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translation of this cover

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91584M



915845

Tuhia he (☒) ki te pouaka mēnā
kāore koe i tuhi kōrero ki tēnei puka



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Mana Tohu Mātauranga o Aotearoa
New Zealand Qualifications Authority

Te Pāngarau me te Tauanga (Te Tauanga), Kaupae 3, 2023

91584M Te arotake pūrongo ā-tauanga

Ngā whiwhinga: E whā

Paetae	Kaiaka	Kairangi
Te arotake pūrongo ā-tauanga.	Te arotake pūrongo ā-tauanga, e whai parahautanga ana.	Te arotake pūrongo ā-tauanga, e whai māramatanga ā-tauanga ana.

Tirohia kia kitea ai e rite ana te Tau Ākonga ā-Motu (NSN) kei runga i tō puka whakauru ki te tau kei runga i tēnei whārangi

Me whakamātau koe i ngā tūmahi KATOA kei roto i tēnei pukapuka.

Tangohia te Pukapuka Rauemi 91584MR kei te te puku o tēnei pukapuka.

Tirohia kia kitea ai kei a koe Te Pukapuka Tikanga Tātai me ngā Tūtohi L3-STATMF.

Whakaatuhia ngā whiriwhiringa KATOA.

Ki te hiahia wāhi atu anō koe mō ō tuhinga, whakamahia ngā whārangi wātea kei muri o tēnei pukapuka.

Tirohia kia kitea ai e tika ana te raupapatanga o ngā whārangi 2-15 o tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

Kaua e tuhi i ngā wāhi e kitea ai te kauruku whakahāngai (A E RUMU / TE I). Ka poroa taua wāhanga ka mākahia ana te pukapuka.

HOATU TE PUKAPUKA NEI KI TE KAIWHAKAHAERE HEI TE MUTUNGA O TE WHAKAMĀTAUTAU.

TE TŪMAHI TUATAHI: TE TŌROA AWATEA

Tirohia te Rauemi Tuatahi kei te pukapuka rauemi hei whakaoti i ngā wāhanga o te tūmahi e whai nei.

- (a) Waihangatia, ka whakamāori ai i tētahi horahanga whakapono mō te ōwehenga o ngā pākeke o Aotearoa e hiahia ana kia ū tonu ki te pūnaha tōroa awatea o nāianei.

- (b) I ngā Ata 1(a) me te 1(b), kua nui ake i te 100% te tapeke o ngā take e kitea ana i ngā kauwhata.

- (i) Whakamāramatia ngā take, i runga i te āhua o te tuhia o te pātai rangahau, ka nui ake i te 100% te tapeke o ngā take katoa kei ngā ata e rua.

- (ii) I te Ata 1(a), e whakaahuatia ana ngā take e rua i rite tonu te whakaputaina mō te ū tonu ki te tōroa awatea, koirā ngā take matua.

E whakataurite ana tētahi ākonga i te tautokona o ēnei take matua, mā te whakamahi i tētahi horahanga whakapono mō te rerekē o te ōwehenga i waenganui i ngā tāngata o Aotearoa e tuku nei i tētahi take kia ū tonu ki te pūnaha tōroa awatea o tēnei wā e pēnei ana: “ka roa ake te wā e ngahau ai i ngā hāora awatea i te raumati”, me ērā e tuku nei i tētahi take kia ū tonu ki te pūnaha tōroa awatea o tēnei wā e pēnei ana: “ka roa ake te wā e rere ai ngā mahi ā-waho i te kāinga.”

Matapakina he take e tika ana rānei, kāore rānei i te tika, tēnei ara.
Taunakitia tō tuhinga ki ngā whakaaro ā-tauanga.

QUESTION ONE: DAYLIGHT SAVING

Refer to Resource One in the resource booklet to answer the following question parts.

- (a) Construct and interpret a confidence interval for the proportion of adult New Zealanders who are in favour of keeping the daylight saving system as it is.

- (b) In Figures 1(a) and 1(b), the reasons shown in the graphs add to more than 100%.

