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Working for fun? The impact of employment in the arts sector on wellbeing

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Abstract

Despite the prospect of adverse financial and employment outcomes, the labour market for arts workers is often characterised with an excess supply of workers. Several theories have been proposed to explain this puzzle. In recent years one theory that has gained prominence is that employment in the arts provides workers with high wellbeing, which may compensate them for the low pay they receive. Using New Zealand Census and household survey data, this study finds that on average arts workers earn about 20% less than non-arts workers, however about half to two thirds of this pay gap can be explained by differences in observed characteristics between the two groups. While causality is not formally proved, we provide indirect evidence that employment in the arts sector has a positive impact on wellbeing. This additional wellbeing may be considered psychic income, which could be one reason why some people stay in the arts labour market despite the prospect of lower pay.

JEL codes

J31 Wage Level and Structure; Wage Differentials

Z11 Economics of the arts and literature

I31 General welfare, Well-being

Keywords

Arts sector, wage gap decomposition, subjective wellbeing

Summary haiku

Arts workers earn less

Yet they appear happier

Than other workers

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Executive summary

Despite the prospect of low pay, high unemployment, and non-voluntary part-time work, there is typically an oversupply of arts workers in the labour market. One prominent explanation for this puzzle is that employment in the arts sector provides workers with high wellbeing, which compensates them for the prospect of low pay. This study investigates the impact of employment in the arts sector on wellbeing in New Zealand. We first examine whether arts workers earn less than other workers, and if so, to what extent this gap can be explained by differences in observed demographic and job-related characteristics. We then explore the relationship between arts employment and wellbeing, controlling for income and other relevant variables.

Data

Our main data source is the Household Economic Survey (HES) 2018/19. The HES is the only large-scale household survey in New Zealand that routinely collects detailed information on both labour market characteristics and subjective wellbeing. For our main analysis, we construct a sample of 9,081 professional and technician workers, which we restrict to those aged between 18-64 to keep the focus on the working-age population. For robustness checks and to take advantage of different measures of wellbeing, we also use data from the 2018 Census of Population and Dwellings, the General Social Survey (GSS) 2014-2018, and the Households Labour Force Survey (HLFS) June 2020.

We follow previous studies by defining an arts worker as someone whose primary occupation is arts-related and then select which occupations are to be considered arts-related. Our broad list of 90 arts-related occupations includes both traditional arts roles (e.g. actor, painter, musician) and contemporary arts roles (e.g. marketing specialist, content creator, web designer).

Methodology

Our empirical approach consists of two parts. We first use the Blinder (1973)-Oaxaca (1973) method decompose the pay gap between arts and non-arts workers into various factors which may explain the gap.

To examine the impact of arts employment on wellbeing, we run OLS regressions of wellbeing on an arts worker dummy variable, labour income, and various individual characteristics which may influence wellbeing. The wellbeing measures we use are life satisfaction, job satisfaction, sense of purpose, and mental wellbeing. Since arts workers may be motivated by

pecuniary income differently to other workers, we also test for a differential impact of income on wellbeing by interacting the arts worker dummy variable with labour income.

Key findings

- In 2019, on average arts workers in New Zealand earned about 20% less than non-arts workers
- About a half to two-thirds of this pay gap can be explained by differences in observed characteristics, such as age, education, working hours, and etc, between the two groups
- Differences in job characteristics contribute more to explaining the gap than differences in demographic variables. For example, if arts workers worked as many hours per week as non-arts workers, the gap would be almost halved
- Consistent with theory, income has a positive effect on wellbeing
- Being an arts worker is associated with higher life satisfaction, and labour income has a smaller impact on life satisfaction for arts workers than for non-arts workers
- Unlike labour income, total income has no differential impact on wellbeing between arts workers and non-arts workers, as well as having no direct relationship with job satisfaction.

Discussion

While causality is not formally proved, we provide indirect evidence that employment in the arts sector has a positive impact on wellbeing. Our baseline wellbeing regression results are robust to the inclusion of a large number of control variables. This suggests that the higher life satisfaction of arts workers is at least partly attributable to the arts employment itself rather than, for example, arts workers being more educated or experiencing the autonomy that comes from being self-employed. The results based on data collected during the Covid-19 pandemic, a period when employment prospects for arts workers were limited, show that arts workers have similar levels of short-term wellbeing (mental wellbeing) and medium-term wellbeing (life satisfaction). This finding lends support to the argument that arts workers have higher wellbeing through being able to do the work they love.

