



Discussing the Data:
Health Attitudes to Being
Online and Alcohol Use

PART A.

Building capabilities for data-informed learning inquiries



There are six inquiries in Part A, focused on developing students' capabilities for engaging in data-informed inquiry learning processes.

To support the development of capabilities in this section of the resource, the inquiries use the PPDAC approach (Problem, Plan, Data, Analysis, Conclusion) – see Overview of the Resource, Section 3.

Using a selection of the CensusAtSchool **Activities, Opinions and Health Attitudes** questions, the students are guided through a succession of tasks to familiarise them with how to use the CensusAtSchool database, how to present, analyse and interpret data, and how to think critically about the way data can be used as evidence, and how data can be misrepresented. The data skills developed in this section are reused for the inquiries across Parts B and C of the resource. Teachers will be directed to these developmental tasks in Part A, as and where required for the inquiries in Parts B and C.

To assist teachers with the selection of inquiries, the table below describes the inquiry, identifies the CensusAtSchool data used, and indicates the nature of the data-related tasks.

PART A. Developing capabilities for data-informed inquiry	CensusAtSchool VARIABLES used for the activity	Activity suitable for learning mainly in
The list below identifies the main skills being developed and the CensusAtSchool survey item(s) used as the context for the skill development.		
Inquiry 1. Happiness and wellbeing: Using the CensusAtSchool database	Happiness	Statistics
Inquiry 2. Friendships and wellbeing: Designing your own survey	Close friends	Health Education & Statistics
Inquiry 3. Bed time and wake time: Formatting and presenting data	Bed time & Wake time	Statistics
Inquiry 4. Screen time after school: Interpreting data	Screen time after school	Statistics
Inquiry 5. Screen time after school and sleep time: Thinking critically and using data as evidence	Screen time after school & Sleep time	Statistics
Inquiry 6. Attitudes to teenage alcohol use: Identifying reliable and relatable information and challenging misinformation	Alcohol OK	Health Education

Inquiry 1.

Happiness and wellbeing: Using the CensusAtSchool database

Overview

This activity aims to develop students' capabilities for the other inquiries in this resource. Using the **Happiness** question (*Overall, how happy would you say you are?*) students will learn how to:

- identify possible inquiry/investigative questions related to a wellbeing topic – in this case, student happiness
- download and analyse data from the CensusAtSchool database
- format the data in a way that aids interpretation of data
- interpret the data and draw conclusions about what it is showing – and what it is not
- ask questions of the data to determine what else could be learned with further investigation.

Background

The Youth19 data identified that *most students (69%) are happy or satisfied with their lives, have good wellbeing and are not depressed. Wellbeing was higher among males and younger students than among females and older students. Differences in wellbeing for students from different school deciles, different deprivation areas, and rural vs urban areas were generally small... Prevalence of good wellbeing has decreased between 2012 and 2019 (from 76% to 69%)* (Fleming et al., 2020, p2).

Safety considerations

- Some students may be experiencing a period of feeling low or depressed.
- Acknowledge that this is a common human response to many life situations.
- If students think they have been feeling low for a long time and seldom or never feel happy, ensure there is clear messaging on how to make an appointment with the school counsellor, and make available a selection of contacts for helplines and other forms of online support.
- Signal to all members of the class, if they have concerns about a friend's unhappiness, what they can say to their friend and how they can support them, e.g., offer to support their friend to go and see the school counsellor.
- If students are still concerned about a friend, suggest a range of trusted adults they could talk to about what to do and how to best support their friend.
- If teachers have particular concerns about a student's mental and emotional wellbeing, they need to use established school systems to communicate their concerns to a designated member of the pastoral team.

This activity could link with most inquiries across this resource where students are downloading their own dataset from the CensusAtSchool survey.

Contributes to:

Health Education

Students will learn how to:

- explore links between the self-perception of happiness and wellbeing
- [extra] draw comparisons with other New Zealand data about youth wellbeing
- identify actions taken by schools and helping agencies that support student happiness and wellbeing.

Statistics

Students will learn how to:

- pose investigative questions
- make predictions or assertions about what they expect to find
- source data from existing databases
- use multiple representations to analyse and visualise data
- communicate findings using evidence from analysis, provide possible explanations for findings, and reflect on predictions or assertions.

Key Competencies

Using language, symbols and texts; (Critical) Thinking; Participating and contributing

Expected timeframe

- 2 hours— dependent on student capabilities to use the CensusAtSchool database.

Data for the inquiry

CensusAtSchool data to download

(see Section 2 in the Overview of the Resource)

- Happiness question (*Overall, how happy would you say you are?*)— this question is answered as *Very unhappy, Unhappy, Neutral, Happy, Very happy*.
- A selection of demographic data— age/year level and gender are recommended.

Resources required

- Access to a digital device and internet to access the CensusAtSchool website— see additional instructions in the introductory section.
- [Extra] *Youth19 Rangatahi Smart Survey, initial findings: Hauora Hinengaro/Emotional and Mental Health* (Fleming et al., 2020) report— see reference section below for link.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define problem; Introduction to the learning/ scene setting

Ask students as a class or working in small groups to discuss:

- What do they think it means to 'be happy'? How do you know if you are happy? What does it sound like, look like, and feel like to be happy? How do you know if someone else is happy?
- How would you explain the link between happiness and (emotional) wellbeing?
- What helps young people your age to be happy?
- What things get in the way of young people being happy most of the time?

- Do you think it is realistic to be happy all of the time? Why or why not?
- If they had to guess, what percentage of New Zealand students do they think are happy most of the time?
- Read the Youth19 extract in the background statement above, noting that the focus here is emotional wellbeing, not happiness as such, although the ideas are closely related (make this statement available to the students for ongoing reference). Compare this statistic with their guesses about student happiness. What does/does not surprise them about the Youth19 statistic? Why is this?

PROBLEM: Pose inquiry / investigative questions

- Explain to the students that they are going to be accessing the CensusAtSchool data about student happiness.
 - Happiness question (*Overall, how happy would you say you are?*) – this question is answered as *Very unhappy, Unhappy, Neutral, Happy, Very happy*.
 - They will also have access to other variables such as students' ages, gender, year level, ethnicity, region (of the country their school is in), country students were born in.
- Working in groups, ask students to develop 2–3 inquiry/investigative questions about student happiness they hope to find answers to from the CensusAtSchool data, including using some of the demographic data. Use the previous discussion as a source of ideas, e.g., *What levels of happiness do Year 9 students have? Are male students happier than female students? Are students born overseas happier than students born in New Zealand?*

Note that, because this activity is primarily about building capabilities for using data, it is important to keep these inquiry questions 'gentle' and surface level, and reflective of the data available from the CensusAtSchool survey. Maintain a focus on the wellbeing aspects of happiness and avoid any focus on unhappiness or the negative impacts on wellbeing of being unhappy.

DATA: Source data

- Direct students to the CensusAtSchool database and familiarise students with the main features of the website and how to navigate it.
- Show students how to access the CensusAtSchool data and select the variables they wish to investigate.
- Students take a sample of 1000 students, selecting sub-populations if they have decided to only explore some year levels, e.g., Years 9 and 10.
 - [Video](#) on how to select data from CensusAtSchool, download and import into CODAP.
 - Students can download the data and open in it a spreadsheet.

ANALYSIS: Make tables, graphs, summaries;

Describe and reason from data

- Students can analyse the data directly from CensusAtSchool – see video link above.
- Students can also use CODAP to analyse the data.
- Excel and other spreadsheets can be used; however, the data needs to be summarised before data visualisations can be made.
- Make data visualisation(s) to answer the inquiry / investigative question chosen.
- Describe what the data visualisation(s) shows.
- Support students to 'read' and interpret what the data is showing.
- Support students to include the context in their descriptions, i.e., the variable, proportions or counts, the group(s) the data was collected from.

CONCLUSION: Answer the inquiry / investigative questions

- Once the data is analysed and understood, support students to answer their inquiry / investigative questions.
- Practice writing (or digitally recording) the answer to the inquiry / investigative questions, supported by the data that they are using as evidence to justify this claim.
- Ask students to identify 2–3 more inquiry / investigative questions as next steps for the inquiry to find out more information about student happiness.
- Provide opportunity for each group to share findings with the class.
- [Extra] Locate the *Youth19 Rangatahi Smart Survey, initial findings: Hauora Hinengaro / Emotional and Mental Health* report and compare and contrast the CensusAtSchool data with the “good emotional wellbeing” data for gender, age and other demographic data (p. 4).

Taking action

- What does your school do to support student happiness and emotional wellbeing? Think of what goes on in the classroom, in the school grounds, events, opportunities for joining groups, etc.
- What could a student at your school do if they felt very unhappy for an extended period? As a friend, how could you help them?
- Identify at least one helpline and one youth support website a young person your age could use for advice or information if they felt unhappy. Record the name of the site and the URL. Contribute these ideas to a class directory of supporting agencies.

Evidence of student learning / learning artefacts

Students document:

- their inquiry / investigative questions and data-informed responses to these questions, along with next steps for the inquiry
- ways schools can support students to be happy most of the time.

Teacher reflection

- As an introductory activity, how readily were students able to navigate the CensusAtSchool database, download, format and present, and interpret data?
- How readily were students able to develop basic inquiry / investigative questions based on stimulus material and their own knowledge of a situation?
- Which aspects of this capability building will need further development? Where / when will this best happen?

References

Fleming, T., Tiatia-Seath, J., Peiris-John, R., Sutcliffe, K., Archer, D., Bavin, L., Crengle, S., & Clark, T. (2020). *Youth19 Rangatahi Smart Survey, initial findings: Hauora Hinengaro / Emotional and Mental Health*. The Youth19 Research Group, The University of Auckland and Victoria University of Wellington. <https://www.youth19.ac.nz/publications/emotional-and-mental-health-report>

Inquiry 2.

Friendships and wellbeing: Designing your own survey

Overview

This activity aims to develop students' capabilities for the other inquiries in this resource. Using the **Close friends** question (*How many close friends do you have?*) as stimulus material, students will learn how to:

- pose inquiry/investigative questions to explore
- design their own questionnaire
- use a digital platform for collecting data
- use digital tools for presenting data
- interpret data and draw conclusions about what the data is showing – and what it is not.

Note that the selection of friendships data for this activity is deliberate (given the familiarity of the context of friendships for students), to focus the learning on developing skills for designing and carrying out a survey.

Background

Having good friendships is really important to our happiness. It helps us to feel secure in our lives, gives us someone to talk to about whatever is on our mind, and gives us special people to hang out with and enjoy the things we like to do together. They can be someone you can talk to about the things you can't share with anyone else – not even your family. A good friend is someone who's there for you when you need support, and that's important to have in your life. [The Lowdown](#)

Safety considerations

- A few students may not have close friendships at school.
- Teachers need to be sensitive to this in the way talk about people having friends.
- Please review the information about using gender data in Section 5 of Overview of the Resource.

This activity could link with [Inquiry 13 in Part B](#) and [Inquiry 16 in Part C](#), where students design their own survey.

Definitions

- A **survey** is a systematic collection, collation and analysis of **data taken by questioning** a sample of people taken from a population in order to estimate a population parameter. When students are working with the whole group, for example their class or some other group that they can realistically collect or have all the data from, they are not working with a sample, any statistics they calculate or data visualisations they make will be for the whole group and not an estimate for a wider population.
- A **questionnaire** is a **prepared set of questions used to obtain information** from a group of people in a poll or survey. A high quality questionnaire contains unambiguous questions, accessible language, unbiased questions, and clear instructions on how to respond.

Contributes to:

Health Education

Students will learn how to:

- design and administer a survey on friendships ethically and responsibly
- analyse and interpret their own data
- identify actions that maintain and enhance friendships and support wellbeing.

Statistics

Students will learn how to:

- Pose investigative questions
 - pose a question for investigation
- Plan to collect data for observational studies, including selecting valid and reliable measurements for variables
 - plan an investigation pathway
- Use multiple representations to analyse and visualise data
 - suggest connections between different representations
- Communicate findings using evidence from analysis, provide possible explanations for findings
 - make sense of outcomes or conclusions in light of a given situation and context
 - make statements and give explanations inductively based on observations or data
- Critique the findings and claims of others by interrogating all phases of the statistical inquiry cycle

Key Competencies

Using language, symbols and texts; (Critical) Thinking; Relating to others; Participating and contributing

Expected timeframe

2–3 hours to allow time for the survey, including preparing the questionnaire, collecting the data and analysing the data.

Data for the inquiry

Provided data for introduction (secondary data)

- Table of CensusAtSchool **Friends** data— see resource sheets 2A, 2B, 2C for this activity.
- Data was collected using the Random Sampler.
 - 2A— year level: three random samples of 1000 for each year level were taken and combined to get the total dataset of 3000 Year 9–11 students (year level can be selected in the **2. Subpopulation** section).
 - 2B— gender: two random samples of 1000 for each of the two main genders were taken and combined to get the total dataset of 2000 Year 9–11 students.
 - In **2. Subpopulation**, year level was chosen and Years 9, 10 and 11 were selected.
 - In **4. Select sample type, Stratified sample** was chosen and then **Stratify by gender**. The first sample selected 1000 male, this was repeated, and in the second sample 1000 female were selected.
 - 2C— age: a random sample of 1000 students of all ages was taken.
 - It is not possible to stratify by age using the CensusAtSchool data, for the simple reason that students are taught in year levels not age groups.

