tūturu.

Discussing the Data:

Health Attitudes to Being Online and Alcohol Use

A Year 9–11 teaching resource of inquiry-based learning activities using data from the 2023 CensusAtSchool survey, for use in Health Education and Statistics

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	On 'alcohol'	• Te Puna Whakaiti Pāmamae Whakapiri New Zealand Drug Foundation https://drugfoundation.org.nz/ • Amohia te Waiora https://resources.alcohol.org.nz/ see, for example, https://www.alcohol.org.nz/help-and-support/advice/standard-drinks-and-legal-limits#e383 • Te Whatu Ora https://www.hpa.org.nz/
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	NZHEA	• Robertson, J., & Dixon, R. (2021). *Alcohol and other drugs: Health Education activities to support teaching and learning for Levels 4–8 in The New Zealand Curriculum*. New Zealand Health Education Association https://healtheducation.org.nz/wp-content/uploads/2021/01/NZHEA_Alcohol-and-Other-Drugs_NZC-Levels-4_8_2021.pdf • Robertson, J. (2021). *Mental health and resilience: Teaching and learning activities for NZC Levels 6–8*. New Zealand Health Education Association https://healtheducation.org.nz/wp-content/uploads/2021/01/NZHEA-Mental-Health_Resilience_2nd_ed_2021.pdf
	Ministry of Education	• Health Education resources on Tāhūrangi https://newzealandcurriculum.tahurangi.education.govt.nz/new-zealand-curriculum-online/learning-content-resources/health-and-physical-education/5637144625.c
	Other mental health education resources	• SPARX (digital-world activities) https://www.sparx.org.nz/teachers-and-healthprofessionals • Fitzpatrick, K., Wells, K., Tasker, G., Webber, M., & Riedel, R. (2020). *Mental health education and hauora: Teaching interpersonal skills, resilience, and wellbeing* NZCER. https://healtheducation.org.nz/wp-content/uploads/2020/09/Mental-Health-and-Hauora.pdf
	Te Puna Whakaiti Pāmamae Whakapiri, New Zealand Drug Foundation	• Did You Know: Alcohol (poster) https://resources.drugfoundation.org.nz/products/didyouknow-poster-alcohol • Did You Know: Alcohol (video) https://www.drugfoundation.org.nz/info/did-you-know/alcohol/
	Te Hiringa Hauora (Health Promotion Agency)	• What happens when I drink alcohol? (poster) https://order.hpa.org.nz/products/what-happens-when-i-drink-alcohol-a4-infosheet • Short-term effects of drinking alcohol (poster) https://order.hpa.org.nz/products/short-term-effects-of-drinking-alcohol-a4-poster • Alcohol help booklets https://order.hpa.org.nz/search?q=alcohol+booklet

Other agency materials for teachers	**On 'alcohol'**	• Sorted: Alcohol (poster) https://www.bopdhb.health.nz/media/sj2bl5sa/sorted-alcohol-resource-sheet.pdf • Youth2000; 'Understanding and addressing alcohol harm' fact sheets and webinar recordings, as well as other fact sheets: https://www.youth19.ac.nz/publications/category/Fact%20Sheets%20and%20Briefs and https://www.youth19.ac.nz/webinars • The REAL Drug Talk (video series): https://www.youtube.com/watch?v=XMFYP4ZIJUM • Health New Zealand Te Whatu ora—Mental health and addiction Alcohol and drug addiction: https://info.health.nz/mental-health/alcohol-and-drug-addiction/ • Healthify—What harm can alcohol cause? https://healthify.nz/hauora-wellbeing/a/alcohol-and-harmful-drinking/ • Alcohol Drug Helpline https://alcoholdrughelp.org.nz/ • ActionPoint https://www.actionpoint.org.nz/ • Community Action on Youth and Drugs https://cayad.org.nz/
	On 'being online'	• Classification Office Various research reports and resources: https://www.classificationoffice.govt.nz/resources/ • Sticks'n Stones posters https://www.sticksnstones.co.nz/category/resources/ • Netsafe posters https://netsafe.org.nz/the-kit/resource/downloadable-posters/ • Ministry of Education Changing the kōrero around pornography: https://training.education.govt.nz/ilp/pages/mediacontent.jsf?mediaId=1244287&catalogId=849811&menuId=112475&client=external • The REAL Sex Talk (see the episode on porn): https://www.youtube.com/@Villainesse • Classification Office Young people's views on porn: https://www.youtube.com/watch?v=ykYzKeI73eo&feature=youtu.be
Resources and information for school leaders and boards	**Tūturu**	• Health education consultation—manual and video: https://tuturu.org.nz/toolkit/health-education-consultation
	Ministry of Education	• Ministry of Education. (2022). *Mental health education: A guide for teachers, leaders, and school boards*. https://newzealandcurriculum.tahurangi.education.govt.nz/mental-health-education-guide/5637165639.p • Ministry of Education. (2023). *Digital technology: Safe and responsible use in schools guide*. https://www.education.govt.nz/school/digital-technology/ict-incidents/digital-technology-guide-for-schools/
Statistics for teachers		• Arnold, P., Trinick, T., & Pfannkuch, M. (2022). *Statistical investigations | Te tūhuratanga tauanga: Understanding progressions in The New Zealand Curriculum and Te Marautanga o Aotearoa*. NZCER • CensusAtSchool https://new.censusatschool.org.nz/ • Ministry of Education. (2022). Resources to support numeracy across the curriculum. https://ncea.education.govt.nz/resources-support-numeracy-across-curriculum • Mathematics and statistics resources on Tāhūrangi https://newzealandcurriculum.tahurangi.education.govt.nz/new-zealand-curriculum-online/learning-content-resources/mathematics-and-statistics/5637144636.c

Overview of the Resource

1. Introduction: Using statistical and other data in Health Education and across the curriculum

The development of this resource was led by Tūturu (established by the New Zealand Drug Foundation) in collaboration with CensusAtSchool | TataurangaKiTeKura and the Ministry of Education.

Rationale

The purpose of the resource is to provide teaching and learning materials that utilise data from the 2023 CensusAtSchool questionnaire. The data used in this resource includes a selection of general wellbeing-related survey questions, as well as the specifically designed health-attitudes survey questions about **being online and alcohol use.**

Central to each inquiry is the use of data. In most cases this data is from the 2023 CensusAtSchool database, or, in some activities, students will collect their own data, drawing on ideas from the questionnaire.

Audiences for this resource

Teachers developing **Health Education** and **Mathematics and Statistics** learning programmes are the main audience for this resource.