Overall, this study provides evidence suggesting that the additional wellbeing attributable to arts employment may be considered psychic income, which could be one reason why only people who gain sufficiently high wellbeing from artistic involvement stay in the artistic labour market despite the prospect of lower pay.

1 Introduction

The labour market for arts workers¹ is often characterised by low pay, high unemployment, non-voluntary part-time work and intermittent work (Steiner & Schneider, 2013). Despite these adverse financial and employment outcomes, there is often an oversupply of arts workers (Menger, 1999, 2006). Several theories have been proposed to explain this puzzle. In recent years one theory that has gained prominence is that employment in the arts provides workers with high wellbeing, which compensates them for the low pay they receive.

Using New Zealand Census and household survey data, this study seeks to examine and decompose the pay gap between the arts sector and the rest of the economy, and to investigate whether any remaining gap can be explained by differences in wellbeing between the two groups. We find that on average arts sector workers earn about 20% less than non-arts sector workers, however about half to two thirds of this pay gap can be explained by differences in observed characteristics between the two groups. While causality is not formally proved, we provide indirect evidence that employment in the arts sector has a positive impact on wellbeing. This additional wellbeing may be considered psychic income, which could be one reason why only people who gain sufficiently high wellbeing from artistic involvement stay in the artistic labour market despite the prospects of lower pay.

This study makes two main contributions to the literature. First, contrary to existing New Zealand studies which merely document a pay gap between the arts and non-arts sectors, this study examines how much of the gap can be explained by differences in observed characteristics between workers in the two sectors. Second, it expands the scant international evidence on the impact of arts sector employment on individuals' (subjective) wellbeing.

The rest of the paper proceeds as follows. Section 2 reviews the related literature. Data sources and descriptive statistics are presented in section 3, while methods are outlined in section 4. Sections 5 and 6 respectively present the results from decomposing the pay gap between the arts and non-arts sectors, and estimating the impact of arts employment on wellbeing. Section 7 concludes.

¹ The definition of 'arts worker' will be subsequently explored. At this stage, it suffices to say that the term generally refers to people who work in arts industries or arts occupations.

2 Literature review

This study draws from two strands of literature. Section 2.1 summarises the literature on whether arts workers suffer a pay disadvantage, and the extent to which that disadvantage can be attributed to observed factors. Section 2.2 then presents theories on why arts workers are willing to risk the prospect of lower pay while section 2.3 reviews the empirical literature on these theories. We also cover New Zealand studies related to employment in the arts sector (section 2.4) and explore how the arts sector is defined in the literature (section 2.5).

2.1 Pay gap between the arts sector and other sectors

Evidence suggests arts workers have low earnings on average which are below what would be suggested by their education and skills. Alper and Wassall (2006) investigate the extent to which artists fare less well than comparably educated workers in other professions. Using decennial US census data from 1950 to 2000, they estimate a Mincer-type earnings function for artists and another for professional and technical workers, whilst controlling for various individual characteristics such as education and work experience. The authors compare the predicted earnings of the average artist to the earnings they would have earned if they worked as a professional or technical worker. They find the earnings penalty the average artist faces because of their career choice varies across six census years from 6 to 51 percent of annual artistic earnings. Filer (1986) uses a similar methodology and finds that artists on average earn 10.3 percent less than non-artists. However, he argues that since earnings grow more rapidly for artists than for non-artists, there is no pay disadvantage in terms of lifetime earnings. The observation that artists earnings grow rapidly may be partly due to a selection effect, where the less successful artists with lower potential earnings drop out of the artistic labour force and only those with higher potential earnings remain. Alper and Wassall (2006) refute this by showing that artists' return from extra years of experience are comparable to that for the professional and technical workforce, implying the pay gap persists over time.