- Year level is also one of the more easily used variables, given the way the CensusAtSchool year-level data is accessed and downloaded as subpopulation data (along with gender and region).

Age data

If students want to compare larger datasets using age, then there is some work to be done with the random samples that are collected. For example, if they wanted to compare 14-year-olds and 16-year-olds.

- A large (1000) random sample of Years 9, 10 and 11 would need to be taken—select Years 9, 10 and 11 in **2. Subpopulation** (14-year-olds could be in Year 9, 10 or 11, though most would be in year 10)—the students ordered by age and all those not 14 removed from the dataset.
- This process would be repeated taking a large (1000) random sample of Years 11, 12 and 13 students—select Years 11, 12 and 13 in **2. Subpopulation** (16-year-olds could be in Year 11, 12 or 13, though most would be in year 12)—the students ordered by age and all those not 16 removed from the dataset.
- These two datasets could be combined, and comparisons made. It is most likely, though, that the number of 14-year-olds and the number of 16-year-olds would be different. Therefore, comparisons should be made using proportions rather than counts.

Gender data

If selecting for gender by using the **2. Select subpopulation** option, note that this does not provide **Another gender** data, which for this survey is around 1% of the responses. To be able to use **Another gender** data, ensure gender variable under **3. Select variable** is selected. You can do this by selecting **Specific variables** and **Gender**. Ensure that the gender option is NOT selected in **2. Subpopulation** or in **4. Select sample type**.

Students collect their own data for their specific inquiries (Primary data)

Resources required

- Access to a digital device and the internet.
- Resource sheets 2A, 2B, 2C—Friends data presented as tables and graphs.
- Copies of the context analysis diagram.
- Access to the Lowdown website article on [Friendships](#) (either online or printed off in sections). *Note that if using this article in a type of expert jigsaw, download it and divide it into approximately equal-sized sections. Decide the number of sections in consideration of student literacy levels and the size of the class. In a larger class it may be useful to have the expert jigsaw completed by two halves of the class.*
- Access to a digital survey application—use the school's digital learning platform where possible.
- Access to a spreadsheet application with basic table and graphing options.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define problem; Introduction to the learning / scene setting

- Friendship and wellbeing are the focus for this inquiry. In this first part of the activity, students explore provided CensusAtSchool data and discuss the importance of friendships for wellbeing.

- Ask students to recall prior learning about the importance of friendships for wellbeing. *How does having good friends support wellbeing? Is it the number of friends or the quality of friends that is more important? Why do you say this?*
- Provide students with access to the resource sheets for this activity, which contain CensusAtSchool data about the number of friends that students responding to the survey say they have. There are three options – 2A, friends by year level; 2B, friends by gender; and 2C, friends by age. Each data summary is designed to highlight considerations for students' own statistical investigation design. Allocate pairs/groups one of the resource sheets – across the class it will be useful to have more than one pair/group focusing on each data summary.
- Guide and support students to respond to the questions on the resource sheet as much as needed.
- Provide opportunity for sharing a summary of the discussion for each of options A, B and C. This can be done as a whole class or by regrouping students so that the new larger groups have representation of each of 2A, 2B and 2C summaries.
- Draw conclusions about what is useful and what is not useful to consider when designing a statistical investigation. *E.g., what sorts of demographic questions to ask, given what the inquiry/investigative question is in the first place – what do you need to know/not need to know; what variables to collect and how to 'measure' each variable so that the data collected gives you the information you need; and can the data collected be analysed in a way that answers an inquiry/investigative question?* Note that some of these considerations may not become clear until students start to design their own questionnaire.
- Capture student thinking, especially from the last two points:
 - If you are to carry out a school survey about the number of friends students have, what other sorts of things do you think will be important to ask about – apart from the number of close friends they have? *E.g., overall, do males or females say they have more friends? Do students at some year levels have more or fewer friends than other levels? Are some friends more 'online' and others more 'in-person' friends? Are most friends in school or not at the school (or same neighbourhood, city or country)? Are their friends all same-age friends?*
 - If you are to carry out a class or school survey about the number of friends students have, what will you need to be sensitive to so that people feel safe answering your survey questions? *E.g., ensure they understand that they can choose whether they answer the survey – they have to consent to it; ensure students know that their answers are anonymous; inform them how their information will be kept private and confidential; inform them how the information will be used. Use the information in Overview of the Resource, Section 4, on safe and ethical use of data for further ideas.*

PROBLEM: Pose inquiry /investigative question(s)

- Building on the introductory scene-setting discussion above, instruct students to brainstorm ideas for their inquiry/statistical investigation. Support students to think about friendships from a diversity of perspectives (in statistical terms, a type of context analysis – see Arnold et al., 2022, p. 44; in Health Education terms this will need to reflect the personal, interpersonal and societal levels of the socio-ecological perspective – see Inquires 8 and 15). For example:

Are friend(ship)s mostly...

- At the same school and / or out of school; in-person and / or online? In the same neighbourhood / town or in a distant place, even overseas?
- At different ages or year levels?
- With people of the same and/or different genders?
- With people from the same and/or different cultures or ethnicities?
- Long lasting or short?
- 'Best' friends vs mates (or other ways of naming different types of friends)?
- With unrelated people or including extended family members?
- Based on similar interests or group affiliation?
- Etc.

Note:

It is not expected that all these ideas will result in viable inquiry questions. The purpose is to scope a wide range of possibilities and, from those, draw out ideas that could shape up into a worthwhile inquiry that can be safely and ethically investigated.

- Students decide on 2–3 ideas that they are interested in exploring further.
- Before proceeding, students will need to check that the ideas they are considering are worthwhile and able to be investigated. They should interrogate the ideas by asking questions such as:
 - Is this an idea or area that the students in our class would be happy to share their information about with everyone? If not reject the idea [ethics].
 - Can we collect data to answer an inquiry/investigative question based on this area of interest? If not, reject the idea [ability to gather data to answer the inquiry/investigative question].
 - What would be the purpose of asking about the particular idea that we have? If it is not purposeful then reject the idea [purposeful or interesting].
 - Would the inquiry/investigative question we pose involve everyone in the class? If not, then reject the idea [involving the whole group].
- Ideas that have survived interrogation are collated. There will most likely be double-ups and the ideas may need to be narrowed down to about 10–20 ideas. In pairs or groups, the students pick 1–2 of the ideas to work with, ones that they find interesting. Each pair or group should have a different idea to work with if this is possible.
- Pose inquiry/investigative questions (these will likely be updated later). To help, students should consider:
 - What is the variable(s) you want to ask about?
 - Describe the group you are asking about (most likely this is the class).
 - Inquiry/investigative questions are likely to be summary (summarising and describing a single variable for the class) or relationship (looking at the relationship between two paired categorical variables or two paired numerical variables).
- For more on posing investigative questions, see Arnold et al. (2022), pp. 36–54.

PLAN: Measures – what, why, when, where, “who”, how and ethics

- Explain to the students that they will be seeking to find data to answer the inquiry/investigative questions that they have posed about teenage friendships and wellbeing. *In the first instance the inquiry/investigative questions apply to them as a class, although students may extend the investigation to the wider school if relevant for the learning programme.*
- To answer the inquiry/investigative question, we will need to collect data. The most common way to collect data is to ask survey questions; the survey questions need to address the inquiry/investigative questions chosen previously.
- Pairs/groups consider what survey questions need to be asked to answer their inquiry/investigative questions.
 - Survey questions may include the friendship question from the 2023 CensusAtSchool questionnaire that focuses on the number of friends.
 - In their pairs/groups they also need to consider how the students will answer the survey questions, e.g., closed yes/no questions, responding on a Likert scale, selecting from given categories or similar, open-ended written responses.
 - Prompt students to think of the benefits and limitations of each type of survey question.
 - *Initially, it may help to have them fill out a short questionnaire related to another topic, with examples of different types of survey-question responses so they experience what it is like to answer different sorts of survey questions before deciding how they think their survey questions should be answered.*
- Check (again) with the students whether they think these are ethical questions to ask the class (where ethical means that the questions conform to accepted standards of social behaviour): is it ‘right’, is it ‘moral’, is it fair – which could prompt ideas about is it safe – to ask these survey questions? Check the survey questions with an ethical lens, interrogate the survey questions:
 - The interrogation for the ideas in PROBLEM should have removed many potential ethical issues, but it is important to double check the survey questions themselves.
 - Ethical practice is the need to do good and to do no harm.
 - Ask again: Is this a survey question for which the students in our class would be happy to share their information with everyone? If not, can it be reworded, or should it be rejected [ethics]?
 - Ask: Could this survey question cause harm, or make someone feel uncomfortable? If the answer is yes or maybe, can it be reworded, or should it be rejected [ethics]?
- Curate all these survey questions into one digital file (or use sticky notes if a paper-based option is preferred). Prompt students for further ideas if necessary; *e.g., where it is apparent that their suggestions would not provide answers about key friendship and wellbeing situations, or challenge any suggestions where it would be unethical to collect such data.*
- Through class discussion and negotiation, support students to group similar survey questions together to come to agreed survey question(s) for each main idea (inquiry/investigative question), and overall reach a consensus about the survey questions they will include in their class questionnaire (5–8 are suggested), as well as agreement about how the survey questions will be answered.
- See Arnold et al. (2022) pp. 111–133 for more information about what to measure and how. Some examples are provided below.

What to measure	How to measure (the type of data collected)
Demographic data, e.g. <ul style="list-style-type: none"> • Year level or age • Gender • Ethnicity 	<ul style="list-style-type: none"> • Use established wording from other formal or official surveys that collect demographic data. It is usual to provide the options for each, and participants select the one most applicable. Use established surveys that show how to set this out in a questionnaire.
How many people have a friend who... [something related to the nature of friendships]	<ul style="list-style-type: none"> • Numbers, e.g., yes/no questions (some questions may require a depends/maybe/not applicable option)
How many friends...	<ul style="list-style-type: none"> • Write in a number • Make a list of possible ranges of numbers of friends and participants select the most applicable one from the list
How long-lasting is your longest friendship ...	<ul style="list-style-type: none"> • Make a list of possible ranges of numbers (in even step ups of time) and participants select the one most applicable
Opinions about friendships	<ul style="list-style-type: none"> • Short written statements – provide a word limit • Provide a list of possible answers/statements arising from previous learning and planning – participants select the one(s) most applicable
Level of agreement with statements about friendships	<ul style="list-style-type: none"> • Likert or rating scale – strongly agree to strongly disagree, etc. – provide a neutral or don't know option where necessary

- Discuss whether the data collected needs to be anonymous or whether people need to identify themselves. Unless there is an agreed reason, anonymity of questionnaire responses will be more ethical (discuss why this is). How will anonymity be assured in the set-up of the questionnaire?
- Utilise the survey / data-collection function on the school's digital learning platform or another digital application to collect data. Supervise the development of the final questionnaire, utilising the functions in the selected digital tool to design the questionnaire to match the type of data being collected. *It may be more appropriate for the teacher to set up the questionnaire at this time.*
- Testing the questionnaire – does it work? Can people understand and answer all the survey questions? Has the digital form of the questionnaire been set up correctly?

DATA: Collecting and managing

- Direct students on how, when and where they will answer the questionnaire.
- Once data has been collected, provide students with access to the data digitally. This could be as a spreadsheet or as a link to a CODAP document.
- Provide as much instruction as is needed for students to use the spreadsheet or statistical software.
- Each group uses the collected data that is appropriate to answer their inquiry/investigative question.

ANALYSIS: Making tables, graphs, summaries;

Describing and reasoning from data

- Discuss with students how they will summarise, organise and format the data so that it provides information to answer the inquiry/ investigative questions (see Inquiry 3).
- Ask each group to prepare a summary of the data and an answer to each inquiry / investigative question.

CONCLUSION: Answering the inquiry/investigative question and communicating findings

- All analyses and interpretations of data (i.e., answers to sub-questions) are shared with the class.
- Allow students to choose the platform for presentation. They may use slides, the statistical software, a Word/Google doc, or make a video.
- Through discussion with the whole class, draw conclusions about the links between friendships and wellbeing based on the data.
- Debrief: What conclusions cannot be drawn about friendships and wellbeing? What cannot be assumed? What other inquiry/investigative questions have surfaced as a result of this survey?

Taking action

- Direct students to the Lowdown website article on [Friendships](#).
- Allocate a section of the article to pairs or groups of three (in a larger class the same section can be allocated more than once).
- Once students have shared a summary of their section of the article, they return to their pair or small group and make a list of 10 ways to have a good friendship – including what to do if there is conflict within the friendship, and if support from another person is needed.
- [Extra] Check out one of the other helping agencies listed with this article.

