

91584MR



NEW ZEALAND QUALIFICATIONS AUTHORITY  
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD  
KIA NOHO TAKATŪ KI TŌ ĀMUA AO!

## Te Pāngarau me te Tauanga (Tauanga), Kaupae 3, 2020

### 91584M Te aromātai i ngā pūrongo tauanga

9.30 i te ata Rāapa 18 Whiringa-ā-rangi 2020  
Whiwhinga: Whā

## PUKAPUKA RAUEMI

Titiro ki tēnei pukapuka hei whakatutuki i ngā tūmahi mō Te Pāngarau me te Tauanga (Tauanga) 91584M.

Tirohia mēnā e tika ana te raupapatanga o ngā whārangi 2–9 kei roto i tēnei pukapuka, ka mutu, kāore tētahi o aua whārangi i te takoto kau.

**KA TAEA TĒNEI PUKAPUKA TE PUPURI I TE MUTUNGA O TE WHAKAMĀTAUTAU.**

## PŪRONGO 1

### Kāore e ea i te nuinga o ngā kaimahi ngā mea waiwai – uniana

Kei te uaua ki ngā kaimahi te utu i ngā utu oranga e piki haere ana mā ā rātou moni whiwhi, e pā kinotia ana te iwi whānui i te ahurea wāhi mahi kino, te kī a te uniana.

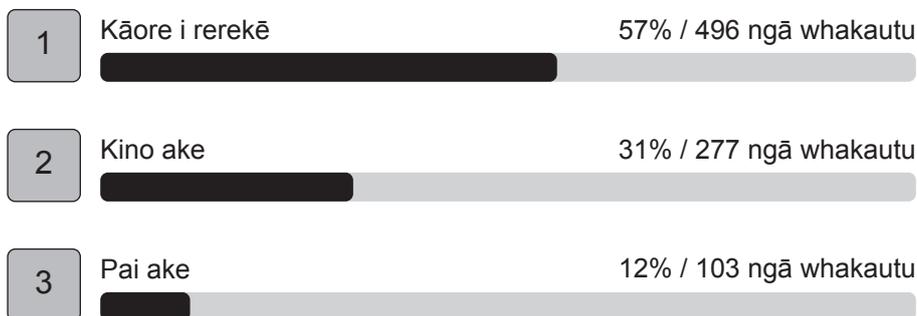
876 ngā tāngata i whakautu ki te 'Rangahau Tātau Katoa' ā-tau a Te Kauae Kaimahi (CTU), ka whakahaeretia mai i te 3 ki te 5 o Kohitātea 2020. E tūhura ana te rangahau i ngā whakaaro me ngā waiaro o te hunga mahi i Aotearoa mō ā rātou mahi me ō rātou wāhi mahi. I whakahaeretia te rangahau i runga ipurangi, ā, i whakauru tūao mai ngā kaiwhakauru ki te rangahau. Ko ngā kaiwhakauru katoa ki te rangahau he mema nō ngā uniana e hono ana ki te CTU.

Tata ki te haurua o ngā kaiwhakautu i kī he raruraru te whakaweti, ā, kāore e ea ana i te 56% ngā mea waiwai pērā i te rēti, te hiko me te penehīni. Tata ki te 60% i kī kāore rātou i te utua tōkeketia mō ā rātou mahi i oti i a rātou, tata ki te 50% i kī kua kino ake te nui o ā rātou mahi, me te 31% i kī kua kino ake ā rātou haora mahi.

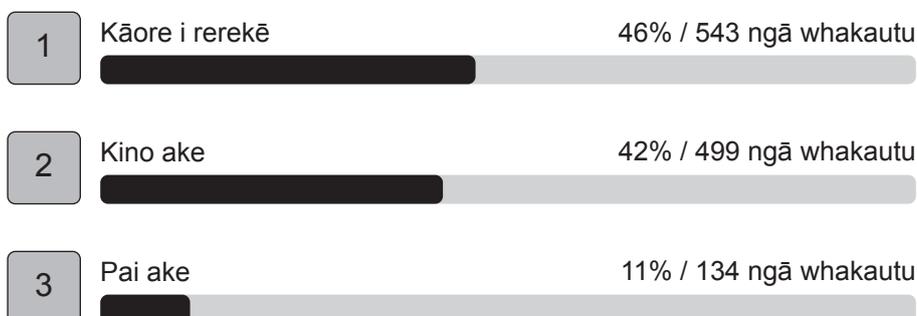
I roto i te rangahau, 5% o ngā kaiwhakautu e whakapono ana kei te ū haere tonu ā rātou moni whiwhi ki ā rātou utu oranga, ā, kua nui ake tēnei i te rangahau o tērā tau. Ko tētahi huringa pai e ai ki te rangahau o tērā tau, ko te ōrau o ngā kaimahi e whakapono ana kua kino ake ā rātou haora mahi, kua heke mai i te 42% ki te 31% i roto tēnei wā (2019 ki te 2020).