Guided-inquiry approach to teaching and learning

Each activity takes a guided-inquiry approach to teaching and learning. Health Education and Statistics both have subject-specific approaches to inquiry. The potentially sensitive nature of the CensusAtSchool health-attitudes topics, and the fact that these inquiries aim to build students' capabilities for data-informed investigation, mean a **guided-inquiry** approach is a more appropriate description of the teaching and learning process, as well as to ensure student safety.

Using this resource

There is no requirement to teach the inquiries sequentially. The activities in this resource **can be used individually** as learning experiences to develop skills related to the use of statistical data; or a **selection of activities may be used in combination** to give context to statistical investigations, or as part of a unit of learning about wellbeing online, or alcohol education.

Each inquiry contains suggested links to other inquiries as one way to show next steps for learning, especially where the statistical skills developed in Part A can be reused and applied in a subsequent inquiry or investigation.

Part A.
The inquiries in this section aim to **develop students' capabilities** in engaging in data-informed inquiry. This learning about skills and processes for statistical inquiry is applied in Parts B and C. This section of the resource uses:

- The PPDAC inquiry model (Problem, Plan, Data, Analysis, Conclusion).
- A selection of general wellbeing data from across the CensusAtSchool survey.

Part B.
The inquiries in this section of the resource use:

- The ACLP model (Action Competence Learning Process) with connections to the PPDAC where applicable.
- The CensusAtSchool survey data from the questions related to **attitudes about being online**.

Part C.
The inquiries in this section of the resource use:

- The ACLP model (Action Competence Learning Process) with connections to the PPDAC where applicable.
- The CensusAtSchool survey data from the questions related to **attitudes about alcohol use**.

The Statistics and/or Health Education focus for each inquiry is noted on the introductory page for each set of inquiries (Parts A–C), and the suggested learning intentions also highlight the main learning (and subject) focus for each inquiry.

Videos

This resource is supported by four **videos that discuss the data**, two for each of the being online and alcohol attitudes sections. For each topic there is a video featuring students discussing questions raised by the data, and the other videos have subject experts responding to similar questions. The instructions that guide the student learning inquiries/investigations also advise on use of these videos.

Year levels

Years 9–10 are the main focus for this resource. A number of the activities are also applicable for Year 11 and support learning contributing to the NCEA Level 1 mathematics and statistics requirements.

Critical thinking

The skills and processes of critical thinking form the main learning foundation for this resource. Critical thinking leads to critical inquiry and critical action. Knowing how to take critical action in the contexts featured in this resource is essential for promoting wellbeing.

Mental health education

As contexts for learning, **alcohol** (and other drugs) and wellbeing related to **being online** sit within the broader framing of **mental health education**, a key area of learning in Health and Physical Education in the New Zealand Curriculum. The scope and intent of learning about mental health contexts in the Curriculum is comprehensively explained in the Ministry of Education's Mental health education: A guide for teachers, leaders, and school boards (2022).

A whole-school approach to the promotion of student wellbeing

The learning activities in this resource may contribute to a whole-school approach to the promotion of student wellbeing. Links to a range of health-promotion agencies and community support are provided across the activities.

See also the Tūturu resource **Supporting student-led action: Helping students promote wellbeing through learning-based activities.**

Health promotion

In addition to utilising 2023 CensusAtSchool data, another feature of this resource is the links the activities make to a range of resources and agencies that focus on the promotion of young people's health and wellbeing in contexts related to being online and alcohol use. As well as featuring across the activities and inquiries, these resources and agencies are also listed at the end of the resource.

Supporting mathematics across the curriculum

The commitment to the development of students' mathematical knowledge and skills across all learning areas of the New Zealand Curriculum is explained in the Ministry of Education's *Literacy & Communication and Maths Strategy* (2022).

> *Faced with a rapidly changing technology and employment landscape, and a complex ever-expanding world of data, the numeracy demands on young people are steadily increasing. Nationally and globally, the demand for people with advanced knowledge and skills in maths is higher than the supply of qualified potential employees. Maths develops learners' ability to think creatively, critically, strategically, and logically. The curriculum supports the development of important skills such as problem solving, logic, deductive and inductive reasoning, abstraction, spatial reasoning, creative thinking, and communication, as well as ways to think about data, information, and living with uncertainty.*
>
> Ministry of Education (2022), *Literacy & Communication and Maths Strategy,* p. 22.

The Royal Society Te Apārangi report *Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand: Advice on refreshing the English-medium Mathematics and Statistics learning area of the New Zealand Curriculum* (2021) was influential in shaping this strategy.

Statistics is the science of learning from data

Statistics has been defined as the science of learning from data, and of measuring, controlling, and communicating uncertainty. We use statistics to learn about the world and the phenomena we see in it. Data are units of information that are created and collected through observation. Data collection must be designed. Data are recorded in a systematic way, and are used to provide evidence for predictions, decisions, and evaluating risk. Data can be collected from many sources, and increasingly come from large computer-based systems. Not only is the recent growth in data availability unprecedented, new sources and types of data continually emerge. As we move forward into the data-centric world, statistics is shifting beyond traditional inference to computationally intensive approaches and new ways of processing and reasoning with it. For instance, data underpin machine learning, which then supports Artificial Intelligence decision-making processes.

Royal Society Te Apārangi (2021), *Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand: Advice on refreshing the English-medium Mathematics and Statistics learning area of the New Zealand Curriculum*, pp. 27–28.

Health Education

Health Education provides a range of opportunities for students to develop capabilities to use statistics. In Health Education, students develop their use of statistics when they:

- use statistical reasoning to interpret and analyse information about health and wellbeing
- identify patterns and relationships in data to consider trends, draw conclusions, make predictions about health behaviours and actions
- evaluate health and wellbeing claims made by others.

(Adapted) Supporting NCEA Numeracy in Health and Physical Education (2022)

Experiences for using findings from the inquiries

Each guided inquiry contains a variety of resources and activity sheets to support the learning process and document evidence of learning. When one or more of these inquiries is used across a comprehensive learning programme focused on alcohol or online attitudes and behaviours, consider providing opportunity for students to consolidate a combination of their learning experiences to produce a learning artefact of their choice. Ideally this artefact is one that can be shared with peers, parents and whānau, or, where relevant, the school community. For example:

- A class (maga)zine or e-book featuring information about the topic along with health-promotion information.
- A short information video or podcast about the findings of an inquiry, including ideas for promoting wellbeing in relation to that inquiry topic. Share this via the school intranet.
- A social media post promoting wellbeing related to the inquiry topic.
- A wellbeing-promotion poster, infographic, or a simple game related to the inquiry topic.
- A lesson for younger students.
- A presentation at a year-level assembly or at the parent (community) Health Education consultation event that occurs every two years.
- An advocacy letter to the school board seeking a change to school practices or policy.
- A school-community-specific resource for parents about the inquiry topic.