Evidence of student learning / learning artefacts

Students will:

- file a copy of their statistical investigation including their results and analysis
- record examples of ways friendships can be maintained or enhanced.

Teacher reflection

- How readily did students respond to the process of designing questionnaires? If carrying out surveys for future inquiry, in what aspects of survey design could students work with a level of independence and where do they need a more structured and scaffolded approach.
- How skilled were students at utilising digital survey applications and statistical software (CODAP and/or a spreadsheet)? What are the implications of this for future learning where these digital skills will be required? For next steps see the following inquiries.

References

The Lowdown. (n.d.). *Friendships*. <https://www.thelowdown.co.nz/article/friendships>

Resource sheet 2A(i)

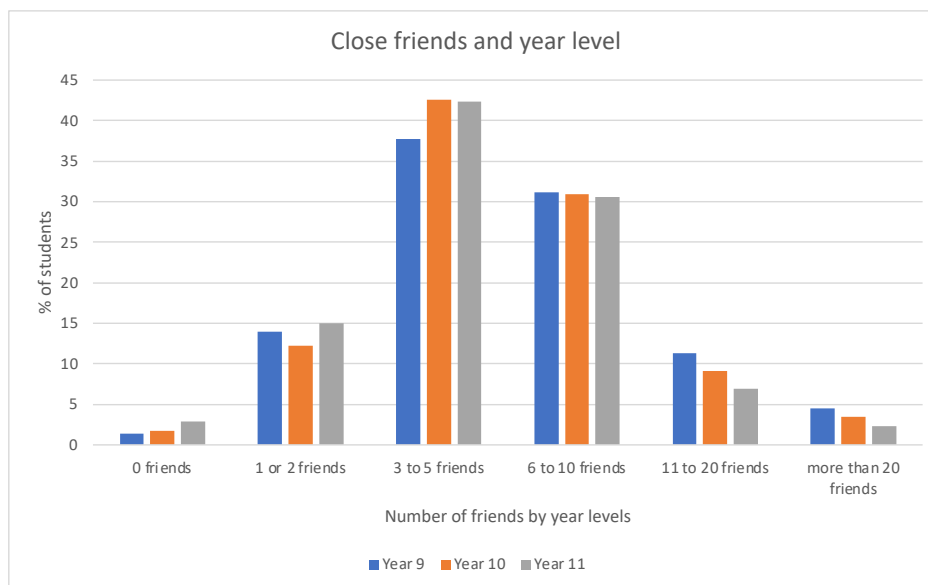
Tables and graphs of CensusAtSchool friends data 2023

Table 2A.
Number of close friends by year level

Year Level	Year 9		Year 10		Year 11	
N = 3000 Total number Years 9-11	N = 1000	%	N = 1000	%	N = 1000	%
Friends						
0 friends	14	1.4	17	1.7	29	2.9
1 or 2 friends	140	14.0	122	12.2	150	15.0
3 to 5 friends	377	37.7	426	42.6	423	42.3
6 to 10 friends	311	31.1	309	30.9	306	30.6
11 to 20 friends	113	11.3	91	9.1	69	6.9
more than 20 friends	45	4.5	35	3.5	23	2.3

Note: Random sample of 1000 for each year level.

Graph 2A.
Number of close friends by year level



Resource sheet 2A(ii)

Discussion questions for

A. Number of friends by year level

Interpreting the data:

What can you conclude about the number of close friends students in Years 9–11 have? E.g.:

- How many close friends do most Year 9–11 students have?
- What patterns can you see across the number of close friends overall?
- What patterns can you see across Years 9–11?

- Why do you think the investigator has clumped the number of friends into ranges, i.e., 0, 1–2 friends, 3–5 friends etc?
- Why do you think the investigator has clumped the ranges unevenly, i.e., 1–2 but then 3–5, 6–10 and 11–20?
- Why do you think the investigator clumped every response reporting over 20 friends into one group?

Hint: Think about the topic that the survey question is about.

- Do you think this clumping of data, and the uneven clumping of data, is appropriate? Why or why not?

Hint: There may be different answers to this question, depending on whether you are thinking about the topic of the question or what is most appropriate to do statistically.

Do you think some students thought about this question carefully? *Think about what a 'close friend' is.* What do we generally know about the number of 'close friends' people have compared to class or team mates, acquaintances, and other people they know and spend time with?

- Thinking about the topic of friends, why might an investigator want to specifically know if students have no friends?
- What might an investigator recommend to a school if they realised quite a few students at a school had no friends, or very few friends?

Hint: Think about young people's wellbeing when answering this question.

If you are to carry out a school survey about the number of friends students have, do you think you need to ask about year level? Why or why not?

If you are to carry out a school survey about the number of friends students have, what other sorts of things do you think will be important to ask about – apart from the number of close friends they have?

If you are to carry out a class or school survey about the number of friends students have, what will you need to be sensitive to so that people feel safe answering your survey questions?

Resource sheet 2B(i)

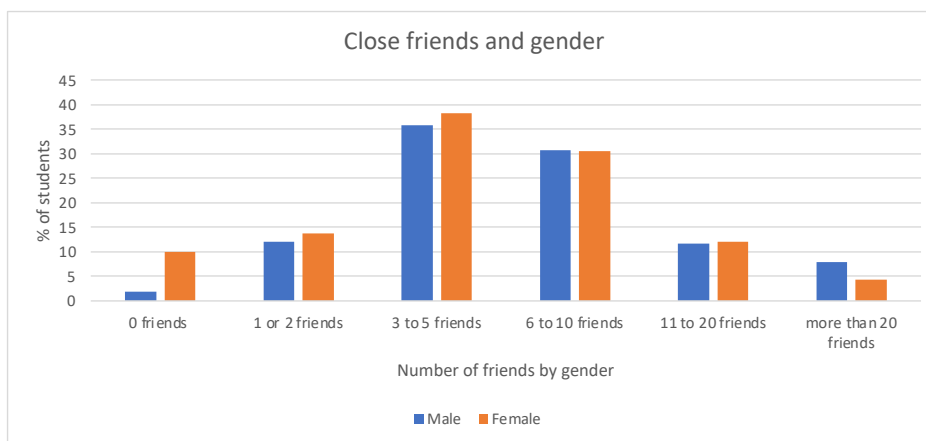
Tables and graphs of CensusAtSchool friends data 2023

Table 2B.
Number of close friends by gender

Gender	Male		Female	
N = 2000 Total number male and female genders Years 9-11	N = 1000	%	N = 1000	%
Friends				
0 friends	18	1.8	10	1.0
1 or 2 friends	120	12.0	137	13.7
3 to 5 friends	358	35.8	383	38.3
6 to 10 friends	308	30.8	306	30.6
11 to 20 friends	116	11.6	120	12.0
more than 20 friends	80	8.0	44	4.4

Note: Random sample of 1000 for each gender.

Graph 2B.
Number of close friends by gender



Resource sheet 2B(ii)

Discussion questions for

B. Number of close friends by gender

Interpreting the data:

What can you conclude about the number of close friends students in Years 9–11 have? E.g.:

- How many close friends do most male and female students have?
- What patterns can you see across the number of close friends overall?
- What patterns can you see across the two genders?
- Are there any results that you find surprising? If so, why is this?

- Why do you think the investigator has clumped the number of friends into ranges, i.e., 0, 1–2 friends, 3–5 friends, etc.?
- Why do you think the investigator has clumped the ranges unevenly i.e., 1–2 but then 3–5, 6–10 and 11–20?
- Why do you think the investigator clumped every response reporting over 20 friends into one group?

Hint: Think about the topic that the survey question is about.

- Do you think this clumping of data, and the uneven clumping of data, is appropriate? Why or why not?

Hint: There may be different answers to this question, depending on whether you are thinking about the topic of the question or what is most appropriate to do statistically.

Do you think some students thought about this question carefully? *Think about what a 'close friend' is.* What do we generally know about the number of 'close friends' people have compared to class or team mates, acquaintances, and other people they know and spend time with?

- Thinking about the topic of friends, why might an investigator want to specifically know if students have no friends?
- What might an investigator recommend to a school if they realised quite a few students at a school had no friends, or very few friends?

Hint: Think about young people's wellbeing when answering this question.

If you are to carry out a school survey about the number of friends students have, do you think you need to ask about gender? Why or why not?

If you are to carry out a school survey about the number of friends students have, what other sorts of things do you think will be important to ask about – apart from the number of close friends they have?

If you are to carry out a class or school survey about the number of friends students have, what will you need to be sensitive to so that people feel safe answering your survey questions?

Resource sheet 2C(i)

Tables and graphs of CensusAtSchool friends data 2023

Table 2C.
Number of close friends by age

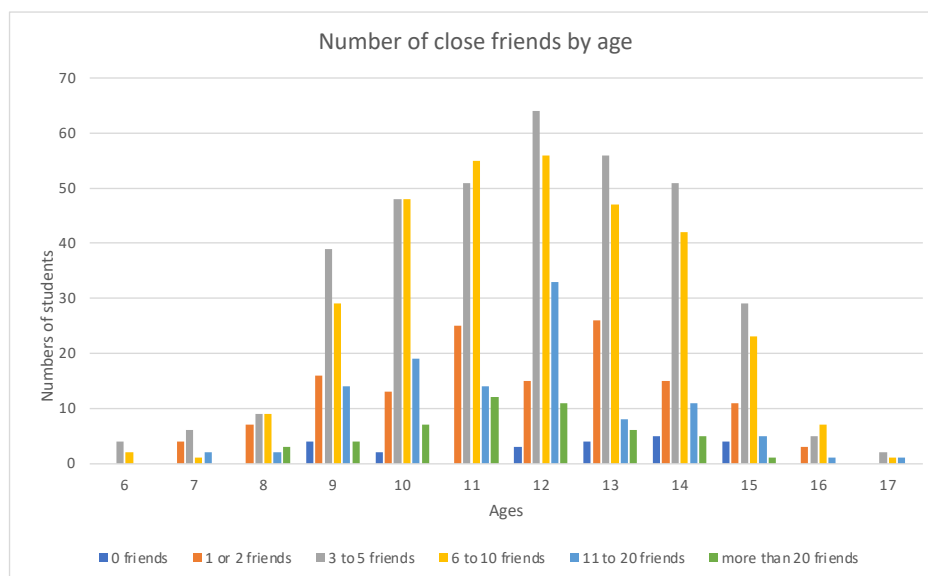
Age (years)	6	7	8	9	10	11	12	13	14	15	16	17
N = 1000*	6	13	30	106	137	157	182	147	129	73	16	4
0 friends	—	—	—	4	2	—	3	4	5	4	—	—
1 or 2 friends	—	4	7	16	13	25	15	26	15	11	3	—
3 to 5 friends	4	6	9	39	48	51	64	56	51	29	5	2
6 to 10 friends	2	1	9	29	48	55	56	47	42	23	7	1
11 to 20 friends	—	2	2	14	19	14	33	8	11	5	1	1
> 20 friends	—	—	3	4	7	12	11	6	5	1	—	—

*All ages—random sample of 1000 students

Graph 2C.
Number of close friends by age

Note:

There are very few 6–8-year-olds and 16–17-year-olds completing the 2023 CensusAtSchool survey.



Resource sheet 2C(ii)

Discussion questions for

C. Number of close friends by age

Interpreting the data:

What can you conclude about the number of close friends students aged 6–17 years have? E.g.:

- How many close friends do most 6–17-year-old students have?
- What patterns can you see across the number of close friends overall?
- What patterns can you see across 6–17-year-olds?
- Are there any survey results that you find surprising? If so, why is this?

- Why do you think the investigator has clumped the number of friends into ranges, i.e., 0, 1–2 friends, 3–5 friends etc?
- Why do you think the investigator has clumped the ranges unevenly, i.e., 1–2 but then 3–5, 6–10 and 11–20?
- Why do you think the investigator clumped every response reporting over 20 friends into one group?

Hint: Think about the topic that the survey question is about.

- Do you think this clumping of data, and the uneven clumping of data, is appropriate? Why or why not?

Hint: There may be different answers to this question, depending on whether you are thinking about the topic of the question or what is most appropriate to do statistically.

Do you think some students thought about this question carefully? *Think about what a 'close friend' is.* What do we generally know about the number of 'close friends' people have compared to class or team mates, acquaintances, and other people they know and spend time with?

- Thinking about the topic of friends, why might an investigator want to specifically know if students have no friends?
- What might an investigator recommend to a school if they realised quite a few students at a school had no friends, or very few friends?

Hint: Think about young people's wellbeing when answering this question.

If you are to carry out a school survey about the number of friends students have, do you think you need to ask about **age**? Why or why not?

If you are to carry out a school survey about the number of friends students have, what other sorts of things do you think will be important to ask about – apart from the number of close friends they have?

If you are to carry out a class or school survey about the number of friends students have, what will you need to be sensitive to so that people feel safe answering your survey questions?

Inquiry 3.