Tata ki te 20% o anake o ngā kaimahi katoa he mema nō ngā uniana, te kī a te perehitini o te CTU, ā, me whakatika tēnei hapa i te taumata tōrangapū.

### Hoahoa 1A: Ngā otinga o te Rangahau Tātau Katoa 2020 mō ngā haora mahi i te wiki ( $n = 876$ )



### Hoahoa 1B: Ngā otinga o te Rangahau Tātau Katoa 2019 mō ngā haora mahi i te wiki ( $n = 1176$ )



He mea urutau mai i <https://www.rnz.co.nz/news/national/406787/wages-up-but-not-enough-to-balance-living-costs-union>

He kōrero tāpiri mai i <https://nzctu.typeform.com/report/SooQGI/JSjKInVZPS0TqmQp>  
me <https://nzctu.typeform.com/report/StNjy0/2uHwC3RTLKj19cSt>

## REPORT 1

### Majority of workers unable to afford necessities – union

Workers are doing it tough trying to meet rising costs of living on their pay, and bad workplace culture is costing our society, a union says.

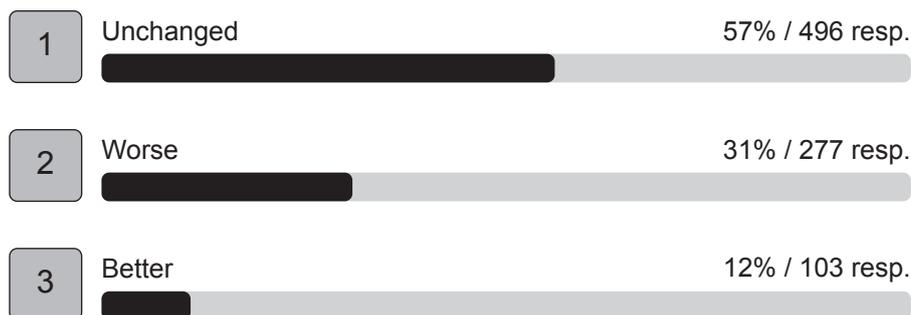
876 people responded to the Council of Trade Unions (CTU) annual ‘Together Survey’, carried out from 3 to 5 January 2020. The survey aimed to investigate the views and attitudes of working people in New Zealand towards their jobs and workplaces. The survey was undertaken online, with survey participants volunteering to participate. All survey participants were members of unions connected to the CTU.

Bullying was a problem for almost half of respondents, and 56% were unable to afford necessities like rent, power, and petrol. Almost 60% said they were not paid fairly for the work they did, nearly 50% said their workload got worse, and 31% said their hours of work were worse.

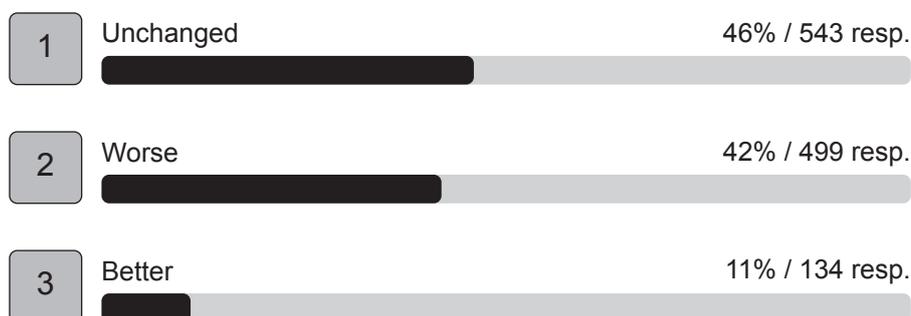
In the survey, 5% of respondents believed that their income was keeping pace with their cost of living, which was an increase on the previous year’s survey. One positive change compared to the previous year’s survey, was that the percentage of workers who believe their hours of work are worse, decreased from 42% to 31% over this time (2019 to 2020).