- (i) Explain, in relation to how the survey question would have been written, why the reasons on the two figures all add to more than 100%.

- (ii) In Figure 1(a), the two most common reasons given for keeping daylight saving as it is are described as the main reasons.

A student is comparing support for these main reasons by using a confidence interval for the difference in proportion between New Zealanders who give one reason for keeping the current daylight saving system as “more time to enjoy daylight hours during summer” and those who give one reason for keeping the current daylight saving system as “more time for home outdoor activities.”

Discuss why this approach may or may not be appropriate.

Support your answer with statistical reasoning.

- (c) The respondents to the survey who want all-year daylight saving and those who want to keep daylight saving as it is, can be considered two independent groups.

Can the following claim be made from the results of this survey?

*The proportion of New Zealanders who want daylight saving, because it gives them “more time to enjoy daylight hours during summer” is larger for those who want **all year daylight saving** than for those who want to **keep daylight saving as it is**.*

Construct ONE confidence interval and interpret this interval as part of your answer.

**TE TŪMAHI TUARUA: KIA KOTAHI TĀORA TE ITINGA IHO:
TE TORO A TE KAIMĀTAI HINENGARO I TE
WHAKAHOAHOA HEI WHAKAITI PARA**

Tirohia te Rauemi Tuarua kei te pukapuka rauemi hei whakaoti i ngā wāhanga o te tūmahi e whai nei.

- (a) Ko te taurangi urupare i tēnei rangahau, ko te nui o ngā tāora ka whakamahia i ia rūma, i ia rā.

Matapakina TĒTAHI take i pai ai tēnei kōwhiringa mō te taurangi urupare.

- (b) Mā te tuari matapōkere ka iti iho te pāngia o ngā hua o tētahi rangahau e ētahi atu taurangi. I tuari matapōkeretia e tēnei rangahau ngā manuhiri hōtēra ki tētahi o ngā āhuatanga e toru.

Matapakina te āhua o te whakaitinga o te pāngia o tētahi taurangi nā te tuari matapōkere, atu i te taurangi whakamārama i tēnei rangahau; te pānga kāore e kore ka pā ki te taurangi urupare; me te āhua o tā te tuari matapōkere whakaiti i te take nei.

- (c) Ka whakamahia e tēnei rangahau te whakamuna (*blinding*) me ngā manuhiri, me ngā kaimahi o ngā rūma hōtēra, hei wāhanga matua mō te hoahoatanga o te rangahau.

- (i) Whakaahuatia te momo whakamuna i whakamahia rā me ngā manuhiri, me ngā kaimahi hōtēra hoki, i te horopaki o tēnei rangahau.

**QUESTION TWO: A TOWEL LESS:
HOW PSYCHOLOGISTS HARNESS SOCIABILITY TO CUT WASTE**

Refer to Resource Two in the resource booklet to answer the following question parts.

- (a) The response variable for this study was the number of towels used per room per day.

Discuss ONE reason why this is a good choice for the response variable.

- (b) Random allocation minimises the impact of other variables on the outcome of a study. This study randomly allocated hotel guests to one of three conditions.

Discuss how random allocation minimises the impact on one variable other than the explanatory variable in this study, its likely impact on the response variable, and how random allocation lessens this issue.

- (c) This study used blinding, with both the hotel guests and the hotel room staff as a key element of the study design.

- (i) Describe the blinding used with hotel guests and with hotel staff in the context of this study.

(ii) Matapakina te take e hira ana te whakamuna i te hoahoa whakamātaunga o tēnei rangahau.

(d) Ko tētahi raru tērā pea ka puta i te rangahau tauanga, ko te hē o te whakawhānui i ngā hua.

Matapakina ngā raru e RUA tērā pea ka puta i te whakawhānuitanga o ngā hua o tēnei rangahau ki hōtēra kē, ki wāhi kē, huri noa i te ao.

Te raru tuatahi: _____

Te raru tuarua: _____

(ii) Discuss why blinding was an important experimental design aspect in this study.

(d) A potential issue with a statistical study is extending the results inappropriately.