A related body of literature compares the earnings of arts graduates and graduates from other fields of study. Görlitz and Grave (2013) estimate Mincer wage equations with controls for individual, study-related, and job characteristics. They find that five years after graduating, German university graduates from arts and humanities have lower average monthly earnings compared to graduates from other fields of study. Blinder-Oaxaca decompositions show that the wage differentials are largely explained by differences in job characteristics, rather than individual and study-related characteristics. In contrast, Tran and Vu (2020) find that, for Vietnamese university graduates, arts and humanities offer higher earnings than more technically and

quantitatively oriented fields, such as engineering, science, and business, even after controlling for individual characteristics.² Although pay gaps between arts and non-arts graduates do not fully translate into pay gaps between arts and non-arts workers, these results highlight the possibility of heterogeneous impacts across countries.

2.2 Theories on the labour supply of arts workers

A puzzling finding in the literature is the oversupply of arts workers in a labour market characterised by adverse labour market outcomes. In addition to receiving a pay disadvantage, arts workers suffer from above-average unemployment and constrained underemployment, such as non-voluntary part-time work and intermittent work (Steiner & Schneider, 2013). This means that many arts workers are unable to support themselves from solely working in the arts sector and must pursue other part-time work in a non-arts sector. Despite these employment conditions, the literature has consistently documented an excess supply of artists (Menger, 1999, 2006).

This begs the question as to why people become arts workers. Early theoretical explanations include those by Santos (1976) and Rosen (1981), who propose that the possibility of high rewards and becoming famous in the arts sector attracts risk-seeking individuals, who are willing to trade off a large chance of low earnings for a small chance of significantly higher earnings. Towse (2006) offers an alternative explanation by assuming that artists are irrational and overestimate their likelihood of success in the market. Recent studies have shifted away from this thinking and have placed more emphasis on artistic work itself as the main driver for entering arts employment.

A favoured explanation as to why people become arts workers is the concept of ‘psychic income’ which motivates artistic employment (Filer, 1986; Papandrea & Albon, 2004). Arts workers may choose to work in a lower-paying job because they elicit substantial non-pecuniary benefits from artistic activity which they value more than the foregone income they could have earned by spending that time on non-artistic work (Papandrea & Albon, 2004). In other words, artists may gain utility from artistic activity, rather than disutility as assumed in standard economic theory. This gain in utility is commonly referred to as a ‘compensating wage differential’.

Throsby (1994) models the labour supply of artists based on this hypothesis. In his work-preference model, individuals are driven by a desire to create art, with their principal objective being to maximise the time spent working at their artistic occupation. Bringing 1988 Australian survey data to his model, Throsby (1994) finds that many artists are willing to forego higher income

² We speculate that this could be driven by the foreign language wage premium. In Poland, where over half of the population speak at least one foreign language at an intermediate or advanced level, Liwiński (2019) finds that advanced command of a foreign language yields a wage premium of 11% on average. It is possible that in Vietnam, a fast-developing country where foreign language proficiency is less prevalent, the wage premium commanded by proficient foreign language speakers, who are often graduates with Humanities degrees, would be higher.

to work in the artistic labour market. Out of the artists for whom the non-arts wage was higher than the arts wage, 98% percent spent time on artistic work even though they could have earned more by supplying all of their labour to the non-artistic market. This finding is consistent with the idea that artists derive utility from artistic activity and are less concerned with income than other workers. However, Throsby (1994) acknowledges that his model is a heavily simplified representation which neglects many aspects of the artistic labour market in the real world.

2.3 Arts employment and wellbeing

Extending the theory that artists derive substantial non-pecuniary benefits from artistic work is the notion that employment in the arts provides workers with high wellbeing and job satisfaction, which compensates them for the low pay they receive. There is strong evidence that employment in general can be beneficial for a worker's physical and mental wellbeing (Waddell & Burton, 2006; Modini et al., 2016). Employment in the arts may offer even higher wellbeing and job satisfaction compared to employment in other sectors due to certain characteristics of the artistic work environment. For example, artistic work may induce high job satisfaction because it involves a high level of personal autonomy, a wide variety of work, the opportunity to feel self-actualised at work, and an idiosyncratic way of life (Menger, 1999). Personal autonomy frequently arises in the literature as a key reason why arts workers may enjoy higher levels of job satisfaction. If arts workers can freely choose their work activities and the ways in which they perform, they are more likely to find their work meaningful and less of an obligation (Erdogan et al., 2012). Artists are also more often self-employed than non-artists, and self-employment has been found to positively affect job satisfaction because it involves greater independence and autonomy (Benz & Frey, 2008).