Only about 20% of workers were members of unions, the CTU president said, and a political fix was needed for this imbalance.

**Figure 1A: 2020 Together Survey results for weekly hours of work ( $n = 876$ )**



**Figure 1B: 2019 Together Survey results for weekly hours of work ( $n = 1176$ )**



Adapted from <https://www.rnz.co.nz/news/national/406787/wages-up-but-not-enough-to-balance-living-costs-union>

Additional information sourced from <https://nzctu.typeform.com/report/SooQGI/JSjKInVZPS0TqmQp>

and <https://nzctu.typeform.com/report/StNjy0/2uHwC3RTLKj19cSt>

## PŪRONGO 2

### **Te moe whakaora tinana: he rangahau tūhuratanga mō te ātaahua o te hunga kore moe**

I tūhuratia e ngā tohunga pūtaiao mēnā ka tukuperu ake te āhua o te hunga kore moe tēnā i muri i tētahi moe noa i te pō. I whakahaerehia te tūhuratanga i roto i tētahi taiwhanga moe i Stockholm, Huitene i te tau 2010.

E rua ngā whakaahua i hopukina mō ia pakeke pakari 23 he 18–31 tau te pakeke (ngā tāngata). Tekau mā tahi o ngā tāngata nei he wāhine.

Ko te whakaahua tuatahi i hopukina i muri i tētahi wā moe noa (waru haora).

Ko te mea tuarua i hopukina i te wā kāore i moe ngā tāngata. I moe ngā tāngata mō te iti iho i te 8 haora i raro i ngā whakahaerenga, ā, whai muri i tērā i takarewa rātou mō te 31 haora.

Mō te hopu whakaahua, kāore he whakanako o ngā tāngata, i tukuna noa ā rātou makawe (i herua mēnā he roa), i whai tonu i ngā ritenga horoi me te heu mō ngā āhuatanga e rua, ā, i whakahautia kia 'noho tū, kia titiro tonu atu ki te kāmera me te tau o te āhua o te kanohi."

### **Hoahoa 2: Te tangata whai muri i te moe noa i te pō (mauī), ā, me te kore moe (mataui)**



I whakaaturia ngā whakaahua 46 (e rua mō ia tangata) ki ngā kaitiro tiro ihupuku 65 (ko te nuinga he ākongā, he 30 tau te pakeke tau toharite, mai i te 18 ki te 61 tau, 40 ngā wāhine) ki te raupapa matapōkere.

I whakatauria te ātaahua e ngā kaitiro tiro mā tētahi āwhata mai i te 0 ki te 100. He iti iho ngā whakatau mō te hunga kāore i moe (he 38 te tatau tau toharite ki te 40) tēnā i muri i tētahi moe noa i te pō. Ka whakatauritea ki te āhuatanga moe noa, i heke ngā tirohanga ātaahua i raro i ngā āhuatanga kore moe mā te 4% i te toharite.

Ko te whakatau a ngā kaipūtaiao he iti ake te ātaahua o ngā tangata kāore i moe tēnā i te wā i tino whakatā rātou. E kī ana tēnei ka aro te tangata ki ngā tohu kanohi ā-moe, ā, ka whai pānga pea ki ngā whakatau ā-pāpori, ā-mahi hoki.

He mea urutau mai i <https://www.bmj.com/content/341/bmj.c6614>

## REPORT 2

### **Beauty sleep: experimental study on the perceived attractiveness of sleep-deprived people**

Scientists investigated whether sleep-deprived people are perceived as less attractive than after a normal night's sleep. The investigation took place in a sleep laboratory in Stockholm, Sweden during 2010.

Two photographs were taken of each of 23 healthy adults aged 18–31 years (the subjects). Eleven of the subjects were women.

The first photograph was taken after a period of normal sleep (eight hours).

The second photograph was taken when the subjects were sleep-deprived. Subjects were allowed a controlled period of sleep of less than 8 hours, followed by being kept awake for a period of 31 hours.

For the photo shoot, subjects wore no make-up, had their hair loose (combed backwards if long), underwent similar cleaning or shaving procedures for both conditions, and were instructed to “sit with a straight back, and look straight into the camera with a neutral, relaxed facial expression.”

**Figure 2: Subject after a normal night's sleep (left) and after sleep deprivation (right)**



The 46 photographs (two photographs of each subject) were shown to the 65 untrained observers (mostly students, mean age 30 years, range 18–61 years, 40 women) in a randomised order.