Bed time and wake time: Formatting and presenting data

Overview

This activity aims to develop students' capabilities for the other inquiries in this resource. Using the survey questions *About what time did you go to sleep last night?* and *About what time did you wake up this morning?* students will learn how to:

- manage and clean data
- organise data into tables and graphs using digital tools.

Note:

That instructions for the activity focus on the CensusAtSchool data about sleep. Alternatively, students can use the data collected about friendships in Inquiry 2, or any other data from the CensusAtSchool survey.

Background

- Learning how to format and present statistical data so that it can be easily read and understood is an important skill. It is useful that students learn how to use at least one data-analysis tool that is relevant for use across a range of contexts or subjects.
- The context of sleep is important to consider when thinking about the impact of digital-device use on wellbeing. Concerns about this are reported in numerous studies internationally.
- Understanding how different data-analysis tools work, which ones use raw data to make data visualisations and which ones use tabulated data to make data visualisations, is an important skill; students would benefit from being able to use both types.

Safety considerations

- Lack of sleep, often due to the use of digital devices, is a known problem among youth internationally.
- Consider following this activity with other learning on supporting wellbeing when using digital devices.

This activity could link with [Inquiry 5 in Section A](#) and most of the inquiries in [Sections B and C](#) where the option to download and analyse a dataset from the CensusAtSchool website is selected.

Contributes to:

Health Education

Students will learn how to:

- present statistical information about an aspect of wellbeing in preparation for an inquiry.

Statistics

Students will learn how to:

- pose summary and comparison investigative questions about populations
- make predictions or assertions about what they expect to find
- source data from existing databases

- clean data
- use multiple representations to analyse and visualise data
- communicate findings using evidence from analysis, provide possible explanations for findings, and reflect on predictions or assertions.

Key Competencies

(Critical) Thinking; Using language, symbols and texts; Participating and contributing

Expected timeframe

- 1-2 hours if students have a basic knowledge of the data-analysis tools chosen.

Data for the inquiry

- Students will work with data from the 2023 CensusAtSchool database, using information from Q21a, *About what time did you go to sleep last night?* and Q21b, *About what time did you wake up this morning?* and from demographic variables **Year level** and **Gender**.
 - Students can download their own sample of data from CensusAtSchool. In **2. Subpopulation** they should select **Specific years** and then tick Years 9, 10 and 11. In **3. Select variables** they should select **Specific variable** and then select the variables:
 - Year level categorical
 - Gender
 - Bed time
 - Wake time
 - Sleep time
 - If they also select **Screen time**, they can use this dataset for Inquiry 5
 - Select 1000 as the sample size.
 - Generate sample and then download the sample and save as a .csv file.
 - See the instructions in the Overview of the Resource, Section 4, about how to guide students to download a suitable dataset.
 - [Video](#) on how to select data from CensusAtSchool, download and import into CODAP.
 - Students can then work on this data in a spreadsheet tool, e.g., Excel or Google sheets, or they can use CODAP or iNZight Lite.
 - Alternatively, 3000 Year 9-11 students, including the variables suggested, set up ready to use in CODAP is available [here](#).
- and/or
- Data from Inquiry 2 will need to be available in a spreadsheet.

Resources required

- Digital access to a spreadsheet or other application with formatting functions.
- Access to the internet to use statistical software such as CODAP.
- Access to the [Random Sampler](#) on the CensusAtSchool website.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define problem; Introduction to the learning/ scene setting

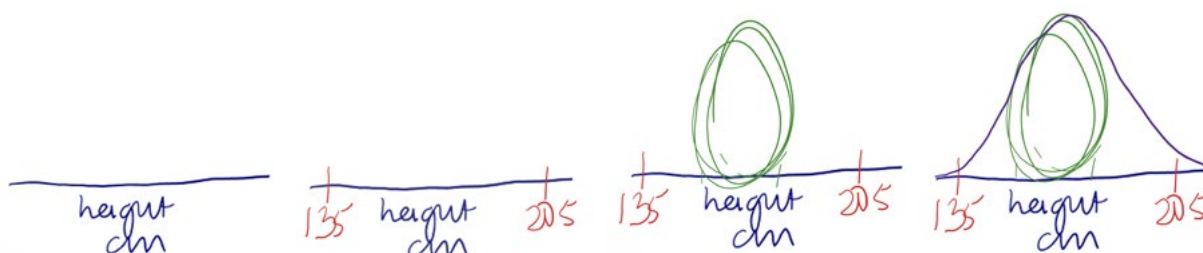
PLAN: What variables are used and how were they measured?

- Explain to the students that the focus for this activity is on how to clean, format and present data clearly so that it can be understood by others.

- The CensusAtSchool variables used are **Bed time**, **Wake time**, **Sleep time**, plus **Year level** and **Gender** as demographic options for comparisons. The variables **Bed time**, **Wake time** and **Sleep time** are derived from the survey questions *About what time did you go to sleep last night?* and *About what time did you wake up this morning?*
- Ask the students about where the variable **Sleep time** came from if there was no survey question about sleep time.
- In their group discuss: Bed and wake time
 - Check the actual survey questions in the [questionnaire](#). What additional information is included with the survey question other than just what time did you go to sleep/wake up?
 - What time they went to bed last night, what time they woke up.
 - Was this typical of their sleep patterns or were they up later, or went to bed earlier than normal?
 - Why the survey question asks about LAST NIGHT and not some other time period, or when they typically go to bed.
 - What time range they would expect Year 9-11 (or Year 9-13) students to go to bed, what time to wake up.

Sleep time

- How many hours of sleep do they think Year 9-11 (or Year 9-13) students get?
- What is the least number of hours? What is the maximum number of hours?
- Where do they think most students will be? Between X and Y?
- What shape do they think the distribution of the data will be? Symmetrical, uniform, left or right skewed?
- How many modes (peaks)?
- Get the groups to make a sketch of what they think the distribution of hours of sleep will look like. Support them by giving them an example of how to do this, e.g. (and selecting a different context to the task the students will do):
 - Heights of Year 9-11 students – make a horizontal axis and label with height cm (1. Blue)
 - Ask them the shortest height. E.g., 135 cm – mark 135 on the lower end of the axis (2. Red)
 - Ask them the tallest height. E.g., 205 cm – mark 205 on the upper end of the axis (2. Red)
 - Where do they think most heights will be, between which two values? E.g., 155-175 cm – mark an oval that encompasses 155-175 (3. Green)
 - What do they think the middle (median) height will be? E.g., 165 cm – extend the oval so it 'peaks' around 165 (3. Green)
 - What shape? Symmetrical and unimodal – draw a smooth curve that is symmetrical and peaks around 165 (4. Purple)
 - Make a sketch to model what you want them to do for the sleep times, see progression of sketch below aligned to the comments above.



- Students should do this for sleep time.
- They could also try making a sketch of the distribution of bed time and wake time.
 - Same sorts of questions – What is the earliest, latest, most, middle?
- Thinking about what they expect to see before they actually get the data helps a lot with deciding if any of the data needs cleaning.

PROBLEM: Pose inquiry /investigative questions

- Discuss with the students the sort of inquiry/investigative questions they could ask about data related to year level and gender, and teenage bed times and wake times.
 - E.g., do Year 9 students go to bed earlier than Year 13 students, or do boys sleep in longer than girls, etc.
 - Note, if they are working with the provided dataset (3000 Year 9–11 students, including the variables suggested, set up ready to use in CODAP is available [here](#)) they are limited to asking investigative questions about Year 9, 10 and 11 boys and girls.
 - Many of the inquiry/investigative questions will probably be comparison questions.
 - If we are using a random sample from CensusAtSchool, then the population(s) being explored are New Zealand Year 9, 10, 11 [12 and 13] students or New Zealand Year 9–11[13] boys and girls.
 - At this age students can start to explore using a sample to find out about a population.
- Support students to develop investigative questions, get them to:
 - Decide the variable they will explore (e.g., **Bed time, Wake time, Sleep time**)
 - Decide if they will **summarise** the data for all students or **compare** between two or more sub-populations, e.g., Year 9 and Year 10 or boys and girls
 - Confirm the **population** (summary), e.g., New Zealand Year 9–11 [Year 9–13] students; or **sub-populations** (comparison), e.g., New Zealand Year 9 students and New Zealand Year 10 students
 - Use the information decided above to pose their investigative question, e.g.:
 - Do **New Zealand Year 9 students** **tend to go to bed** **earlier** than **New Zealand Year 10 students**?
 - **How long do** **New Zealand Year 9–11 students** **sleep** for?
 - Do **New Zealand Year 9–11 girls** **tend to be earlier risers** than **New Zealand Year 9–11 boys**?
 - Check the investigative questions, especially any comparison questions. They should be phrased according to what is expected to be found, e.g., if we think Year 9 students go to bed earlier then we would state it that way (see the first example investigative question above); if we think Year 9–11 boys are earlier risers than Year 9–11 girls then we would write the third investigative question example above the other way around: Do New Zealand Year 9–11 boys tend to be earlier risers than New Zealand Year 9–11 girls?
- Encourage students to do at least one summary investigative question and one comparison investigative question.
- Based on discussions in the section *PROBLEM: Understand and define problem*, get students to predict what they think they will find when they explore their investigative question with CensusAtSchool data. They should refer back to ideas they had in that first part, e.g., sketch a graph to show what they think they will find and make a statement about it.

DATA: Source data

- Direct students to the [CensusAtSchool Random Sampler](#) section of the CensusAtSchool website.
- Guide them to download a dataset using the guidance in the *Data for the inquiry* section.
 - This could be getting their own random sample of students from the population they have specified in their investigative question.
 - This could be the pre-prepared dataset containing 3000 Year 9-11 students set up ready to use in CODAP, available [here](#).

DATA: Manage data (see Arnold et al., 2022, pp. 178-189 for more on data management)

- Get the students to look at the raw data that has been downloaded from CensusAtSchool.
 - If they have downloaded their own .csv file, then get them to open the .csv.

Year categorical	Gender	Bed time	Wake time	Sleep time
Year 11	Female	23:30:00	7:00:00	7.5
Year 09	Male	20:30:00	7:00:00	10.5
Year 09	Female	13:00:00	7:00:00	18
Year 09	Male	23:30:00	7:30:00	8
Year 10	Female	21:30:00	7:00:00	9.5
Year 10	Female	12:30:00	7:00:00	18.5
Year 09	Male	23:30:00	6:30:00	7

- If they are using the 3000 Year 9-11 students set up in CODAP, get them to click on the table icon in the top left-hand corner of the case table, then select "Switch to case table view of the data".



- This gives a table view of the data.

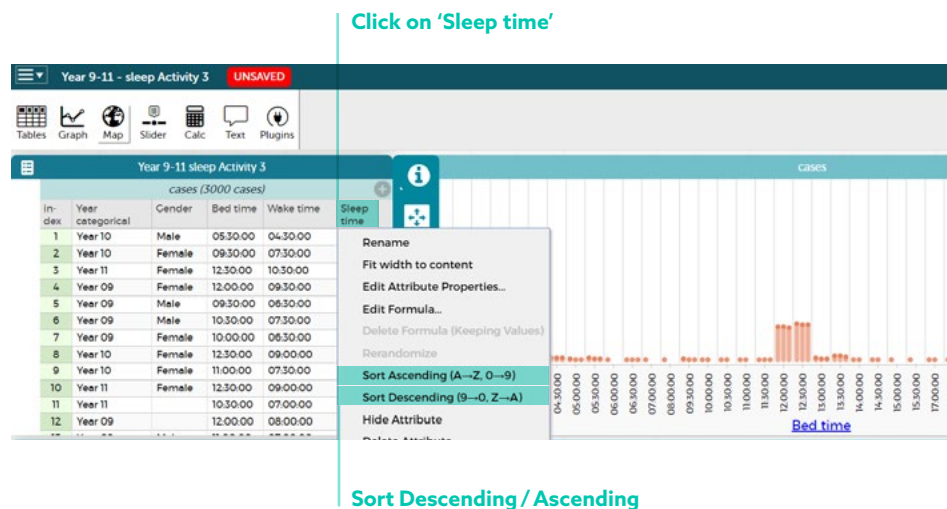
The image shows a detailed table view of the data. At the top, there is a teal header bar with a table icon on the left and the text "Year 9-11 sleep Activity 3". Below the header, it says "cases (3000 cases)". The table has columns for "in-index", "Year categorical", "Gender", "Bed time", "Wake time", and "Sleep time". The first six rows of data are visible, with the first row highlighted in green.

in-index	Year categorical	Gender	Bed time	Wake time	Sleep time
1	Year 09	Female	12:30:00	07:30:00	19
2	Year 09	Female	02:30:00	06:00:00	3.5
3	Year 09	Male	22:30:00	06:00:00	7.5
4	Year 09	Female	21:00:00	07:00:00	10
5	Year 09		22:30:00	06:30:00	8
6	Year 09	Male	21:00:00	06:00:00	9

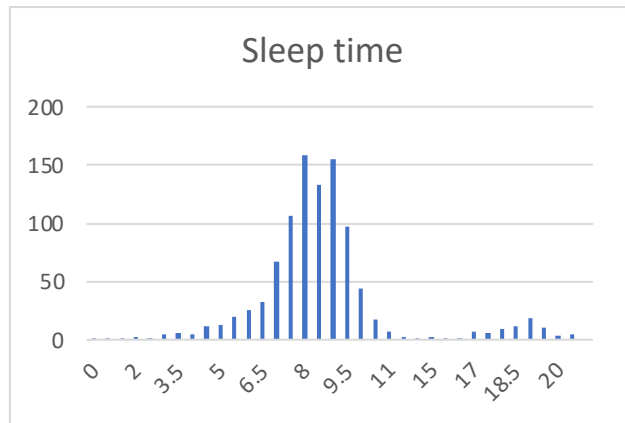
- They should notice the structure of the raw data.
 - “Cases” or students occupy rows.
 - Variables are recorded in columns.
 - A row contains the values for all the variables for one student.
 - A column contains the values for each student for a single variable.