2. About CensusAtSchool | TataurangaKiTeKura

What is CensusAtSchool?

CensusAtSchool is a non-profit, educationally motivated project. It is hosted by the Department of Statistics at the University of Auckland in association with Stats NZ and the Ministry of Education.

Aims of CensusAtSchool:

- Foster a positive attitude to statistics through using data that is both relevant and real
- Improve understanding of a data gathering process, its purposes and benefits to society
- Provide access to large and meaningful multivariate datasets
- Encourage effective IT teaching and learning
- Enhance the process of statistical inquiry across the curriculum

CensusAtSchool involves an online survey for Year 3–13 students. Schools take part voluntarily, with students completing the survey during lesson time, then submitting their data to contribute to an international database.

Some questions are in common with the other countries, to provide comparisons between countries, while the remainder of the questionnaire is tailored to reflect the interests of New Zealand children.

Results and sample data are made available to teachers once the 'census' is complete, with classroom resources released over time.

Read more about CensusAtSchool at this **link**.

Which data from the 2023 CensusAtSchool survey are used in this resource?

The tables below summarise the data used across the inquiries in this resource. Further information about all the survey questions and variables can be found on the **data page** on CensusAtSchool.

Teachers and students can select any **questions** from the questionnaire along with a range of **variables** relevant to their inquiry. Downloading the selected data to an Excel spreadsheet specifies the question(s), the variable name(s), the options, any units, and the data type (categorical or numerical). Some additional notes are provided below to help guide the selection of demographic variables.

CensusAtSchool questionnaire section	Survey question and data type	I
About you This includes demographic data	**Year level** *Categorical data*	*Note that this is automatically recorded when students complete the survey and is based on information that the teacher records when they sign up to do the questionnaire with their students.* *Year-level data is available as numerical and categorical data. We recommend that students select it as categorical data.*
	1. What is your gender? *Male, Female, Another gender (please specify), Skip question* *Categorical data*	*When students want to explore gender as a demographic option, they need to select this variable when they choose specific variables.* *They should keep **all genders** selected in the section **2. Select subpopulation** when generating a sample of data from the CensusAtSchool database. If they did select a specific gender, this would not allow them to get data about **another gender.*** *Overall, the proportion of students selecting **another gender** is around 1% of the survey responses, which is consistent with the Youth19 reporting of 'other gender' identities.*
	2. What is your age in years? *Categorical data*	*Age data is available as numerical and categorical data. As with the year-level data, we recommend that students select it as categorical data.*
	Note: • **Ethnicity data** is also available. However, in health and wellbeing contexts some ethnicity-based data can be very problematic because of the association with socioeconomic factors negatively impacting health and wellbeing. If selecting for ethnicity, please be sensitive to data that draws attention to the health status of particular ethnic groups. Unless there is time available to process the data and engage in critical discussion, or if uncertain, it is best to avoid it. If individual (or groups of) students are choosing to disaggregate data by ethnicity for an inquiry, please supervise this. • **Regional data** can also be selected for 18 regions in New Zealand and the Cook Islands. Given the contexts featured in this resource, regional data is not a major priority compared to year level/age and gender. However, students may wish to consider data from their region (and/or in comparison to other regions) where relevant to their inquiry question. Regional data can be selected under **2. Select subpopulation** the same way as year level or gender can be selected.	

Teachers and students can access all data from the survey. However, given the purpose of this resource the focus is on the following questions:

CensusAtSchool questionnaire section	Theme and data type	Survey question
Opinions ** Q26a, b and Q24a, b. The raw data can be thought of more broadly as qualitative data. Once it has been sorted into useful categories, then the data that will be used for analysis is categorical.*	**Health attitudes alcohol** *All categorical data**	**26a. In five words or less, what do you think is the main reason why teens drink alcohol?** *If you don't know, type I don't know.* **26b. In five words or less, what do you think is the main effect on teens who drink alcohol?** *If you don't know, type I don't know.* **26c. Do you think it is okay for teens your age to drink alcohol?** *Yes, No, It depends, I don't know* **26d. Alcohol can be a problem for some teens I know.** *Strongly disagree, Disagree, Agree, Strongly agree, I don't know*
	Health attitudes being online *All categorical data**	**24a. In five words or less, what do you think is the best thing about going online for you?** *If you don't know, type I don't know.* **24b. In five words or less, what do you think is the worst thing about going online for you?** *If you don't know, type I don't know.* **24c. Have you blocked anyone online in the past week?** *Yes, No*
Activities	**Amount of sleep** *Numerical data*	**21a. About what time did you go to sleep last night?** *Answer to the nearest half hour.* **21b. About what time did you wake up this morning?** *Answer to the nearest half hour.* **Sleep time** This is not a survey question but is worked out using the bed time and wake time.
	Digital use *Q22—numerical data* *Q23—all categorical data*	**22. 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.** *Hours, minutes* **23a. Which of the following have you used in the last week? (You may tick more than one.)** *Own cell phone, YouTube, Instagram, Snapchat, Facebook, Twitter, TikTok, Twitch, Pinterest, BeReal, WhatsApp, Reddit, Discord, none of these* **23b. Which of the following did you use four or more separate times yesterday? (You may tick more than one.)** *Own cell phone, YouTube, Instagram, Snapchat, Facebook, Twitter, TikTok, Twitch, Pinterest, BeReal, WhatsApp, Reddit, Discord, none of these*
Opinions	**Happiness** *Categorical data*	**25a. Overall, how happy would you say you are?** *Very unhappy, Unhappy, Neutral, Happy, Very happy*
	Friends *Numerical data*	**25b. How many close friends do you have?** *[enter a number]*

How do I access and download a data sample from CensusAtSchool?