The observers rated perceived attractiveness using a scale from 0 to 100. Sleep-deprived people were rated as less attractive (mean score 38 vs 40) than after a normal night's sleep. Compared with the normal sleep condition, perceptions of attractiveness in the sleep-deprived condition decreased on average by 4%.

The scientists concluded that sleep-deprived people appear less attractive compared with when they are well rested. This suggests that humans are sensitive to sleep-related facial indicators, with potential implications for social and job-related decisions.

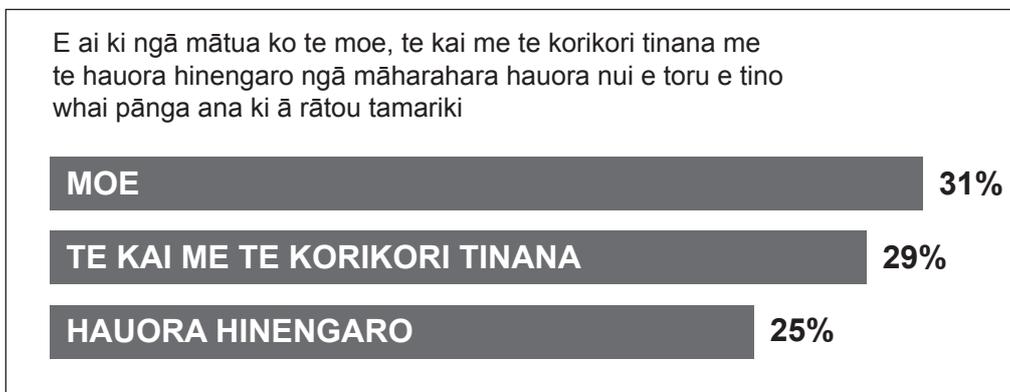
### PŪRONGO 3

#### E whakaatu ana te rangahau mātua ko te kore moe te māharahara hauora nui rawa mō ā rātou tamariki

Kua whakaputahia e tētahi kamupene rīanga hauora o Aotearoa ngā otinga mai i tana 'Rangahau i te Āhua o te Tiaki Tamariki i te Motu', e āta tirotiro ana ki ngā māharahara me ngā ia e pā ana ki ngā mātua i Aotearoa i tēnei rā.

1200 ngā mātua o Aotearoa (tae atu ki ngā mātua whakaangi, ngā kaitiaki, me ngā kaimaanaki i ngā tamariki 17 tau, tamariki ake rānei) i uiuitia. Mai i ēnei mātua, ko ngā take mō te kounga o te moe i tino kīia hei māharahara hauora nui rawa – 31% o te hunga i uiuitia i kī koinei te take e tino whai pānga ana ki ā rātou tamariki. Ko te take tuarua ko te kai me te korikori tinana, he 29%. 44% i kī kāore rātou i te tino aro atu ki tō rātou ake hauora tēnā i te hauora o ā rātou tamariki.

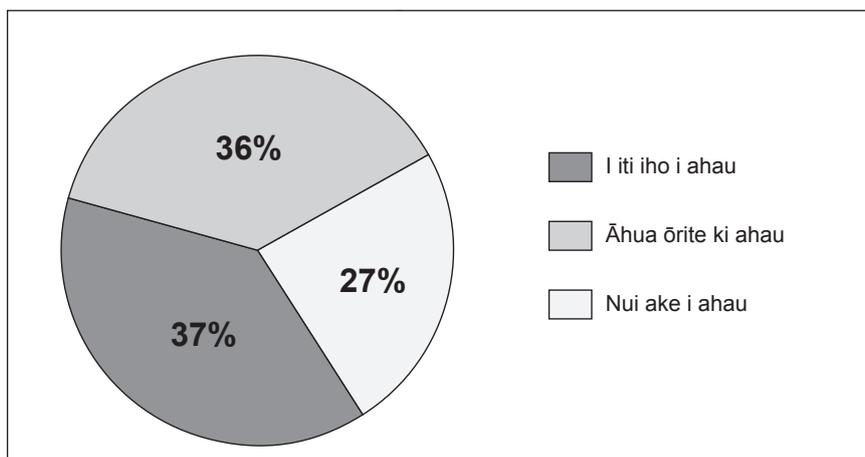
#### Hoahoa 3A: Ngā māharahara nui e toru mai i ngā mātua/ngā kaitiaki mai i te Rangahau i te Āhua o te Tiaki Tamariki i te Motu, Pipiri 2019



Ko te māharahara, 41% o ngā mātua i kōrero mō ngā māharahara hauora o ā rātou tamariki i kī anō kāore i taea e rātou ngā āwhina e tika ana mō ngā raruraru moe – inā rā kāore rātou i te mōhio me tīmata ki hea, e pōhēhē ana rānei kāore he āwhina i tō rātou rohe.