DATA: Check and clean the data (optional, but some potentially interesting discussions about the data)

- Cleaning data involves detecting erroneous or suspicious data, dealing with missing data, and identifying irrelevant data. Cleaning data is a tedious but necessary element of preparing data for analysis (Arnold et al., 2022, p. 190).
- Remind students of the discussion they had in the section *PROBLEM: Understand and define problem*, where they thought about the earliest times to bed, latest times to bed, etc.
- Now have a look at the data.
 - If working with a spreadsheet, put a filter on the top row (variable names) and sort the data—largest to smallest—on sleep time. [See this video](#) for how to do that.
 - If working in CODAP, click on the variable name, **Sleep time**, and Sort Descending.



- What do they notice, e.g.
 - Some students have slept a long time, saying they went to bed at 12:30 pm, in the afternoon.
 - They might wonder at bed time being during school hours, but the previous day could have been the weekend.
 - They might notice that there could be some confusion between 12:30 pm (after lunch) and 12:30 am (after midnight).
- Another way to explore the data to see if it is fit for purpose is to make a graph of the data.
 - [See this video](#) of how to quickly make graphs in Excel using raw data. The example uses a sample from CensusAtSchool. The sleep-time graph from the video is included below.



- Using CODAP, they can make graphs of bed time, wake time and sleep time. The image below shows the three graphs using the 3000 Year 9-11 sample.



- What do they notice?
 - In the sleep-time graph the data seems to be bimodal, what is causing that?
 - In CODAP the second, smaller peak appears to be a separate cluster of points, if we highlight those points we can see what is going on in the other two graphs.



- It seems as though many of these students had times from 9:30 am through to 1:30 pm as their bed times; maybe they used the wrong label, putting in am for 9:30-11:30 and pm for 12-1:30. Compare this against the distribution prediction.

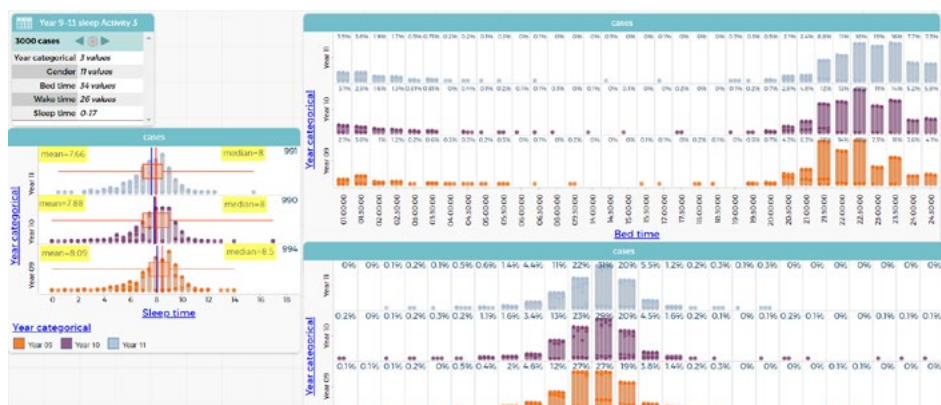
- What should we do about this? This highlighted cluster includes approx. 240 students.
 - Decide to keep – make no change
 - Decide to remove – this is a listwise deletion, removing the whole case
 - Decide to impute – assume a 12-hour difference for the bed-time values, e.g., 12:30 is actually 24:30, 11:30 is actually 23:30, update the bed-time values
- A similar process could potentially happen for some of the wake-time values, especially the ones in the evening
- Adjust the sleep time for the changed bed-time values – adjust by 12 hours
- This could be done in a spreadsheet and then re-imported into CODAP for analysis
 - Adjusted data could look like this once the bed times and sleep times are adjusted.



- Always make a note of the adjustments that are made to datasets, explaining the rationale for the change.

ANALYSIS: Make tables, graphs, summaries; Describe and reason from data

- Once the data is tidied up, students can start to make data visualisations to answer their investigative question. They should be considering the story they want to tell with the data.
- [Short video showing how to make graphs in Excel.](#)
- The graphs above show a single variable – summary situation.
- If the students have a comparison situation, they will need to add a second variable to the vertical axis. This might be year level or gender. The graphs below show the updated data split by year level.
- Students should describe patterns they see in the data and compare between sub-populations if appropriate for their investigative question.



- Check statements for links to the context: have they included the variable, units and values, the name of the population or sub-populations?
- **Remind students to save their spreadsheets or their CODAP documents. We will come back to this data again.**

CONCLUSIONS: Presenting and formatting

- Guide students as much as needed to use the functions in the application to generate tables and graphs to show the data discussed. Get them to focus on which way around is best to arrange the data (columns and rows on tables, x and y axes on graphs).
- Include guidance around conventions, e.g., titles on and for tables and graphs, naming columns and axes, and including units such as %.
- Include guidance around how to copy tables and graphs and include them in a document such as a report.
- Revisit the questions about bed and wake times for different groups: can answers to these questions be easily 'read' from the tables and/or graphs the students produced? If yes, what features of the formatting and presentation enable this? If no, what needs to happen to the tables and/or graphs to make them easier to read or more informative?
- Instruct the students that they need to compile the materials from the activity into a short report including:
 - a heading
 - 3–4 sentences about the purpose of the learning
 - including the inquiry/investigative questions they were exploring about bed time, wake time and sleep time
 - formatting and presenting of tables and graphs that could show them these data
 - graphs and tables they produced
 - description of the data
 - short summary about the importance of formatting and presenting data in a particular way.
 - Optional: any tips and reminders for how to use the digital tool to create graphs and tables, the value and uses of graphs vs tables, and anything they found out about bed, wake and sleep times.

Reflection questions

- What conclusions can be drawn about the importance of how data is formatted and presented?
- Thinking about the context of bed, wake and sleep times, what inquiry/investigative questions do these data not answer? Signal further learning opportunities about this.

Evidence of student learning / learning artefacts

Students will:

- file a copy of their brief report in their learning journal.

Teacher reflection

- How proficient were students in using the digital tool for formatting and summarising data? What ongoing skill-development is needed to ensure they are proficient in using the digital tool?
- Was there any apparent difference in the way students managed tables and graphs – either creating them or understanding them? What are the implications of this for future learning?

Inquiry 4.

Screen time after school: Interpreting data

Overview

This inquiry aims to develop students' capabilities for the other inquiries in this resource. Using the *Screen time after school* survey question, students will learn how to:

- 'read' and interpret graphs and tables to work out what they are showing – and what information cannot be interpreted from the data.

For illustration, data is used from the CensusAtSchool questionnaire Q22, *For your most recent whole school day, how much total screen time did you have after school before going to sleep? Answer to the nearest 15 minutes. Enter zero if you spent no time on screens.*

Background

Interpreting data is an essential skill for critical thinking and carrying out an inquiry. It is a skill that takes a lot of practice, and teachers are encouraged to include an aspect of data interpretation in any Health Education topic.

The judgement of how much screen time is 'good' and 'bad' remains somewhat problematic. Although the Ministry of Health recommends recreational screen-time should be zero for children under two years old, less than one hour per day for children aged two to five, and less than two hours per day for children aged five to 17, educationalists point out that this is not nuanced enough, as it is the quality and type of the screen time that is important, given the multiple uses of screen-based technologies for learning, recreation and leisure.

Safety considerations

- As the data will show, some students are spending an enormous amount of time each day in front of a screen.
- Highlight for students the importance of managing screen time and the need for a balance of recreation and leisure-time activities.
- If any students think their screen time is causing a problem for their wellbeing, refer them to the pastoral support team at your school.
- Please review the information about using gender data in Section 5 of the Overview of the Resource.

This activity can build on the data from [Inquiry 2 and/or 3](#), or link with [Inquiry 5 in Part A](#).

Contributes to:

Health Education

Students will learn how to:

- 'read' graphs and tables to interpret data about screen time
- identify what information cannot be interpreted from the data.

Statistics

Students will learn how to:

- Use multiple representations to analyse and visualise data
- Communicate findings using evidence from analysis, provide possible explanations for findings
 - make sense of outcomes or conclusions in light of a given situation and context
 - make statements and give explanations inductively based on observations of data

Key Competencies

(Critical) Thinking; Using language, symbols and texts; Participating and contributing

Expected timeframe

- 1 hour.

Data for the inquiry

- *Note that students recorded screen time to the nearest quarter hour. For analysis, these times have been clumped into hour groups, e.g., 0-1, 1.25-2, and so on.*
- *Five random samples of 1000, one for each of Years 9-11 and for male and female have been downloaded from CensusAtSchool to give the five datasets that are used for the analysis. Note that this means that the students in the Year 9-11 dataset are not the same as the students in the male and female dataset (though some may be in both).*

Resources required

- Access to a digital device.
- Resource sheets for Inquiry 4—screen-time data summarised as tables and graphs.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define the problem;

Introduction to the learning / scene setting

- Explain to students that they are going to be exploring data that was gathered through the CensusAtSchool questionnaire, they will be exploring the data generated by the survey question: *For your most recent whole school day, how much total screen time did you have after school before going to sleep?*
- Ask the students: if they were answering this survey question, what sort of 'screen time' would they be thinking about? *E.g., watching TV or a movie, alone or with their family; doing homework on a computer; viewing images and reading comments on social media; taking photos and writing comments and posting on social media; watching videos on TikTok, YouTube or other application; playing video games; etc.*

- Ask the students what they understand to be some of the wellbeing concerns about the amount of screen time children and young people have.
- Share that the Ministry of Health recommends *recreational screen-time should be zero for children under two years old, less than one hour per day for children aged two to five, and less than two hours per day for children aged five to 17.*
 - How is screen time defined in this comment? *Recreational.*
 - Is this the same as the screen time in the CensusAtSchool survey? How, and how not?
 - How realistic do they think this is, given the many uses of screen-based digital technologies? Do they think there is such a thing as 'good' and bad' screen time? Explain their reasoning.

PROBLEM: Pose inquiry / investigative questions

- Explain that students will get tables and graphs of screen-time data, summarised in tables and graphs by year level (Years 9, 10 and 11) and gender (male, female, other) (resource sheets 4A and 4B).
- Ask students to pose an investigative question they think they could answer with the data they will get.
 - Identify the variable.
 - Identify group (or groups).
 - Will they summarise (summary investigative question) the data and/or make comparisons (comparison investigative question)?
 - Is their investigative question about the whole group(s)?

DATA: Provided summarised secondary data

- Provide students with copies of the screen-time data – use the tables and graphs provided with the resource page for this activity.

ANALYSIS: Describe and reason from data

- In groups, ask students to describe what the data is saying about screen time for students of different year levels and genders. A discussion sheet is provided with the resources (resource sheet 4C). Check that they have reached some similar understanding by asking questions such as:
 - Are there any differences in screen time for ... ? *Select from across year level and gender.*
 - Where is screen time similar across ... ? *Select from across year level and gender.*
 - Based on the Ministry of Health recommendations for daily screen time, what % of teenagers are meeting this recommendation?

CONCLUSION: Answer the inquiry / investigative questions

- What inquiry/investigative questions can data like this provide some answers to? *E.g., how similar / different is screen time across year levels, genders? Are teenagers meeting the Ministry of Health recommendations for daily screen time?*
- What inquiry/investigative questions can data like this NOT provide answers to? (Use some of the introductory discussion questions as a clue.) *E.g., What sort of screen time were students thinking about when answering the survey question? How much screen time had teenagers already had during school time? Is there a difference between recreational screen-time and other types (what are they?) of screen time?*

Taking action

- Ask students where they think they could get support if they thought their own screen time, or that of a friend, was creating wellbeing concerns. E.g., school counsellor, talk to a parent (see [Netsafe](#) guidance).

Evidence of student learning / learning artefacts

Students will:

File a copy of the data along with a summary of the class responses to the questions:

- What inquiry / investigative questions can data like this provide some answers to?
- What inquiry/investigative questions can data like this NOT provide answers to?
- Where can you get support if you think your own screen time, or that of a friend, is creating wellbeing concerns?

Encourage students to use digital literacy skills when responding to these questions.