However, some characteristics of the artistic work environment may negatively impact wellbeing and job satisfaction. For example, the pressure to reach high standards, irregular work, the perceived lack of value placed on artistic work, and inadequate financial rewards for artistic work have been reported as contributing to a greater likelihood of developing mental health problems (Shorter et al., 2018). The theme that creative professionals have a higher propensity to develop mental health problems such as anxiety and depression is not uncommon in the literature, however causal evidence is at best mixed and depends on the creative profession in question (Bille et al., 2013).

Earlier work in this literature has focussed on job satisfaction rather than general wellbeing. Steiner and Schneider (2013) show that German performing artists are more satisfied with their job than non-artists based on pooled cross-sectional data. Procedural aspects of artistic work such

as autonomy, increased variety, and on-the-job learning are cited as possible factors contributing to the artists' high job satisfaction. However, the difference in job satisfaction becomes statistically insignificant when fixed-effects and random-effects models are used, meaning it cannot be ruled out that the increased happiness of artists stems from time-invariant factors. For example, special personality traits may cause artists to be more satisfied with their jobs, irrespective of the occupation they have. The authors also test the hypotheses that artists derive utility from work and less utility from income than non-artists, as put forward by Throsby's (1994) work-preference model. They find that the effect of working hours on job satisfaction is positive for artists and negative for non-artists. The effect of income on job satisfaction is positive for both artists and non-artists, however the effect is substantially smaller for artists. Hence, when using job satisfaction as a proxy for utility, these findings corroborate the hypotheses of the work-preference model.

Bille et al. (2013) employ a similar methodology when estimating the impact of artistic employment on job satisfaction. Using British household data from 2001-2008 and Swiss household data from 1999-2010, they estimate pooled cross-section regressions which reveal artists have higher job satisfaction than non-artists, even when controlling for socio-economic influences such as income, working hours, and age. The regression results are robust to the inclusion of individual fixed effects, suggesting unobserved time-invariant factors (such as personality differences) which are correlated with greater happiness and lead individuals to become artists, are not the causes of artists having higher job satisfaction. Including further controls for self-employment, flexible working hours, and the possibility to work from home reduces the size of the effect of being an artist on job satisfaction. This highlights that procedural aspects of artistic work are channels for job satisfaction. The authors argue the remaining effect after controlling for these work aspects can be attributed to the satisfaction artists obtain from creating art.

The study by Fujiwara and Lawton (2016) is the first to analyse the relationship between employment in the creative sector and general wellbeing. It uses data from the 2011 and 2012 waves of the Annual Population survey, a repeated annual cross-sectional survey of UK households containing broad wellbeing measures such as life satisfaction, eudemonic wellbeing (feeling things done in life are worthwhile), and happiness. Following UK government definitions, the authors identify 30 creative occupations and pool them under nine creative industries groups. Using OLS, the authors regress subjective wellbeing on dummies for the nine creative industries and a set of controls for the main determinants of subjective wellbeing, including age, gender, marital status, ethnicity, and income. Jobs in crafts, design, performing, and visual arts are associated with higher

levels of subjective wellbeing than non-creative jobs. However, jobs in marketing and advertising, film, TV, IT, and publishing are associated with lower levels of subjective wellbeing than non-creative jobs. The authors assert that the creative jobs which are associated with higher wellbeing are those which have a strong emphasis on creativity and more closely fit the characteristics of traditional creative jobs. For example, jobs in crafts, design, and visual arts typically involve a high level of autonomy, freedom, and control. In contrast, jobs in public relations, advertising, and computer programming, which are typically more associated with the information or knowledge economy, may involve longer hours, higher stress, and lower autonomy, which subsequently leads to lower wellbeing. These mixed results highlight the dangers of being too inclusive when defining creative jobs.