I tirotiro anō te rangahau ki ngā waiaro o ngā mātua ki te rahinga o ngā hākinakina i whai wāhi atu ā rātou tamariki, tēnā i te wā i a rātou e tamariki ana. E ai ki te Hoahoa 3B, he hauwhā anake o te hunga i uiuitia i kī he nui ake ngā hākinakina a ā rātou tamariki tēnā i te wā i a rātou e tamariki ana.

#### Hoahoa 3B: Ngā tirohanga a ngā mātua/kaitiaki mō te nui o ngā hākinakina e tākarotia ana e ā rātou tamariki, tēnā i te wā i a rātou e tamariki ana



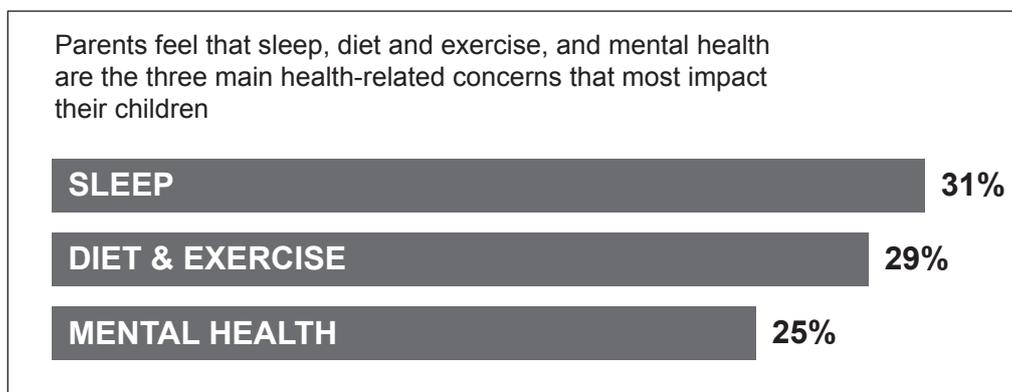
## REPORT 3

### Parenting survey highlights sleep as parents' biggest health concern for their children

A major New Zealand health insurance company has released the results from its 'State of the Nation Parenting Survey', taking a thorough look into the concerns and trends facing parents in New Zealand today.

1200 New Zealand parents (including step-parents, guardians, and caregivers with children 17 years or younger) were surveyed. Among these parents, issues around quality of sleep were most commonly mentioned as the biggest overall health concern – with 31% of those surveyed reporting this as the issue they believe most impacts their children. Coming in at a close second was diet and exercise, at 29%. 44% said they place less priority on their own health than they do on their children's.

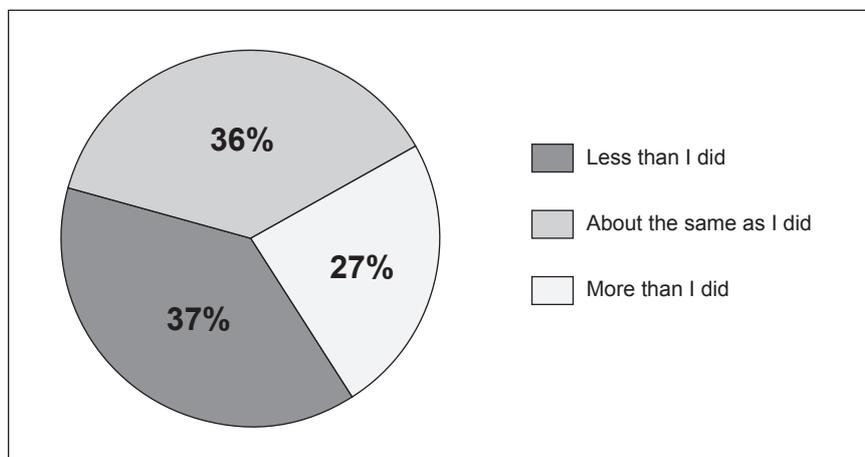
**Figure 3A: Top three concerns from parents/caregivers from State of the Nation Parenting Survey, June 2019**



Worryingly, 41% of parents who cited health concerns for their children also reported being unable to access the necessary level of support for sleep problems – either because they would not know where to start, or because they believe there is nothing available in their region.