Navigation assist

1. Select Data
If navigating from the CensusAtSchool homepage, select **Data** from the menu bar at the top of the page.

2. At this link there are two options:

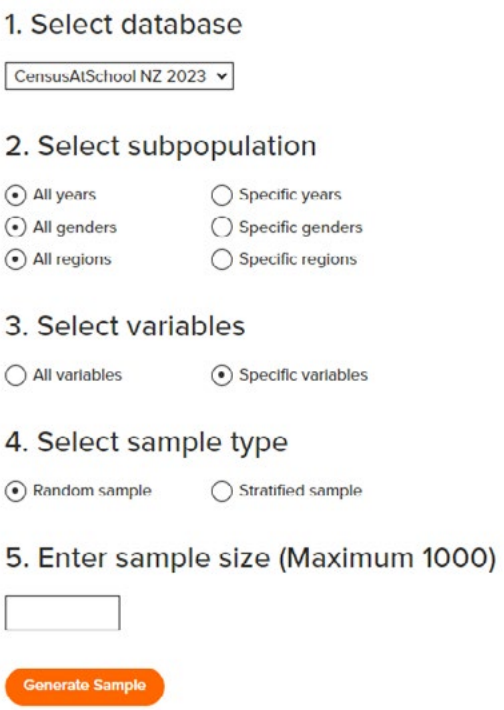
- **Sample**—this takes the user to the Random Sampler, which is where students can download a dataset, or alternatively explore the data directly online in iNZight Lite.
- **Database**—this takes the user to Explore the Whole Data, which is explored online in iNZight Lite.

Most of the activities in the resource make use of the data that can be downloaded using the **Random Sampler** tool.

Note:
A download of data produces a .csv file. This can then be saved as an Excel file or imported into statistical software to analyse.

The following instructions provide further guidance for navigating the CensusAtSchool website.

Locate the Random Sampler page on the CensusAtSchool website. After ticking the box agreeing to the conditions of use the following should appear on screen:



1. Select database
Select the CensusAtSchool NZ 2023 database.

2. Select subpopulation
Unless a specific year level, gender* or region is required, leave these with the **All** selection. You may want to compare only with the year level of the students, or the schools in your region. If this is the case, select accordingly from the list that appears when **Specific years** or **regions** are selected.
*see earlier note about selecting gender as a subpopulation

3. Select variables
This is where you need to select Specific variables—see further instruction below.

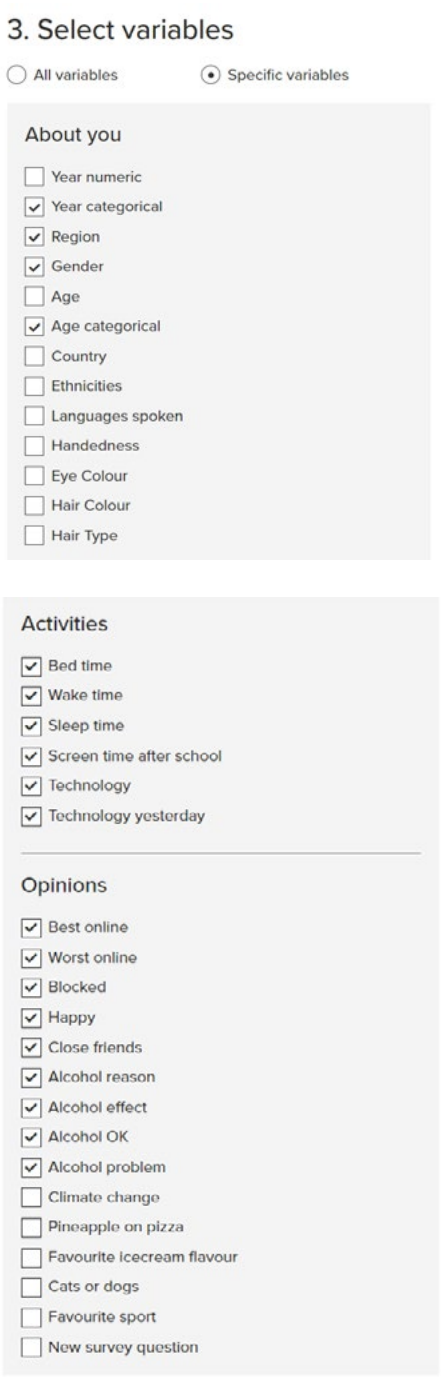
4. Select sample type
Unless otherwise notified, **Random sample** is used for the activities.

5. Sample size
CensusAtSchool has a maximum sample size of 1000.

Bigger combined samples can be achieved, but only by specifying a subpopulation first. The subpopulation is selected in **2. Select subpopulation.**

For example, a sample of 2000 could be achieved by selecting a sample of 1000 Year 9 students and combining this with a sample of 1000 Year 10 students.

Select Variables



"About you" section
Several of the activities in this resource use year level, gender and age. Make sure these are selected, otherwise they will not appear on the spreadsheet. **Region** is another piece of demographic information that might be of interest to explore, especially if students felt there might be regional differences in opinions.

As suggested earlier, select **Year categorical** and **Age categorical.** In the explorations suggested, both year level and age are used as categorical variables.

If other information **About you** is required, select the specific variables needed.

Please use ethnicity data carefully and ethically in relation to the health-attitudes data.

Keep scrolling down the variables list to find the other variables suggested earlier. The health attitudes and wellbeing items used in this resource, and that should be selected, include:

Activities section
- Bed time
- Wake time
- Sleep time
- Screen time after school
- Technology
- Technology yesterday

Opinions section
Health-attitudes questions—being online
- Best online
- Worst online
- Blocked

Other wellbeing-related opinions
- Happy
- Close friends

Health-attitudes questions—alcohol
- Alcohol reason
- Alcohol effect
- Alcohol OK
- Alcohol problem

See the full wording of the survey questions above.

Each activity provides further information about the data required.

3. Inquiry learning approaches across the curriculum

To reflect the data-driven focus for the activities in this resource, inquiry learning (or carrying out an investigation) dominates the approach taken to the teaching and learning process in this resource. Health Education and statistics both have discipline-specific approaches to inquiry learning (investigations).

More specifically, the inquiry approach is one of **guided inquiry**, whereby the teacher is deliberately and purposely teaching the data-based skills for engaging in inquiry, and guiding the questioning and investigative approach to ensure students manage sensitive subject matter safely and ethically.

Some inquiries may not wholly fulfil all aspects of an inquiry cycle (as shown in the models following), but, nonetheless, still help develop students' capabilities for carrying out data-informed inquiry.

An overview of the PPDAC model (Problem, Plan, Data, Analysis and Conclusion) used for statistical inquiry and the ACLP (Action Competence Learning Process) used in Health Education, along with a te ao Māori perspective on inquiry learning, are provided below.