Discuss TWO potential issues with extending the results of this study to other hotels in other locations around the world.

Issue one: _____

Issue two: _____

TE TŪMAHI TUATORU: KEI HEA NGĀ MINENGA?

Tirohia te Rauemi Tuatoru kei te pukapuka rauemi hei whakaoti i ngā wāhanga o te tūmahi e whai nei.

- (a) Ko tētahi tino tikanga rangahau ka miramiratia e te pūrongo, ko te pātai atu ki ngā kaiwhakautu pātai e pā ana ki ō rātou whanonga “inanahi”. Hei tauira, e whakaaturia ana i te Ata 3, *P: Ko tēhea o ēnei i whakamahia rā e koe inanahi?*, ā, ka tukuna ētahi kōwhiringa hei kōwhiri mā te kaiwhakautu pātai.

Matapakina he take e hira ana tēnei tikanga rangahau hei whakaiti i te haukume i ngā whakautu rangahau.

- (b) E kī ana te pūrongo, i whakamahia te “tīpakonga pūtahi ā-rohe” hei wāhanga mō te tukanga tīpakonga.

Whakaahuatia te tikanga o te “tīpakonga pūtahi ā-rohe” i tēnei horopaki, me ngā take e hira ai pea tōna whakamahinga.

QUESTION THREE: WHERE ARE THE AUDIENCES?

Refer to Resource Three in the resource booklet to answer the following question parts.

- (a) The report highlights that a key research technique is to ask respondents about their behaviour “yesterday”. For example, as shown in Figure 3, *Q: Which of the following did you use yesterday?*, and then the respondent is given options to select from.

Discuss why this research technique is important to reduce bias in the survey responses.

- (b) The report states that “regional sample stratification” was implemented as part of the sampling method.

Describe what “regional sample stratification” means in this situation, and why its use may be important.

- (c) Whakaahuatia kia KOTAHI te painga, kia KOTAHI hoki te mate o te whakamahi i ngā uiui hei whakaemi raraunga e pā ana ki te whakamahi arapāho a ngā kaiwhakautu pātai.

Matapakina te āhua o te pānga o tēnei painga me tēnei mate ka puta pea ki te kounga o ngā raraunga ka matapakina i taua pūrongo.

Te painga: _____

Te mate: _____

- (d) I te tātaritanga o ngā hua rangahau, i “inea-tōmuritia” te tīpakonga e whakakanohitia ai te taupori 15+ o Aotearoa. I arongia atu hoki ngā take o te whai wāhi atu ki te waea, o te ia, o te pakeke, me te mātāwaka.

Matapakina kia RUA ngā āhuatanga, ā, mō ia āhuatanga, matapakina he take e hira ana te whakaaturia tōkeketia o ērā i ngā raraunga.

Te āhuatanga tuatahi: _____

Te āhuatanga tuarua: _____

- (c) Describe ONE advantage and ONE disadvantage of using interviews to collect data on respondents' media consumption.

Discuss how this advantage and this disadvantage could impact on the quality of the data discussed in this report.

Advantage: _____

Disadvantage: _____

- (d) In the analysis of the survey results, the sample was “post-weighted” to ensure it was representative of the 15+ New Zealand population. Factors of access to a landline, gender, age, and ethnicity were accounted for.

Discuss TWO factors and, for each, why it is important that they have been fairly represented in the data.

Factor one: _____

Factor two: _____

English translation of the wording on the front cover

Level 3 Mathematics and Statistics (Statistics) 2023

91584M Evaluate statistically based reports

Credits: Four

91584M

Achievement	Achievement with Merit	Achievement with Excellence
Evaluate statistically based reports.	Evaluate statistically based reports, with justification.	Evaluate statistically based reports, with statistical insight.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

Pull out Resource Booklet 91584MR from the centre of this booklet.

Make sure that you have the Formulae and Tables Booklet L3–STATMF.

Show ALL working.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–15 in the correct order and that none of these pages is blank.

Do not write in any cross-hatched area (DO NOT WRITE). This area will be cut off when the booklet is marked.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.