2.4 New Zealand studies on arts sector employment

Stroombergen (2015) provides an overview of the economic characteristics of the arts sector in New Zealand. Using data from Statistics New Zealand's Integrated Data Infrastructure (IDI), they find that employment in arts-related industries accounted for only 0.56% of total employment in 2012/13. Average annual earnings for those employed in arts-related industries was \$35,700 in 2009/10, which was substantially lower than the economy wide average of \$49,800. The author defines the arts sector rather conservatively and notes that his paper reflects findings for the not-for-profit arts-related sector, rather than the whole arts sector. Taking a broader approach to defining the creative sector by including a more extensive list of industries and occupations, NZIER (2009) finds that the sector accounted for 6.3% of total employment in 2006. Annual income for creative sector workers was estimated to be \$52,000, which is significantly above the \$40,700 average for all employed persons. The conflicting findings between the Stroombergen (2015) and NZIER (2009) studies are likely being driven by the fact that NZIER (2009) considers a much larger number of occupations and industries to be part of the arts sector, as indicated by the larger estimate of the share of the arts sector in total employment. This highlights the sensitivity of employment and income estimates to the definition of the of arts sector. We revisit this issue in the next section.

Creative New Zealand (2019) surveys 1,477 creative professionals to better understand career sustainability in the arts and creative industries in New Zealand. They find that creative professionals earn median annual income of \$35,800, which is considerably less than the \$51,800 that other professionals earn, but comparable to the \$37,900 that self-employed professionals earn. Furthermore, only \$15,000 of the income that the median creative professional earns comes from creative work. 55% of creative professionals engage in work outside of the creative sector,

implying the need for many to supplement their artistic income from additional sources to make ends meet. 53% of creative professionals are satisfied with their career, which is lower than the national average of 66%. The most common reason creative professionals give for being satisfied with their career is that they love the work. Low incomes and limited opportunities for career growth arise as common reasons for career dissatisfaction. There is a strong link between career satisfaction and personal wellbeing, with 90% of those who are very satisfied with their career also feeling satisfied with life. Creative professionals most satisfied with life tend to be more advanced in their careers and earning a high income. In contrast, those less satisfied are more likely to be starting out in their careers, earning a low income, and doing more non-creative work. These relationships highlight some potential drivers of career satisfaction and wellbeing within the arts sector.

2.5 Definitions of the arts worker

Defining who is an arts worker and who isn't poses a challenge. The literature has identified a plethora of ways to define artists, but no consensus has been achieved amongst scholars as to which way is the most correct or appropriate (Lena & Lindemann, 2014). Some definitions are more objective (e.g., time spent on artistic work, income received from artistic work), and some are more subjective (e.g., self-identification as an artist).

A common approach in the empirical literature is to define an arts worker as someone whose *main occupation* is artistic and to subsequently decide which occupations are to be considered as artistic (Steiner & Schneider, 2013; Bille et al., 2013; Fujiwara & Lawton, 2016). This is typically done at the discretion of the researcher, for example Stroombergen (2015) identifies artistic occupations based on the criterion that they involve creative expression for an original artistic work or performance. Occupations are not considered artistic if the author is not confident that the occupation is overwhelmingly arts-related.

One advantage of defining arts workers at the occupation level is the ability to include workers in arts-related occupations from both arts and non-arts related industries, and to exclude those who are not doing arts-related work within an arts-related industry. Another advantage is that it allows the researcher to disaggregate the arts sector into distinctive creative occupation groups. Fujiwara and Lawton highlight the danger of treating all artistic occupations the same by placing them under one group in regression analysis. They show that jobs not traditionally viewed as creative but which are categorised as creative by the UK government, such as marketing and advertising, information technology, and publishing, are associated with lower levels of wellbeing. On the other hand, jobs with a stronger emphasis on creativity, such as crafts, design, and

performing and visual arts, are associated with higher levels of wellbeing. These heterogeneous impacts of arts employment on wellbeing demonstrate that not all artistic occupations have the same impact on wellbeing and which occupations one defines as being artistic can have a significant effect on estimation results.