The use of data across the inquiries in this resource aims to support learning whereby students are asking inquiry/investigative questions that:

- require data to answer the inquiry/investigative question(s); and/or
- require data to provide the evidence needed to check assumptions, test hypotheses, support or refute claims and substantiate observations.

Inquiry learning – an approach for deeper understanding

Inquiry is the dynamic process of being open to wonder and puzzlement and coming to know and understand the world.

Source: Galileo Education Network. (n.d.). *What is inquiry*? https://galileo.org/articles/what-is-inquiry/

Inquiry learning is an investigation into a topic, idea, problem or issue with a focus on students constructing their own learning and meanings. Inquiry enables students to learn through curiosity, discovery and collaboration, rather than being presented with facts through direct instruction.

An inquiry approach encourages students to:

- ask thought-provoking questions
- investigate widely and deeply
- make sense of information to build new knowledge
- develop a solution or formulate opinions
- present or share their new understanding with others
- have a valuable learning experience that leads to taking some form of action
- reflect on what they learned and how they learned it.

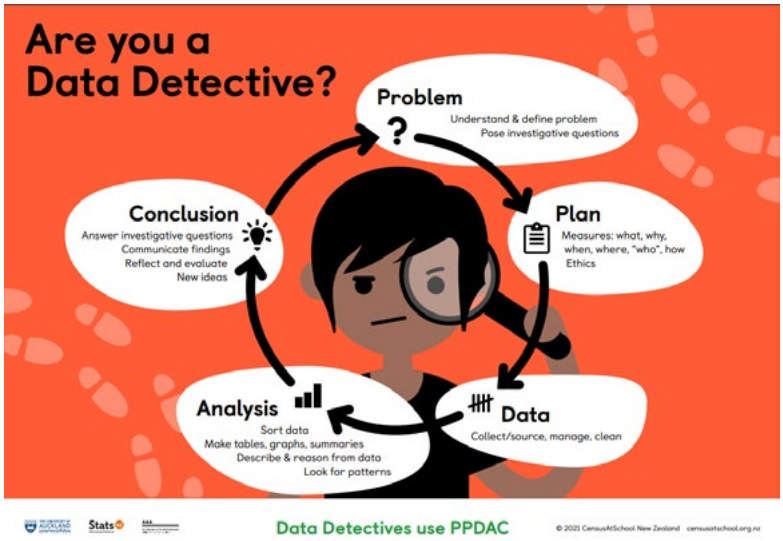
It is based on the constructivist theory of learning, which puts emphasis on the skills, attitudes, and understandings that students develop as they discover and construct new knowledge for themselves.

Source: National Library. (n.d.). *Understanding inquiry learning*. https://natlib.govt.nz/schools/school-libraries/library-services-for-teaching-and-learning/supporting-inquiry-learning/understanding-inquiry-learning

Statistics

The statistical inquiry cycle that the New Zealand Statistics curriculum is based on is also known as the PPDAC (said as P-P-DAC) model (MacKay & Oldford, 1994; Wild & Pfannkuch, 1999), with the five stages of **P**roblem, **P**lan, **D**ata, **A**nalysis and **C**onclusion forming the mnemonic. Students using the statistical inquiry cycle are said to be acting as data detectives, following the clues (data) to solve a problem (Arnold et al., 2022, p. 2).

The Statistical Inquiry Cycle



Source: CensusAtSchool. (2021). *Data detective posters*. http://new.censusatschool.org.nz/resource/data-detective-poster/. Copyright CensusAtSchool | TatauranguKiTeKura New Zealand. Reproduced with permission.

The PPDAC model is how one thinks about and the way in which one acts during a statistical investigation. As summarised in the data detective posters above:

- The ***problem*** stage deals with understanding and defining the problem and posing investigative questions.
- The ***planning*** stage involves deciding what to measure and how these will be measured, when the data will be collected, where it will be collected, who the data is collected from and if a sample is needed. The planning stage is one of the main places where we consider ethics.
- The ***data*** stage is concerned with collecting or sourcing, managing and cleaning the data.
- The ***analysis*** involves sorting the data, constructing tables, graphs and summaries as appropriate, exploring the data, looking for patterns, and describing and reasoning from the data.
- The final stage of the cycle, ***conclusion***, involves answering the investigative question, communicating findings, reflecting on and evaluating findings and processes used, and wondering about new ideas (Arnold et al., 2022, p. 3).

Health Education

The Health Education Action Competence Learning Process (ACLP) is an inquiry process with taking action as an integral part of the learning.

Action Competence Learning Process

Stages of the ACLP	Explanation
Identifying an issue	Consider personal, school, community and societal issues.
Developing knowledge and insight	(Critical thinking) How did the issue arise (history, values, beliefs)? What is its importance now and in the future? Who benefits? Who is disadvantaged? Why and how?
Developing a vision	(Creative thinking) What alternatives are there? How are conditions different in other classes, schools, cultures, communities or societies?
Understanding	(Gathering, analysing and evaluating ideas) What changes will bring us closer to our vision? Consider changes within ourselves, our classroom, school society. What are the possibilities for action to achieve the change?
Planning	What are the barriers and enablers in relation to taking action or making change? What action will we initiate?
Acting	Individually. Collectively.
Reflecting and evaluating	What has been learned? How could it be done differently? How far have we realised our vision?

For some Health Education contexts it may not be possible for students to implement the planned action and therefore reflect and evaluate. In such cases, the value of the learning lies in understanding the situation and knowing what action needs to be taken to improve wellbeing.

Note:
Some learning contexts may give more focus to selected aspects of the ACLP, depending on prior and subsequent learning about the topic/context and the main learning intentions to be achieved.

Supporting inquiry learning in kura kaupapa Māori

A te ao Māori perspective on an inquiry process was developed by Te Kura Kaupapa Māori with The University of Auckland. It can be accessed via the National Library website.

Stages of inquiry

The inquiry model developed by the teachers involved had the following stages:

- Initiate the inquiry process
- Stage 1: Whakatau—deciding: key concept, pre-teaching, brainstorming, mapping, keywords, key questions, planning
- Stage 2: Rapu—finding: print and online searching, using authentic learning contexts
- Stages 3 and 4: Whakamahi and whakatakoto—using, analysing, organising, synthesising
- Stage 5: Whakaatu—presenting
- Stage 6: Aromātai—evaluating

Read more here.