Teacher reflection

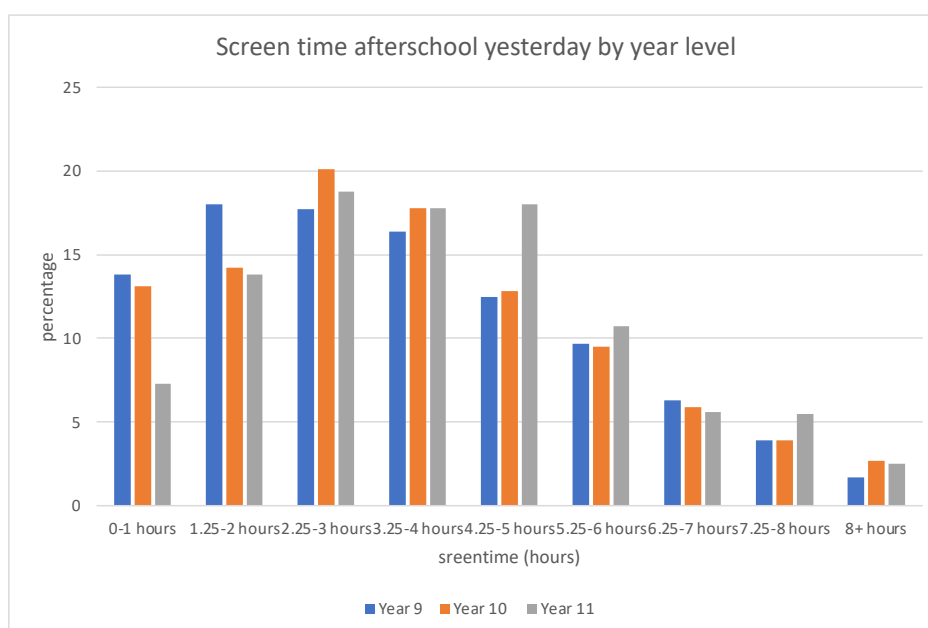
How readily are students able to see patterns, and summarise what is in the data? Can they read graphs or tables more easily? What are the implications of this for future learning? What other learning opportunities are there for practising analysing data?

Resource sheet 4A

Table 4A.
CensusAtSchool screen-time data 2023 for Years 9–11

Year levels – all genders	Year 9	Year 10	Year 11	Total
Screen time	N = 1000	N = 1000	N = 1000	N = 3000
0-1 hours	13.8%	13.1%	7.3%	11.4%
1.25-2 hours	18.0%	14.2%	13.8%	15.3%
2.25-3 hours	17.7%	20.1%	18.8%	18.9%
3.25-4 hours	16.4%	17.8%	17.8%	17.3%
4.25-5 hours	12.5%	12.8%	18.0%	14.4%
5.25-6 hours	9.7%	9.5%	10.7%	10.0%
6.25-7 hours	6.3%	5.9%	5.6%	5.9%
7.25-8 hours	3.9%	3.9%	5.5%	4.4%
8+ hours	1.7%	2.7%	2.5%	2.3%

Graph 4A.
CensusAtSchool screen-time data 2023 for Years 9–11



Resource sheet 4B

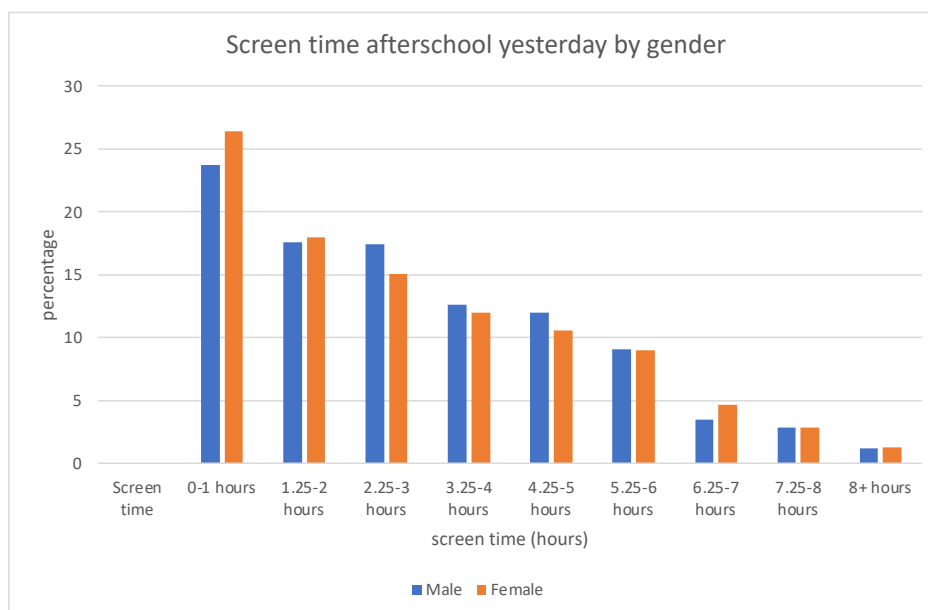
Table 4B.
CensusAtSchool screen-time data 2023 for Years 9–11 males and females

Gender Years 9–11	Male	Female	Total
Screen time	N = 1000	N=1000	N = 2000
0-1 hours	23.7%	26.4%	25.05%
1.25-2 hours	17.6%	18.0%	17.8%
2.25-3 hours	17.4%	15.1%	16.25%
3.25-4 hours	12.6%	12.0%	12.3%
4.25-5 hours	12.0%	10.6%	11.3%
5.25-6 hours	9.1%	9.0%	9.05%
6.25-7 hours	3.5%	4.7%	4.1%
7.25-8 hours	2.9%	2.9%	2.9%
8+ hours	1.2%	1.3%	1.25%

Note:

Students were asked the question: "For your *most recent whole school day*, how much total screen time did you have after school before going to sleep? Answer to the nearest 15 minutes. For analysis, these times have been collapsed into 1-hour groupings."

Graph 4B.
CensusAtSchool screen-time data 2023 for males and females



Resource sheet 4C

Discussion questions

1. What are the similarities and differences in screen time across the year levels 9–11?

Why do you think this is the case?

2. What are the similarities and differences in screen time between genders?

Why do you think this is the case?

3. The Ministry of Health recommends **recreational** screen-time should be **zero for children under two years old, less than one hour per day for children aged two to five, and less than two hours per day for children aged five to 17.**

- What is meant by 'recreational' screen-time?
- Based on the Ministry of Health recommendations for daily **recreational** screen-time, what approximate % of teenagers is meeting this recommendation?

4. What inquiry/investigative questions can data like this provide some answers to? *Hint: Look at the tables and graphs provided.*

5. What inquiry/investigative questions can data like this NOT provide answers to? (Use some of the introductory discussion questions as a clue.) Think about the data that is not included in these tables and graphs.

6. When students answered this survey question in the CensusAtSchool questionnaire, what sort of after-school screen time do you think students were thinking about?

- Do you think it was any screen time (e.g., including homework, watching TV with their family, etc.), or do you think they were just thinking about social media and watching videos online? Can you know for sure?
- Why can this make it difficult to use data such as the CensusAtSchool survey to say whether students are meeting the Ministry of Health recommendations?
- These recommendations have been widely criticised. Why do you think this is the case? (You may find some past news items about this if not sure.)

7. What are the regulations about cell-phone use in your school?

- Do teenagers get much screen time during school time at your school?
- Again, how does that make it difficult to use data from the CensusAtSchool survey to work out if teenagers have had 'too much' screen time during a day?

8. List FIVE things a teenager can do to limit their own recreational screen-time and support their own wellbeing.

Inquiry 5.

Screen time after school and sleep time: Thinking critically and using data as evidence

Overview

This activity aims to develop students' capabilities for the other inquiries in this resource. Using the sleep-time and screen-time data, students will learn how to:

- think critically about a wellbeing issue based on data-informed evidence about an issue, and what cannot be claimed as evidence from data.

This activity uses data from the CensusAtSchool about sleep time. Questions 21a, *About what time did you go to sleep last night?* and 21b, *About what time did you wake up this morning?* are used to calculate a 'sleep time' value. Question 22, *For your most recent whole school day, how much total screen time did you have after school before going to sleep?* is used in conjunction with the sleep-time data.

Background

Of itself, data is not 'evidence'. Until data is analysed and made sense of in relation to a theory or concept, in the context of a particular situation, or in response to a hypothesis or research or inquiry question, it is just information. Thinking critically requires making a distinction between data and evidence.

Note:

- Data is raw information that has no judgement or conclusions drawn about it. It is the quantitative/numerical (numbers or measures) and/or qualitative/categorical (descriptive) information that is collected and analysed. Data forms the basis for evidence.
- Data becomes 'evidence' when it is purposefully selected and explained in relation to knowledge about the situation the data is collected from.

Wellbeing concerns about the association between people's screen time and sleep time are being reported internationally. Many studies have shown that excessive amounts of screen time interfere with the amount and quality of sleep time.

Safety considerations

- Lack of sleep is a widely reported health and wellbeing concern among young people (see Barber et al., 2023 for example).
- Highlight for students the importance of getting enough quality sleep and managing screen time.
- If any students think their screen time is causing a problem for their sleep and overall wellbeing, refer them to the pastoral support team at your school.

This activity could link with [Inquiries 3 and 4 in Part A](#), and [Inquiry 10 in Part B](#).

Contributes to:

Health Education

Students will learn how to:

- identify evidence about screen time and sleep time supported in the CensusAtSchool data
- identify that claims about screen time and sleep time cannot be concluded from the data.

Statistics

Students will learn how to:

- pose investigative questions
- make predictions or assertions about what they expect to find
- source data from existing databases
- use representations to analyse and visualise data
- communicate findings using evidence from analysis, provide possible explanations for findings, and reflect on predictions or assertions.

Key Competencies

(Critical) Thinking; Using language, symbols and texts; Participating and contributing

Data for the inquiry

- Students can use the provided CODAP document they used in Activity 3—to see the **Screen time** variable, open the CODAP document (this could be the original or the cleaned version), click on Plugins and then select “choosy”. In choosy, scroll down and select **Screen time after school**; this will then include **Screen time after school** in the list of variables available to use.

The screenshot shows the CODAP interface. At the top, there is a toolbar with icons for Tables, Graph, Map, Slider, Calc, Text, and Plugins. The 'Plugins' menu is open, showing a list of variables. The 'choosy' plugin is selected, and the 'Screen time after school' variable is highlighted. A red arrow points to the 'choosy' plugin in the toolbar, and another red arrow points to the 'Screen time after school' variable in the list. The main window displays a table with columns for 'Year 9-11 sleep Activity 3', '2021m', and 'choosy'. The table has a header row and several data rows. The 'choosy' column is currently empty.

'Choosy' in here

Tables Graph Map Slider Calc Text Plugins

Year 9-11 sleep Activity 3 2021m choosy

3000 cases

Year categorical 3 values

Gender 11 values

Bed time 34 values

Wake time 26 values

Sleep time 0-17

Screen time after school 0-8.75

Memory time

Reaction time

Time standing on left leg

Standing jump

Target used

Wake time

Sleep time

Screen time after school

Own cell phone

YouTube

Instagram

Snapchat

Facebook

Twitter

Select screen time

- Students can use their spreadsheet or their own CODAP document from Inquiry 3 if they selected **Screen time** as suggested in Inquiry 3.
- Alternatively, students can download a sample of data from the [CensusAtSchool Random Sampler](#) (orange link). It is suggested that year-level demographic data only is added.
- Students will need to select the **Sleep time** variable (note this was not a survey question answered by students, but a calculation based on questions 21a bed time and 21b wake time) and the **Screen time** variable, as well as the year levels they are interested in (year levels are selected in the **2. Subpopulation** section).
 - Generate a sample of 1000 Year 9–11 students and then download the sample and save it as a .csv file.
 - See the instructions in the Overview of the Resource, Section 4, about how to guide students to download a suitable dataset.
 - [Video](#) on how to select data from CensusAtSchool, download and import into CODAP.
- Teacher resource sheet for Inquiry 5 contains an example of summarised data for teacher reference.
- Optional: Go to the [Explore the Whole Data](#) page and run these two variables through the analysis function provided. This also produces a type of scatter plot. See a sample of the output in the teacher resource.

Resources required

- Access to a digital device and the internet to access the CensusAtSchool Random Sampler.
- Access to statistical software for creating scatter plots, e.g., Excel, CODAP.
- Resource sheets 5A and 5B.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define problem; Introduction to the learning/scene setting

- Ask students what they understand about the wellbeing concerns related to screen time and sleep time. Make a note of all ideas.

PROBLEM: Pose inquiry/investigative questions

- Ask what assumptions they would make about the relationship between hours of screen time and hours of sleep, e.g., long periods of screen time mean fewer hours of sleep.
- Ask students what *evidence* would be needed to show that screen time and sleep time were related. Therefore, what data would need to be collected to show this relationship? *E.g., each person being surveyed would need to report on their hours of sleep and their hours of screen time.*
- Explain that the students are going to test out their assumptions using the CensusAtSchool data that asked when students went to sleep and woke up (from which sleep time was calculated), as well how much screen time they had after school on the most recent school day.
- Pose a relationship investigative question, e.g., *What relationship, if any, is there between sleep time and screen time for the Year 9–11 New Zealand students in the sample?*
 - **Note:**
At these year levels we are NOT doing sample-to-population inference for relationship situations, we just describe the relationship for the 1000 (or more/fewer) students in the sample.