A problem with this way of defining arts workers is that it only includes those who are successful enough to make being an artist their main occupation (Steiner & Schneider, 2013). Some arts workers hold other non-artistic jobs which may take up a significant proportion of their time and provide a significant proportion of their total income. When main occupation is a function of time spent or income received, such workers may be defined as non-arts workers if their non-artistic work takes up more of their time or provides a greater proportion of total income than their artistic work. This may bias estimations of the impact of arts employment on wellbeing because the 'successful' arts workers may be happier in general than those arts workers who work multiple jobs and spend less time doing artistic work.

Alternatively, arts workers can be defined as those who mainly work in an arts-related *industry*. This definition is problematic in that it includes those working in a non-arts related occupation within an arts-related industry while excluding those working in an arts-related occupation within a non-arts-related industry. If the focus is on the wellbeing of people engaged in artistic activities, then such definition is inappropriate. However, an advantage of it is that it can be applied to firm-level data and linked employer-employee data, where industries for firms are routinely collected while occupations of employees are not.

The occupation and industry definitions of arts workers can be brought together to define the overarching creative workforce. The creative workforce can be split into three groups of workers based on different occupation-industry combinations (NZIER, 2009):

- Creative specialists: those who have a creative occupation within a creative industry
- Non-creative support workers: those who have a non-creative occupation within a creative industry
- Embedded workers: those who have a creative occupation in a non-creative industry

The first two groups make up the creative sector, whilst the first and third groups involve arts workers (Wilson, 2020). When estimating the size of the creative workforce, studies may choose to focus on creative industries (i.e. creative specialists and non-creative support workers), on creative occupations (i.e. creative specialists and embedded workers), or on all three groups.

2.6 Summary

Many people are willing to become arts workers despite the prospect of lower pay. A possible explanation for this puzzle is that arts workers are more satisfied with their jobs and have greater wellbeing than other workers. This is consistent with the conjecture that arts workers gain utility or 'psychic income' from their work, which exceeds any gains in income they could make from switching to a non-arts occupation. Procedural aspects of artistic work, such as autonomy and variety of work, arise as channels through which arts employment positively impacts job satisfaction and wellbeing. However, empirical evidence suggests that being employed in the arts does not guarantee higher wellbeing: some occupations deemed as artistic are associated with lower wellbeing. Empirical evidence on these issues can be sensitive to how the arts sector is defined. No New Zealand studies have examined why arts workers have a pay disadvantage compared with non-arts workers, and what impact arts employment has on wellbeing. Very few international studies have examined the relationship between arts employment and general wellbeing. This study seeks to fill those gaps.

3 Data

Our main data source is the Household Economic Survey (HES) 2018/19. We use the HES to estimate the difference in earnings and wellbeing between arts and non-arts workers. For robustness checks two additional data sources are used: the General Social Survey (GSS) 2014-2018 and the Household Labour Force Survey (HLFS) June 2020. We also use the 2018 Census of Population and Dwellings to provide a population benchmark for the descriptive analysis. These data sources are accessed using Statistics New Zealand's IDI.

3.1 Data sources

3.1.1 Household Economic Survey 2018/19

The HES is a major survey conducted by Statistics New Zealand to collect information on household income, savings, and expenditure, as well as demographic information on individuals and households. Since its inception in 1973, the HES has undergone several redevelopments, most importantly in 2006/07 and 2018/19. Currently the HES has three components: HES Income, HES Expenditure, and HES Net worth. Each survey is usually run from July to June. We use HES Income, which has been run annually since 2006/07. It is the only large-scale household survey in New Zealand that routinely collects detailed information on both labour market characteristics and subjective wellbeing. The HES records income from all sources for each individual aged 15 or over, allowing for labour income to be separated from non-labour income. Subjective wellbeing is measured based on the question "How do you feel about your life right now?", with five possible responses: very dissatisfied, dissatisfied, neither dissatisfied nor satisfied, satisfied, very satisfied. We assign numerical values 1 (very dissatisfied) to 5 (very satisfied) to align with other data sources (where a larger value represents higher life satisfaction).