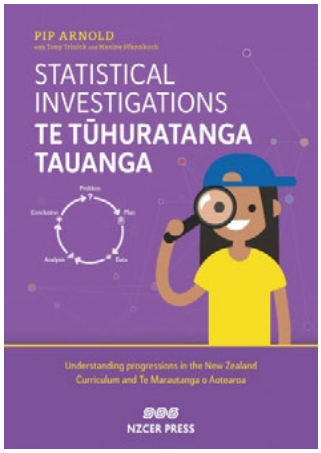
Source: National Library. (n.d.). Supporting inquiry learning in kura kaupapa Māori. https://natlib.govt.nz/schools/school-libraries/stories/supporting-inquiry-learning-in-kura-kaupapa-maori

4. Using statistics across the curriculum

Using statistical data from reliable and reputable sources enhances critical thinking and inquiry learning. Statistical data that is collected ethically, using discipline-specific protocols and practices, is an important part of the evidence base for curriculum knowledge.

Many subjects across the sciences and social sciences use statistical data as part of understanding scientific and social phenomena (see the introductory statement about numeracy across the learning areas and NCEA).

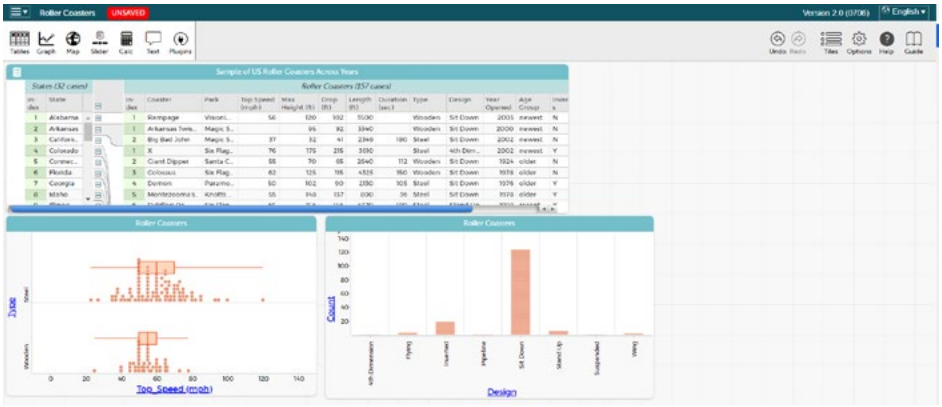
Useful resources and tools for statistics (across the curriculum)



***Statistical Investigations | Te Tūhuratanga Tauanga* Book**
All secondary school Mathematics and Statistics departments/faculties have been given a copy of the book Statistical Investigations | Te Tūhuratanga Tauanga: *Understanding progressions in the New Zealand Curriculum and Te Marautanga o Aotearoa*. This book, published in 2022, was developed *"to provide a comprehensive overview of the Statistical investigations | Te tūhuratanga tauanga thread in the New Zealand Curriculum (NZC) and Te Marautanga o Aotearoa (TMoA). It collates research and best practice in the area from Aotearoa New Zealand and internationally, and shows the development of statistical concepts that form the foundation building blocks of statistical thinking and reasoning up to Year 11."* (Arnold et al., 2022, back cover).

Common Online Data Analysis Platform — CODAP
"CODAP is free open-source software for data analysis built for use in schools. With CODAP, you can explore, visualize, and learn from data in any content area. Our mission is to make data literacy accessible for all *students. Through our National Science Foundation-funded project, we built a commercial-friendly, web-based, open-source data analysis platform, which students anywhere may use for free. (CODAP will always be free!)"*

Source: CODAP. (2020). *About.* https://codap.concord.org/about/



CODAP is created and maintained by The Concord Consortium. In New Zealand, CODAP has been used successfully with students from Year 4 onwards. CODAP has been designed to be accessible to younger students as well, allowing novice users to visualise data quickly and fluidly.

CODAP supports developing statistical concepts as well as doing statistical analysis. In CODAP, graphs are dynamically linked; highlighting data points in one graph highlights the same cases in all other graphs, tables and maps.

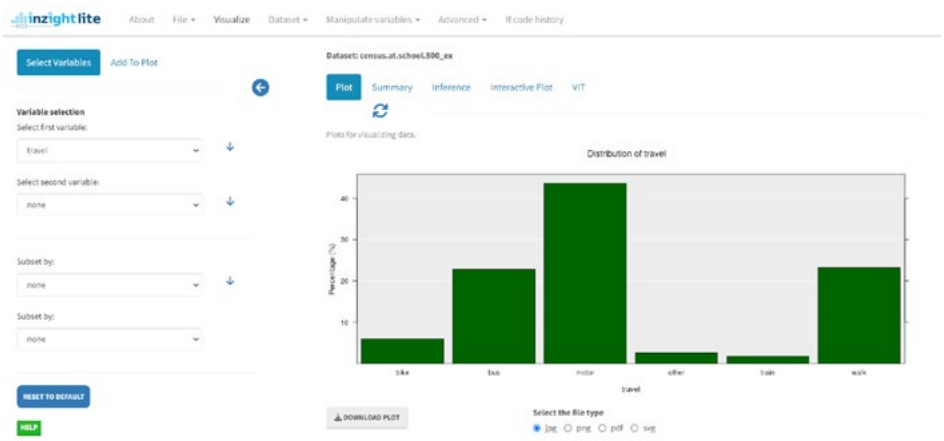
An introduction to using CODAP with your students can be found here and other CODAP-related posts are here. To go straight to an existing or new CODAP document, use this link.

iNZight and iNZight Lite

iNZight is a simple data analysis system which was initially designed for high school students to help them explore data quickly and easily. It still serves this function but other demands have seen extensive additions to its capabilities. For example, it now provides very flexible multivariate visualisation capabilities and supports 3D graphics, maps, time series, and multivariable regression analysis.

iNZight Lite is an online version of the software accessibly from any modern web browser, thus making it suitable to a wider range of users including non-Windows users who cannot install the desktop software. With Lite, you can import your own dataset or explore one of the many example datasets. You can then visualize and conduct statistical analysis on the data, and even modify the data, to explore hidden secrets behind the data.

Source: iNZight Lite. (2023, December 22). *Getting started*. https://lite.docker.stat.auckland.ac.nz/



Introductory videos on iNZight Lite can be found here. iNZight is the data-analysis tool that sits behind CensusAtSchool.

Spreadsheets
Spreadsheets are a key data-management tool. Sorting and organising data before uploading into data-analysis software is usually better managed in spreadsheets. Excel (Microsoft), Google Sheets (Google) and Numbers (Apple) are all examples of spreadsheet packages. Fundamentally, they provide the same functions, e.g., sorting by column, filtering. Spreadsheet packages provide data-visualisation tools for summarised data. However, they are less intuitive to use for creating data visualisations when compared to specialist data-analysis tools such as CODAP and iNZight Lite, both of which work with raw data.