DATA: Source data

- Students can use their data from Inquiry 3, see notes previously about data for the inquiry.
- Alternatively, support students to download a sample of 1000 responses from the Random Sampler. They need to select **Sleep time** and **Screen time**, as well as **Year level** (and then select Years 9–11 as appropriate).

ANALYSIS: Make tables, graphs, summaries;**Describe and reason from data**

- Once data is downloaded into statistical software, support students to create a scatter plot (e.g., in Excel it is listed under Insert-Charts; or in CODAP, graph sleep time and screen time on a single graph, put screen time on the x-axis and sleep time on the y-axis).
 - For reference, a sample scatter plot is provided in the teacher resource for this activity (resource 5B).
 - Use the editing functions to add a full title and axes titles in Excel.
 - Add a title to the graph in CODAP.
- Students need to copy this scatter plot into their learning journal.
- In addition, students may also like to use the **Explore the Whole Data** function (CensusAtSchool) to produce a scatter plot from the whole dataset. Again, selecting for specific demographic data can be added to this analysis if required.

CONCLUSION: Using data to answer the inquiry / investigative questions

- Support students to understand what a scatter plot shows — each blip or blob shows that combination of a person's screen time and sleep time. (In the CensusAtSchool analysis, the bigger the blobs the more people are clustered around those values).
- As an overall impression, what could be concluded about the relationship between sleep time and screen time?
- Do students think this is convincing evidence to support or not (for example) the claim that more screen time means less sleep time for all young people? Why or why not?
- Pose these questions to get students (in groups or as a whole class) to think more deeply about what the data shows and does not show.
 - Why do you think the questionnaire only asks about screen time after school? How much screen time do you think some students have during school time? Is screen time after school any different to screen time at school?
 - [From Inquiry 4] What sort of 'screen time' do you think students answering this question would be thinking about? E.g., *watching TV or a movie, alone or with their family; doing homework on a computer; viewing images and reading comments on social media; taking photos and writing comments and posting on social media; watching videos on TikTok, YouTube or other application; playing video games; etc.* Is the type of screen time an issue here, e.g., watching a movie with the family vs watching TikTok videos alone?
 - Sleep time was calculated as the difference between bed time and wake time. Do you think students answering the questionnaire were thinking about the time they *went to bed* or *went to sleep*? Also, is wake time when they actually *woke up* or *got up out of bed*? Can you be sure? Do all young people sleep all through the night? What could you conclude about the way sleep time is calculated for this questionnaire?
 - Can we assume that sleep time and screen time are directly related to each other for all young people? Why or why not?
 - Direct students to the resource sheet to record ideas for their learning journal.

Taking action

- In groups, instruct students to carry out an internet search for ways young people can manage screen time and allow time for quality sleep. Select 10 ideas the group thinks are important and/or could work for them. Add these to the learning journal summary (see the resource sheet).

Evidence of student learning / learning artefacts

Students will:

- complete the summary sheet provided (resource sheet 5A) to record of their responses to the critical-thinking questions and ways to reduce screen time, and keep a record of the scatter plot.

Teacher reflection

- How readily did students grasp the use of scatter plots? Where else/in which topics could this representation of data have a use?
- How easily were students able to see beyond the immediacy of the data and start to see the limitations of drawing conclusions from one or very few items of data? How readily could students respond to the critical-thinking questions? What are the implications of this for future learning and which aspects of critical thinking need ongoing development?

References

Barber, C., Hetrick, S., Edmonds, L., Taylor, R. W., Alansari, M., Signal, L., Haszard, J., Oldehaver, J., Galland B., & School Start Time Study Advisory Group. (2023). Sleep-in to stay well: Addressing school start times for the health and wellbeing of teens in Aotearoa. *New Zealand Medical Journal*, 136(1568). <https://nzmj.org.nz/journal/vol-136-no-1568/sleep-in-to-stay-well-addressing-school-start-times-for-the-health-and-wellbeing-of-teens-in-aotearoa>

Critical-thinking questions adapted from [Critical thinking and critical action](#).

Resource sheet 5A

Questions for thinking critically about screen time and sleep time	A summary of your ideas
1. What do you know about the concerns related to young people's screen time and sleep time?	
2. How did you come to know this about screen time and sleep time?	
3. How do you feel about this issue? Why?	
4. What are your beliefs or assumptions about screen time and sleep time? And why do you believe/assume this?	
5. What does the CensusAtSchool data show about the relationship between screen time and sleep time for young people?	
6. Do you think the CensusAtSchool data provides evidence that more screen time means less sleep time for all young people? Why or why not?	
7. What information is missing from this picture? Think about all the things the data does not show that were discussed.	
8. What else would we need to know to be able to draw conclusions about the relationship between sleep time and screen time?	
9. How could young people benefit from contributing their ideas to questionnaires like this?	
10. Do you think anyone is not being heard or is in some way disadvantaged by questionnaires like this? Why?	
11. What are 10 actions young people can take to reduce screen time and get enough sleep?	
12. How could other people, like friends or parents, support young people to reduce screen time and get enough sleep?	

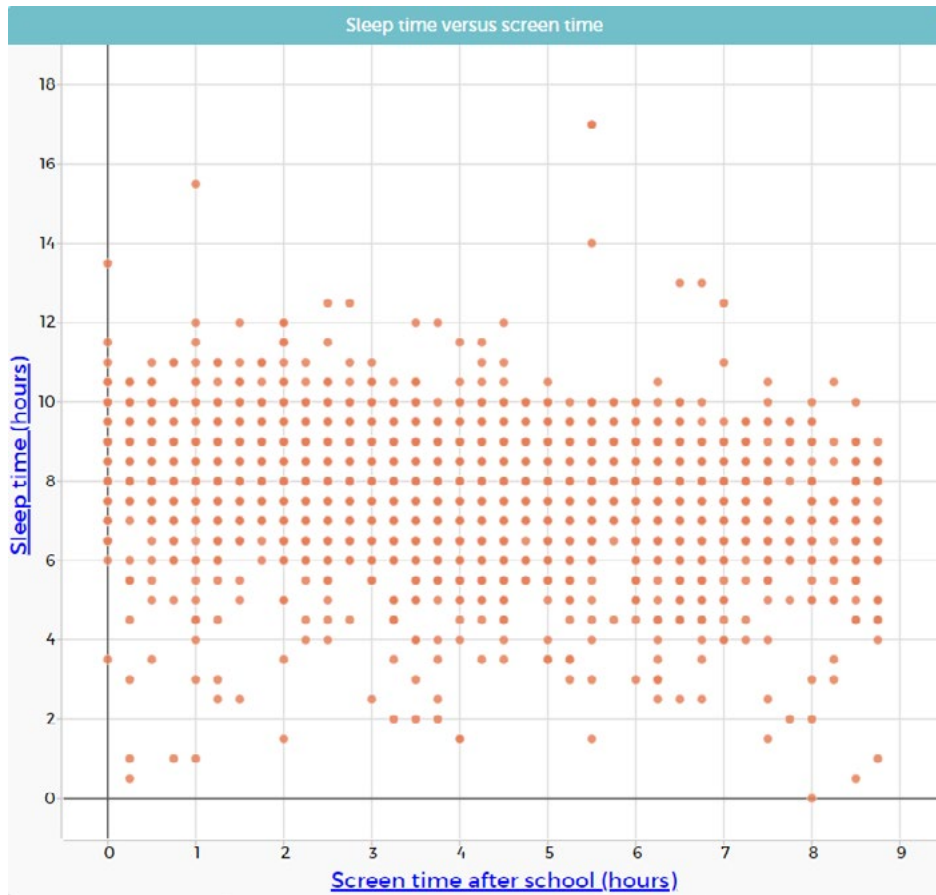
Source: [Critical thinking and critical action.](#)

Insert a copy of your scatter plot here

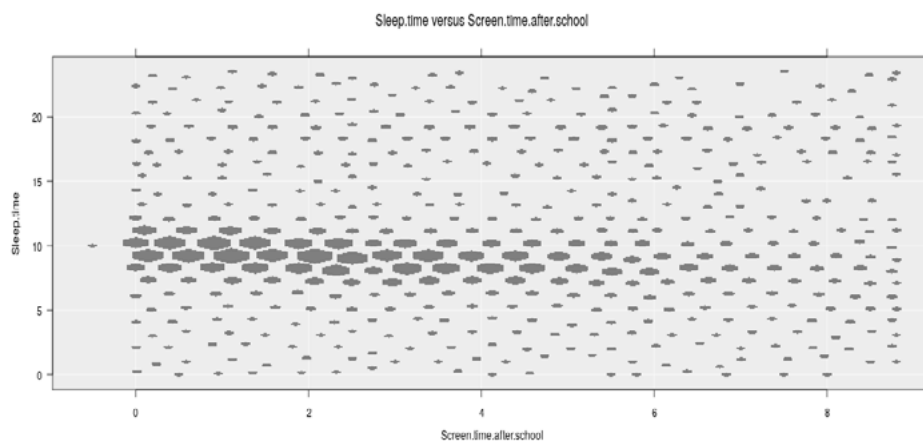
Resource sheet 5B

Graph 5. Sleep time vs Screen time

A random sample of 1000 Year 9-11 students. From the CODAP 3000, Year 9-11 dataset.



From the [Explore the Whole Data](#) page, an analysis of all data presented as a form of scatter plot gives an overall impression of screen time vs sleep time. The larger blobs represent more people, smaller blobs fewer people. *All year levels.*



Inquiry 6.

Attitudes to teenage alcohol use: Identifying reliable and reputable information and challenging misinformation

Overview

This inquiry aims to develop students' capabilities for the other inquiries in this resource. Using the *Do you think it is okay for teens your age to drink alcohol?* and *Alcohol can be a problem for some teens I know* data, students will learn how to:

- think critically about a scenario to explore how data can be misrepresented and misused. The scenario – a fictitious 'news' item – is used to show ways data can be misrepresented and people that the story is about can be treated unfairly or disrespectfully.

Background

Popular media and reporting of 'news' or events on social media often lack any critical insight or a sound and defensible evidence base. This can result in the misrepresentation of data and information in pursuit of a 'news' story and the creation of headlines that attract readers' attention. Although some of these practices are not necessarily deliberate 'misinformation', they do little to stop it. This activity contributes to the much wider educational goal of supporting students to recognise and use information from reliable and reputable sources.

Safety considerations

- Schools can have a huge influence on how young people navigate their world, and a central aim of education about alcohol is to prepare students to live in a world where alcohol and other drugs exist.
- Many young people have had some experience with alcohol. A few have not. Some of these experiences will have had a negative impact on wellbeing for them and/or others.
- For this activity, keep the educational focus on alcohol attitudes rather than (students') alcohol behaviours.
- Please review the information about using gender data in Section 5 of the Overview of the Resource.

This activity could link with [Inquiry 12 in Part B](#) or [Inquiry 16 in Part C](#).

Contributes to:

Health Education

Students will learn how to:

- think critically to identify misrepresentation and misuse of data.

Statistics

Students will learn how to:

- critique the findings and claims of others by interrogating all phases of the statistical inquiry cycle.

Key Competencies

(Critical) Thinking; Relating to others; Using language, symbols and texts

Expected timeframe

- 1-2 hours.

Data for the inquiry

- Summarised data from the two survey questions Q26c *Do you think it is okay for teens your age to drink alcohol?* and Q26d *Alcohol can be a problem for some teens I know* is provided in the resource sheet.

Resources required

- Resources for Inquiry 6— scenario ('news' item), data summaries and discussion frame.

Teaching process to guide the learning inquiry

PROBLEM: Understand and define the problem; Introduction to the learning/scene setting

- Ask students what they understand about misinformation and disinformation, e.g., *misinformation is more an umbrella term to describe false or inaccurate information that is spread regardless of whether there is intent to mislead, whereas disinformation is deliberately false information which is intended to mislead or deceive.*
 - Disinformation is false or modified information knowingly and deliberately shared to cause harm or achieve a broader aim.
 - Misinformation is information that is false or misleading, though not created or shared with the direct intention of causing harm.
 - From: [Strengthening resilience to disinformation](#) (Department of the Prime Minister and Cabinet [DPMC])
- Why do they think some people spread misinformation? Why do they think some people misrepresent or misreport data? *E.g., ignorance and lack of understanding, don't check their sources to know they are passing on inaccurate information, draw attention to themselves or their cause, etc.*
- Additional reading:
 - [The edge of the infodemic | Challenging misinformation in Aotearoa](#) from the Classifications Office
 - [BSA research highlights public concerns over spread of misinformation](#) (Broadcasting Standards Authority)
 - [InternetNZ survey shows Kiwis growing more worried about online 'misinformation'](#) (Stuff article)
 - [Government's security arm works on addressing spread of disinformation](#) (RNZ article)

PLAN: Critiquing the data and news report; Taking action

- Explain that they are going to be using some of the CensusAtSchool data about alcohol attitudes to work out what a fictitious news item has done incorrectly or unfairly when attempting to report the data (resource sheet 6A).
- Use the discussion frame provided in resource sheet 6B as the basis of a group discussion. Share the main points with the class. *Note Q1 about the sample size. Generally, a sample of 3000 is plenty to report, although it is worth noting that the whole CensusAtSchool database numbers around 40,000 students across Years 3–13.*
- Once the discussion questions have been worked through, instruct the students to write a 200-word 'news' story making responsible use of the data.