We use the HES 2018/19, rather than other survey years, for three reasons. First, the industry and occupation codes in previous survey years are at the 1-digit or 3-digit level, which is not detailed enough to accurately define an arts worker.³ Moreover, since the 2018/19 redevelopment, the sample size for HES Income is approximately 4-5 times bigger than before.⁴ Second, the survey was conducted prior to the Covid-19 pandemic so is not affected by lockdowns and related influences on arts activities and wellbeing. Third, for more recent survey years, industry codes are available only for paid employees and occupation codes are available only for self-employed persons. This means if the industry definition is used to define an arts worker, self-

³ The IDI uses Australian and New Zealand Standard Industrial Classification 2006 codes (ANZSIC 2006) and Australia and New Zealand Standard Classification of Occupations codes (ANSZCO). They are defined at the 6-digit level, with similar occupations and industries grouped together at the 3-digit level.

⁴ In order to get better representation of households with low income or high material deprivation, the sample size for the core HES survey was boosted (from 3,700 in 2016/17 to over 21,000 households in 2018/19).

employed persons would be excluded from the sample. Since arts workers are more likely to be self-employed than non-arts workers (Benz & Frey, 2008), excluding self-employed workers may bias our results. Alternatively, using the occupation definition means paid employees would be excluded from the sample, which would significantly reduce the sample size. By contrast, the HES 2018/19 has 6-digit occupation codes for both paid employees and self-employed workers, which circumvents these issues.

The main limitation of the HES 18/19 is the smaller sample size for the life satisfaction variable. The life satisfaction question was only asked of one person in each household, whilst questions relating to income and demographic variables were asked of all adults in each household. This means the sample size is roughly halved when using life satisfaction as the dependent variable in the regression analysis. Another related limitation is that the life satisfaction question is answered on a relatively narrow scale of 1 to 5. Consequently, there is less variation/dispersion in the distribution of life satisfaction scores compared to the 0 to 10 scale used in the GSS and HLFS surveys.

3.1.2 General Social Survey 2014-2018

The GSS is a household survey which provides a cross-domain perspective of social wellbeing for the population of New Zealand. Every two years, the GSS gathers data on socioeconomic circumstances, such as labour force status and income, as well as on different aspects of New Zealander's lives, such as life satisfaction, health, housing, human rights, and relationships. We pool the data from the 2014, 2016, and 2018 survey waves to obtain a bigger sample of arts workers, since the sample size of a single wave is too small. We exclude data from the 2020 wave because the sample size is significantly smaller than previous waves and collection occurred during the midst of the Covid-19 pandemic.

The main advantage of the survey is the broad range of wellbeing measures available, which we use to estimate the impact of arts employment on different dimensions of wellbeing. These include life satisfaction, sense of purpose, mental wellbeing, and job satisfaction. Life satisfaction and sense of purpose are both measured on a scale from 0 to 10. Mental wellbeing is based on the WHO-5 wellbeing index, where a score of 0 represents the worst imaginable mental wellbeing and a score of 100 represents the best imaginable mental wellbeing. Job satisfaction is measured on a scale of 1 to 5. The survey questions used to define these wellbeing variables are stated in Appendix Table 15.

Occupation and industry codes in the GSS are provided at the 6-digit level for all types of employment. A downside is that the income variable measures total gross income, which cannot

be split into labour and non-labour income. Furthermore, the income data are banded rather than continuous.

3.1.3 Household Labour Force Survey June 2020

The HLFS is a large representative survey of the resident population, designed to produce a range of official statistics on employment. Detailed data on income are collected in the Income Supplement in the June quarters. Between the June 2020 and March 2021 quarters, a supplement to the HLFS asked participants a selection of wellbeing questions. This, alongside the rich data on employment and income, makes the HLFS June 2020 quarter survey an appropriate alternative data source for our analysis.

The HLFS June 2020 contains detailed data on income, employment, and wellbeing. Income is reported as weekly labour income from all jobs, which we annualise in order to make it comparable with the income measures from the other data sources. Industry and occupation codes are available at the 6-digit level for all types of employment. The life satisfaction, sense of purpose, and mental wellbeing measures are available, which all use the same scales as their counterparts in the GSS.