Students should be able to work with spreadsheets to capture and manage data. They should be able to save or download the data into a .csv file for use in CODAP, iNZight Lite or other data analysis tools (Arnold et al., 2022, p. 223).

There are many videos available online that show how to use spreadsheets for those who might be unfamiliar with using them.

Safe and ethical use of data

Integral to learning skills for data collection, formatting and presentation, and analysis is the additional consideration of safe and responsible use of data by teachers and students. This applies especially to data that identifies students or data about their own wellbeing.

Ethical collection and use of data:
- Participants must give their informed consent.
- Participation is voluntary.
- Participants should know how their data is to be used.
- There should be no risk to participants.
- Questions should be respectful and consider diverse identities.
- The process of data collection and use protects privacy and confidentiality.
- There should be no subterfuge or deception.
- Data is only kept for the period of the inquiry and either deleted once analysed, or, if there is a reason to retain the data (e.g., for comparison in a subsequent year), agreement should be reached over the safe storage (e.g., on a designated school computer or in a protected cloud-based file) and eventual deletion of the data.

These ideas are explored in Inquiry 2, where students design and administer their own surveys.

Teachers can read more about ethics related to data in:
- Arnold et al. (2022, pp. 95–99)
- Student projects and ethical practice on CensusAtSchool
- Data Ethics Canvas from the Open Data Institute
- The New Zealand Government website data.govt.nz, which has information about data ethics and privacy, security and confidentiality as part of its data toolkit section

Ethnicity data should be used with care, because social and economic inequalities underpin a lot of ethnicity-based health and wellbeing data. If uncertain, it may be preferable to avoid disaggregating health-attitudes data by ethnicity.

Gender data also needs to be carefully considered—see Section 5, *Working with sensitive and challenging topics*, to follow.

Frameworks for evaluating reputable and reliable sources of data and other information

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.

Misuse of data

Where the opportunity presents itself, highlight how legitimate research data can be misused and abused, e.g., in some media reporting; or how the same data can be framed positively or negatively depending on what is selected, taken out of context, differently emphasised; and how it is framed under a news headline, etc.

Activity 9, Inquiry 12 in Part B, and Inquiry 16 in Part C highlight these issues with data use.

Misinformation and disinformation online resources

- He uru kahikatea: Building young people's resilience (pmcsa.ac.nz) — Looks at the access and susceptibility of young people to online information that is misleading or hurtful, teaching resilience skills and how to better navigate the online world.
- Netsafe link to mis/disinformation—Resources to help teach students to understand how to identify misinformation and disinformation.
- Netsafe, Understanding fake news in NZ—Social media and online safety helpline, Your News Bulletin.
- The Edge of the Infodemic—Challenging misinformation in Aotearoa.

Lateral reading techniques—additional evaluation frameworks

- Civic Online Reasoning, Lateral Reading—Looking at ways professional fact-checkers verify information sources. Provides a template to practice unpacking information with students.
- Tohatoha, Lateral Reading—How to separate information from misinformation.
- Ara | Te Pūkenga, Evaluating Information—A useful tool to check the quality of information.
- Check Yourself with Lateral Reading—A video to help you navigate digital information.
- SIFT Framework—The SIFT framework helps to combat evolving disinformation, misinformation and fake news.

5. Working with sensitive and challenging topics

Safe practice

Students are able to learn about a range of sensitive and challenging topics that have implications for their own wellbeing, or the wellbeing of others, when they are in a safe, supportive learning environment.

Establishing a safe classroom learning environment includes:

- Negotiating class safety guidelines about the ways the class will work together, which include respectful communication by and for all.
- Teacher pedagogy that is inclusive and democratic, and values students' ideas and contributions.
- Selecting materials that are relevant and accessible for all students.
- Respectful communication that enhances learner relationships.

A comprehensive account of ways to establish a safe classroom environment can be found in:

- Mental health education and hauora: Teaching interpersonal skills, resilience and wellbeing (Fitzpatrick et al., 2018, see pp. 14–15, with further detailed discussion about teacher pedagogy on pp. 15–23). The digital text for this resource is available here.
- The Ministry of Education resource Mental health education: A guide for teachers, leaders, and school boards (2022).

See also the context-specific safety considerations with each activity / inquiry. Teachers are encouraged to ensure they have knowledge of:

- School policies, procedures, processes, and expectations of teachers for supporting students.
- Accessing support for student mental health concerns, the roles of the school's pastoral team, and teachers' responsibilities and expectations in relation to these roles and services.
- Digital safety, and digital citizenship responsibilities. For example, see the Department of Internal Affairs — Digital Safety.

Consideration of gender in a critical inquiry about a Health Education issue

If teachers are selecting an inquiry that uses gender data, the following information will need to be considered.

It is recommended that a focus on gender data involves collaboration with the Health Education teacher, or that the Health teacher takes the lead in planning and teaching activities around gender and health attitudes to being online or alcohol.

Activities that use gender data:

- Inquiry 2 — friendships
- Inquiry 4 — screen time
- Inquiry 6 — reliable and reputable information (uses a **Random sample** with **Other gender**)
- Inquiry 9 — use of digital apps — some clear gendered differences with implications for wellbeing
- Inquiry 11 — blocking
- Inquiry 16 — attitudes to alcohol use

Research shows there is a range of gender differences in contexts related to alcohol use and being online, both of which feature in the health attitudes questions in the CensusAtSchool questionnaire. When planning data-informed health-promoting action, the complexities of the situation need to be understood to ensure that actions are identified in response to need, and when there are gender differences shown in the data, these need to be considered.

However, large-scale population sampling as a method of data collection and analysis used for large population groups, such as male and female, runs the risk of marginalising the experiences of people who identify as another gender (e.g., agender, non-binary, trans) who make up a very small proportion of the population group.

For further information about gender-related statistics, see Gender, sex, variations of sex characteristics, and sexual identity at Stats NZ.

The dilemma of using gender data to inform a critical inquiry
Data from large-scale population studies that ask participants to respond to demographic questions such as *What is your gender?*, with the option of **Male**, **Female** or **Another gender**—as in the case of the CensusAtSchool questionnaire—means that data will reflect the proportion of these groups in the population. The proportion of New Zealand youth who identify as male, female and *other gender* (or gender diverse) is known most recently from the Youth19 data report Te āniwaniwa takatāpui whānui: Te irawhiti me te ira huhua mō ngā rangatahi | Gender identity and young people's wellbeing.