Effective writing. Things to consider:

- Who is the intended audience of your news report? (For example, how much will they already know about your topic? How formal does your language need to be?)
- The purpose of your news report is to report the data responsibly; how will you make it clear to your readers that you have done this? (Think about the importance of your article's heading and use topic sentences to signal the direction of each paragraph.)
- How will you make all your information in the news article as clear as possible?
- Ensure that you have carefully proofread your work, as any errors will undermine your authority.

For more information, see [how to write news effectively for an online audience](#).

DATA: Understanding the data used

- As part of the instructions given for the task, support students to understand the summarised tables and graphs of data related to the two alcohol-attitudes questions (resource sheets 6C and 6D).

Evidence of student learning/learning artefacts

Students will:

- file a summary of their discussion and their rewritten news article in their learning journal.

Teacher reflection

- How readily were students able to recognise misrepresentation of data and information? What are the implications of this for other learning where this skill will be required? What other opportunities exist in different contexts to further develop students' ability to recognise misinformation?
- Where possible, include reference to evaluation frameworks and processes for ensuring reliability of data and information. There are various options readily accessed online, e.g., TRAAP – Timeliness, Relevance, Authority, Accuracy and Purpose (or CRAAP where C = Currency). In addition, the Rauru Whakarare evaluation framework offers a te ao Māori perspective on sourcing reliable and reputable information. There are numerous online sites where these frameworks can be sourced.

References

Department of the Prime Minister and Cabinet (DPMC). (n.d.). Strengthening resilience to disinformation. <https://www.dPMC.govt.nz/our-programmes/national-security/strengthening-resilience-disinformation>

Resource sheet 6A

Note:

This is a fictitious news item written for this activity. It contains misuse and misrepresentation of data and information. Your task is to identify the concerns with the article and suggest a fairer and more accurate way to report the data and information about teenage attitudes to alcohol use. The data used for the article is provided, along with a discussion activity to critique this 'news' article.

Scenario:

Teenage problem with teenagers' attitudes to alcohol use

Survey results out today about teenage alcohol use show that a whopping 61% of Year 9, 63% of Year 10 and 67% of Year 11 students say alcohol can be a problem for their friends. The survey didn't ask students if alcohol was a problem for them, but if they are the friends others are talking about, that's a lot of teens with an alcohol problem.

Although, with around 20% of Year 9 and 10 students, and 15% of Year 11 not knowing if alcohol is a problem for some teens, it would seem some kids are still sheltered from the realities of the world. We have to ask, is it a good thing or a bad thing to keep kids ignorant of what goes on around them?

In relation to gender, 64.3% of females and 63.4% males agree alcohol use is a problem, so the girls are overtaking the boys for problem drinking. What are the consequences of that for society? Less consensual sex and more teenage pregnancies?

When it comes to teenage attitudes about alcohol, at least it's a minority of students who outrightly say yes, it's OK for teens their age to drink alcohol—although the trend from Year 9 (6%) to Year 11 (21%) suggests this attitude changes quickly once they have spent more time at secondary school.

However, the cry of many an angst-ridden teenager of 'it depends' is clearly a problem here, with between 39% (Year 9) and 47% (Year 11) being non-committal about whether it's OK for teens to drink alcohol. The girls could do to learn something from the boys here about being more decisive, with 44% of them saying 'it depends' compared to 39% of boys. Clearly, we need more alcohol education in schools to teach them about the harms of alcohol use and how it damages young brains and ruins lives.

Clearly the ban on alcohol advertising isn't working, and mums and dads need to lock their booze cabinets.

Resource sheet 6B

Discussion questions	Your responses
How has the reporter misrepresented or misused the data?	
1. The CensusAtSchool database is much larger than the 1000 students at each level reported here. Do you think it acceptable to report on a random selection of data in this case?	
2. Do you think the reporter should have asked for permission to access a summary of all the data for these survey questions?	
3. [First sentence] What has the reporter done with the data from the survey question Alcohol can be a problem for some teens I know?	
4. Do you think this is an acceptable thing to do with data? Why or why not?	
5. How has the data been misrepresented in the first sentence?	
6. Why might some young people in Years 9-11 not know if alcohol can be a problem for some teens they know?	
7. What assumptions is the reporter making about female and male alcohol use? How have they misrepresented the data?	
8. What assumptions are being made about the role of education and alcohol attitudes and behaviours?	
9. [Final sentence] Does the final statement relate to the survey questions in any way? What alcohol ban do you think they are referring to? What assumptions are being made here?	
10. Overall, is this article respectful of young people? Why or why not?	
11. What other concerns do you have about the way the reporter has written this story?	
12. If this was a real news story, what could a person do if they wanted to complain about the content of the article?	
How would you write this 'news' story more responsibly? In 200 words, write a summary of what the data is saying in relation to these two survey questions.	

Resource sheet 6C

CensusAtSchool Data: Sample of 1000 students in each of Years 9-11

Imagine this is the data the 'news' item is based on.

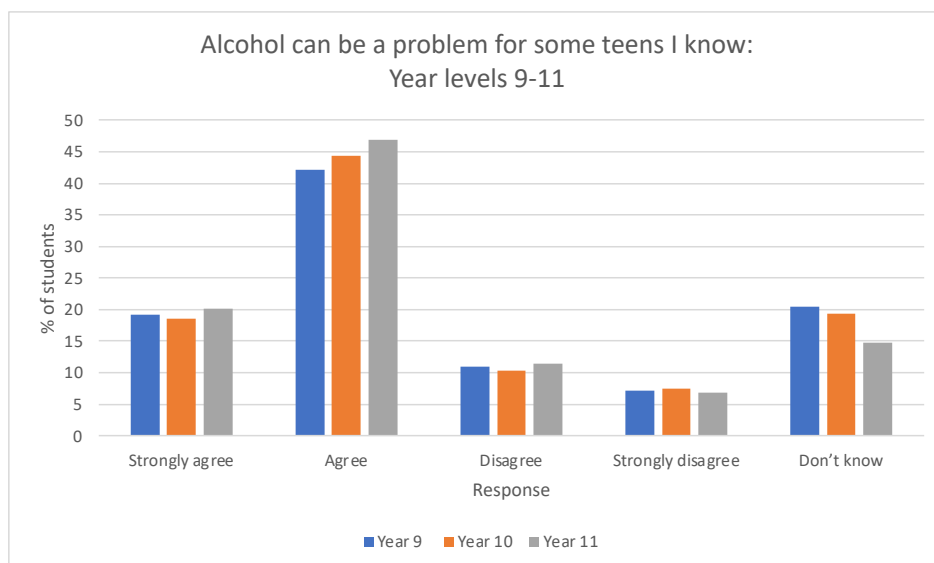
Table 6a.

Responses to the survey question: *Alcohol can be a problem for some teens I know*

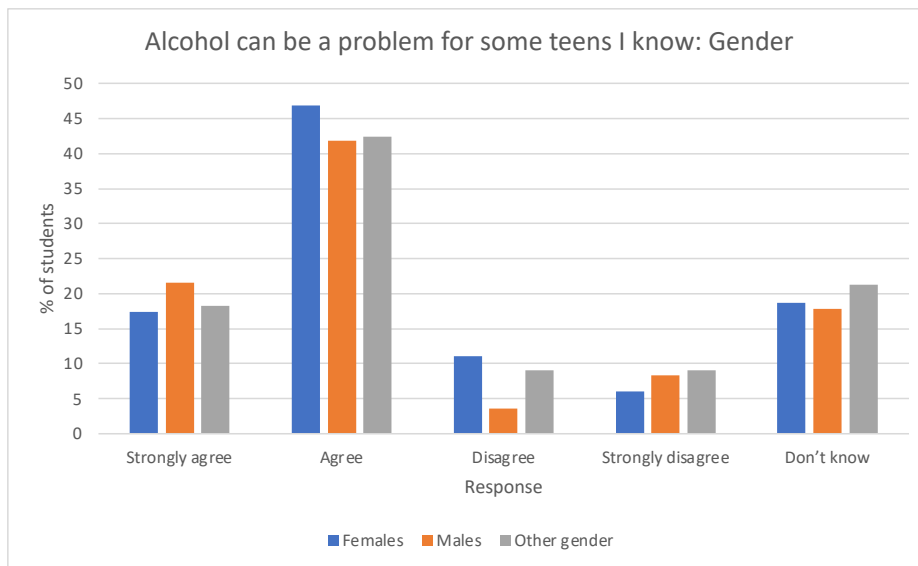
Year Levels	Strongly agree		Agree		Disagree		Strongly disagree		Don't know	
	N =	%	N =	%	N =	%	N =	%	N =	%
Year 9 N = 1000	192	19.2	422	42.2	109	10.9	72	7.2	205	20.5
Year 10 N = 1000	186	18.6	444	44.4	103	10.3	74	7.4	193	19.3
Year 11 N = 1000	201	20.1	469	46.9	115	11.5	68	6.8	147	14.7
Gender (Years 9-11) N = 3000	Strongly agree		Agree		Disagree		Strongly disagree		Don't know	
Females N = 1594	277	17.4	747	46.9	175	11.0	97	6.1	298	18.7
Males N = 1373	296	21.6	574	41.8	149	3.6	114	8.3	240	17.8
Other gender N = 33	6	18.2	14	42.4	3	9.1	3	9.1	7	21.2

Graph 6a(i).

Responses to the survey question: *Alcohol can be a problem for some teens I know* – by year level



Graph 6a(ii).
Responses to the survey question: *Alcohol can be a problem for some teens I know* – by gender



Resource sheet 6D

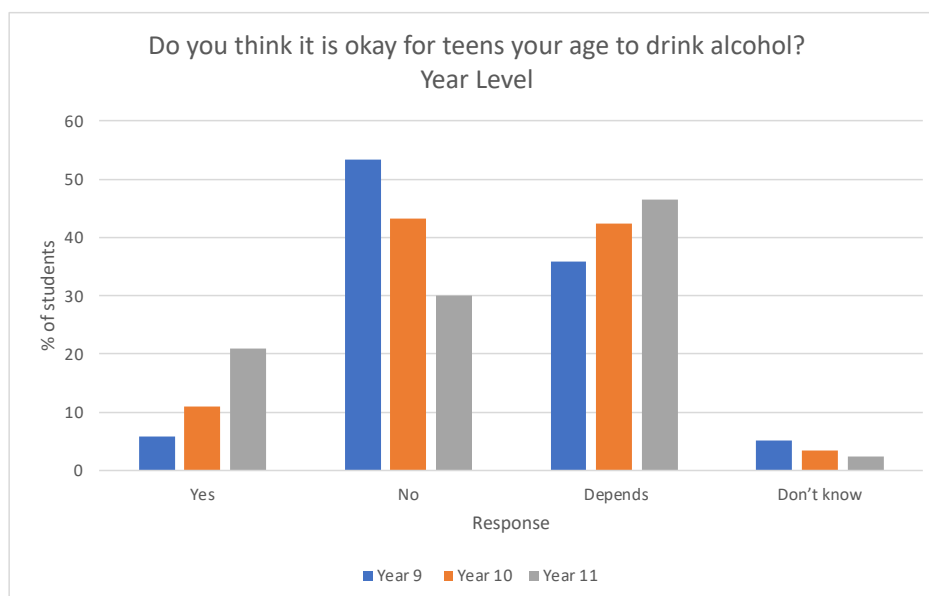
Table 6b.

Responses to the question: *Do you think it is okay for teens your age to drink alcohol?*

Year Levels	Yes		No		Depends		Don't know	
	N =	%	N =	%	N =	%	N =	%
Year 9 N = 1000	58	5.8	533	53.3	358	35.8	51	5.1
Year 10 N = 1000	109	10.9	432	43.2	424	42.4	35	3.5
Year 11 N = 1000	210	21.0	301	30.1	465	46.5	24	2.4
Gender (Years 9-11) N = 3000								
Females N = 1594	214	13.2	622	39.0	704	44.2	54	3.4
Males N = 1373	160	11.7	632	46.0	529	38.5	52	3.8
Other gender N = 33	3	9.1	12	36.4	14	42.4	4	12.1

Graph 6b(i).

Responses to the question: *Do you think it is okay for teens your age to drink alcohol?* – by year level



Graph 6b(ii).

Responses to the question: *Do you think it is okay for teens your age to drink alcohol?*—by gender