The survey also looked into parents' attitudes to the amount of sport their children took part in, compared to when they were children. As Figure 3B shows, only around a quarter of those asked said their children did more sport compared to when they were children.

**Figure 3B: Parents'/caregivers' perceptions of how much sport their child(ren) participate in, compared to when they were children**



I whakaatu ngā kitenga o te rangahau kei te rite ngā mātua o Aotearoa ki te whai i ngā rongoā hauora matihiko, me te 65% o ngā kaiwhakautu i kī he pai ki a rātou te whakamahi i tētahi ratonga hauora matihiko, ā-ipurangi rānei – tae atu ki ngā whakawhitiwhiti tuihono me ngā mātanga hauora, ngā karekōrero, me te whakamahi i te taupānga pūkoro hei āwhina i ngā whakatau hauora.

I kī te Pou Whakahaere o te kamupene rīanga hauora he rongo kōrero pai tēnei tatauranga mō ngā kaituku hauora me ngā kaituku ratonga hāngai, e tirotiro ana, e whakatika ana rānei ki te whakauru mai i ngā rongoā tuihono, matihiko rānei ki ā rātou ratonga.

“I mua, ko te whakaaro pea a ngā kaiwhakapeto kāore e tino ōrite te taumata o ngā manaaki a ngā rongoā matihiko me te tuihono ki ā ngā whakawhitiwhiti kanohi ki te kanohi – engari ko te mea kē, he tino nui ngā painga ka puta i ēnei hangarau e pā ana ki te whai wāhi atu me te whakawhaiaro, te whakaiti i te wā me ngā moni a ngā tūroro ka pau,” te kī a te Pou Whakahaere.

He ± 2.9% te pae hapa mō tēnei rangahau.

He mea urutau mai i <https://www.nib.co.nz/news-and-media/news-details/nib-parenting-survey-highlights-sleep-as-parents'-biggest-health-concern>

He mea urutau ngā kitenga rangahau mai i [https://assets.ctfassets.net/ja9v5o5o08yv/5VILFDewE2IDN7DIMhvCIu/28f137c77fc31f9bea0e899d8e8efb5b/nib\\_Parenting\\_Survey\\_Full\\_Report.pdf](https://assets.ctfassets.net/ja9v5o5o08yv/5VILFDewE2IDN7DIMhvCIu/28f137c77fc31f9bea0e899d8e8efb5b/nib_Parenting_Survey_Full_Report.pdf)

The survey findings also highlighted that New Zealand parents are ready to embrace digital healthcare solutions, with 65% of respondents saying they were comfortable with the idea of using a digital or online healthcare service – including online consultations with medical professionals, chatbots, and use of mobile applications to assist in medical diagnoses.

The Chief Executive Officer (CEO) of the health insurance company said this particular statistic should be encouraging news for healthcare and related providers, who have, or are looking to incorporate, online or digital solutions into their offer.

“Historically, there’s probably been a sense among consumers that digital and online solutions don’t offer the same level of care as a face-to-face consultation – but in reality, these technologies provide massive benefits in terms of access and personalisation, and save patients time and money,” the CEO said.

The margin of error for the survey is  $\pm 2.9\%$ .

Adapted from <https://www.nib.co.nz/news-and-media/news-details/nib-parenting-survey-highlights-sleep-as-parents'-biggest-health-concern>  
Survey results adapted from [https://assets.ctfassets.net/ja9v5o5o08yv/5VILFDewE2IDN7DIMhvCIu/28f137c77fc31f9bea0e899d8e8efb5b/nib\\_Parenting\\_Survey\\_Full\\_Report.pdf](https://assets.ctfassets.net/ja9v5o5o08yv/5VILFDewE2IDN7DIMhvCIu/28f137c77fc31f9bea0e899d8e8efb5b/nib_Parenting_Survey_Full_Report.pdf)





*English translation of the wording on the front cover*

## **Level 3 Mathematics and Statistics (Statistics) 2020**

**91584 Evaluate statistically based reports**

9.30 a.m. Wednesday 18 November 2020  
Credits: Four

**RESOURCE BOOKLET**

Refer to this booklet to answer the questions for Mathematics and Statistics (Statistics) 91584M.

Check that this booklet has pages 2–9 in the correct order and that none of these pages is blank.

**YOU MAY KEEP THIS BOOKLET AT THE END OF THE EXAMINATION.**