CensusAtSchool gender data
At the end of the 2023 year of data collection there were 35,398 survey respondents who reported their gender. A total of 99.18% were (binary) male or female: female 51.49% (N = 18225), and male 47.69% (N = 16883). The balance of 0.81% (N = 290) identified as "Another gender", but not all these were recognised gender identities. There was some confusion between sexuality and gender identity, and between gender identity and gender pronouns, although the use of the reported pronouns would indicate **Another gender**. That this proportion is lower than the Youth19 data is to be expected, with respondents to the CensusAtSchool survey being overall younger and mainly in Years 7–11.

Safety
If selecting an activity where the data has been disaggregated by gender, or the inquiry provides the option for this, please explain the following to the students:

- **Another gender** has not been included in the summaries because the sample size in a random sample (used for the tables and graphs provided) is very small and there is a risk that reporting data based on such small numbers is unrepresentative or gives a distorted picture of 'other gender' in relation to alcohol attitudes or online behaviours.
- It is not saying that 'other genders' do not have valued perspectives about alcohol attitudes or online behaviours, BUT that, statistically, a random sample does not provide enough data to do this responsibly.
- Students can use the **Explore the Whole Data** function to view the database, but noting the clarity of the 'other gender' data is lost because of the very small numbers. Using the **Summary** option (and not the **Plot**) can provide numbers, but this takes time to summarise as each 'other gender' identity is recorded separately.

6. Opportunities for incorporating te ao Māori perspectives

Across the resource, consideration of mātauranga Māori and te ao Māori are included as follows.

Frameworks and models

Inquiry
The approach to statistical inquiry is based on the PPDAC model, and for Health Education on the Action Competence Learning Process (ACLP). An indigenised version of an inquiry process could supplement these models. Find this model, developed for te kura kaupapa Māori, on the National Library website.

Evaluation framework *(to support media literacy and digital literacy)*
The Rauru Whakararere Evaluation Framework is an indigenised process for ensuring the access to and use of reliable and reputable information. This framework can supplement the many other materials referenced in this resource related to digital and media literacy. There are multiple online sources of this framework.

Models of health
The approach to health and wellbeing in this resource is in consideration of the concept of hauora, which includes a holistic understanding of physical, social, mental and emotional, and spiritual wellbeing. The concept of hauora is commonly used in conjunction with Professor Sir Mason Durie's Whare Tapa Whā model of health (see specifically Inquiries 7 and 14). Other Indigenous models of health, such as Te Huia and Te Wheke, may also be used. Similarly, Pacific models of health may also be an option.

Models of health promotion and approaches to taking action
The field of health promotion also contains a range of Indigenous models; however, the inherent complexity of these means they are used more at senior secondary level.

At the Year 9–11 levels of learning, te ao Māori concepts such as whanaungatanga and manaakitanga, which can be incorporated with interpersonal actions, are encouraged. Contemporary ideas for taking action include exploring the notion of e-whanaungatanga when using the online environment (see Inquiry 7), or what manaakitanga might mean online (see Inquiry 9).

Being online and alcohol-specific contexts – teachers' professional reading

Being online: For consideration of the online space from an Indigenous perspective, read more in:

- Lee, M. (2018). Navigating the social media space for Māori and Indigenous communities. In I. Piven, R. Gandell, M. Lee, & A. M. Simpson (Eds.), *Global perspectives on social media in tertiary learning and teaching: Emerging research and opportunities* (pp. 51–71). IGI Global.
- Waitoa, J., Scheyvens, R., & Warren, T. R. (2015). E-whanaungatanga: The role of social media in Māori political empowerment. *AlterNative: An International Journal of Indigenous Peoples*, *11*(1), 45–58.

Alcohol: A comprehensive history about Māori and alcohol can be found in Marten Hutt and Philip Andrews' *Māori and alcohol: A history. Te iwi Māori me te inu waipiro: He tuhituhingā hītori*, Health Services Research Centre/ ALAC, 1999. A brief account of the material in this book can be found on Te Ara: Māori use of alcohol by Megan Cook.

Incorporating te reo Māori

In the text Statistical investigations | Te tūhuratanga tauanga*: Understanding progressions in The New Zealand Curriculum and Te Marautanga o Aotearoa* by Pip Arnold, with Tony Trinick and Maxine Pfannkuch, there is support for teaching statistics through the medium of te reo Māori. Although signalled for use with Te Marautanga o Aotearoa, there is a range of kupu Māori associated with learning about statistics that could be used.

An extensive range of traditional and contemporary kupu Māori related to wellbeing in the contexts of being online and alcohol can be found in Te Aka Māori Dictionary and Paekupu (glossary) for both Māori to English and English to Māori).

Consideration of ethnicity data

Looking at ethnicity data is one way to draw attention to matters with relevance for Māori. However, the association of some ethnic groups with poorer health and wellbeing runs the risk of emphasising deficits and reinforcing stereotypes. If health data about ethnic groups, such as Māori, is being viewed for statistical purposes it needs to be used with great sensitivity.

Student Learning Inquiries

The learning inquiries are divided into three sections.

A summary of the inquiries that are more suited to Statistics and/or Health Education teachers is provided on the first page of each Part.

PART A.
Developing capabilities for data-informed inquiry

The inquiries in this section aim to **develop students' capabilities in engaging in data-informed inquiry** learning processes. The activities can be used in isolation, or in conjunction with the related inquiries in Parts B and C.

Data from a range of CensusAtSchool survey questions features across this section.

The inquiry approach featured is the statistical inquiry **PPDAC** model.

PART B.
Attitudes about ... being online

The inquiries in this section support students to investigate a range of considerations related to **attitudes about being online**. Data from the CensusAtSchool health-attitudes questions related to being online dominates these inquiries.

The activities can be used in isolation, or in conjunction with the related inquiries in Parts A and C.

The inquiry approach featured is the Health Education **Action Competence Learning Process** (ACLP) model, with the addition of the **PPDAC model where applicable**.

PART C.
Attitudes about... alcohol

The inquiries in this section take an inquiry focus to investigate a range of considerations related to **attitudes about alcohol use**. Data from the CensusAtSchool health-attitudes questions related to teenage alcohol use dominate these inquiries.

The activities can be used in isolation, or in conjunction with the related inquiries in Parts A and B.

The inquiry approach featured is the Health Education **Action Competence Learning Process** (ACLP) model, with the addition of the **PPDAC model where applicable.**