The main disadvantage of the HLFS is that wellbeing data were collected at the time when the impact of the Covid-19 pandemic on the New Zealand economy was sizeable.⁵ Employment in the arts and cultural sectors was likely more severely affected by the economic consequences of the disease and the lockdowns than other sectors, meaning the findings for this period might not be generalisable to other periods. Furthermore, the HLFS June 2020 Wellbeing Supplement has a smaller sample size of employed persons than the main HLFS June 2020 survey, which limits the statistical power of the analysis.

3.1.4 Census of Population and Dwellings 2018

The Census provides the official count of how many people and dwellings there are in New Zealand. It is usually carried out every five years. It has the advantages of providing near full coverage of the NZ population and having detailed data on industry and occupation. We use the 2018 Census because it provides the most recent snapshot of New Zealand. To conduct descriptive analysis of the arts sector, we use variables that pertain to the demographics and labour market characteristics of employed individuals, such as sex, ethnicity, migrant status, age, highest qualification achieved, region, income, full-time/part-time status, and employment type (paid

⁵ The HLFS June 2020 quarter was in the field between mid-April and mid-July. New Zealand was in Alert level 4 and Alert level 3 lockdown during 26 March to 13 May and then in Alert level 2 until 8 June, see <https://covid19.govt.nz/about-our-covid-19-response/history-of-the-covid-19-alert-system/>

employee, self-employed, or other). Industry and occupation codes are reported at the 6-digit level.

There are three limitations of the Census data. First, like the GSS, income in the Census is banded and measures total gross income rather than labour income. Second, the Census does not contain any data on wellbeing. Third, the 2018 Census has been subject to considerable criticism due to ‘unacceptably low’ response rates.⁶ Therefore, we use Census data mainly to cross-check our baseline analysis.

3.2 Defining the arts sector

As discussed in section 2.5, an important question is how to define the arts sector. We follow previous studies by defining an arts worker as a worker whose primary occupation is arts-related. We use this definition for two reasons. First, we focus on primary occupation and ignore side occupations. It is intuitive to define employment-related variables based on the occupation the individual spends the most time working in (i.e. the primary occupation) because this will likely drive earnings and wellbeing more than any side occupation. This means our sample considers workers with non-arts-related primary occupations and arts-related secondary occupations as non-arts workers. Since a relatively small number of workers fall under this category, this sample criterion is unlikely to significantly affect our results.

Second, we focus on occupation rather than industry due to the availability of occupation codes across our four data sources. This means our analysis does not capture everyone who is employed within the arts sector (i.e. we study creative specialists and embedded workers and exclude non-creative support workers). This is not a major drawback because most of the literature defines arts workers at the occupation level. Furthermore, using the occupation definition means the impact of arts employment is being driven by direct engagement in arts-related work activities, which may affect wellbeing differently to engagement in non-arts-related work activities within an arts-related industry.

We take a relatively inclusive approach to selecting which occupations are to be considered as part of the arts sector. Using ANZSCO codes, our broad list of 90 arts-related occupations includes traditional arts roles such as actor, painter, and musician, as well as contemporary arts roles such as marketing specialist, content creator, and web designer.⁷ Since the literature shows that estimates relating to arts worker earnings and wellbeing are sensitive to the number and

⁶ See <https://www.stats.govt.nz/methods/2018-census-collection-response-rates-unacceptably-low>

⁷ This list was provided to us by Toi Mai, the Workforce Development Council for the creative, cultural, recreation and technology sectors in New Zealand. This means the selection of occupations considered to be arts-related is based on Toi Mai’s industry knowledge and not the opinion of the authors.

variety of occupations included in the arts sector definition, we also use a more restrictive (narrow) list of 32 arts occupations.⁸ This list mainly comprises traditional arts occupations and excludes occupations related to broadcasting, marketing, recreation and conservation. The broad and narrow occupation lists are presented in Appendix Table 1 and Appendix Table 2 respectively.

3.3 Descriptive analysis

In this section, we compare the demographic and job characteristics of arts workers and non-arts workers. We also compare mean earnings and life satisfaction scores to determine if there are gaps in these outcomes between the two worker types. Our focus is on the descriptive statistics using the HES data, with the Census statistics providing population benchmarks. Descriptive statistics using the HLFS and GSS data are presented in Appendix Table 3 and Appendix Table 4 respectively. For parts of the analysis, we restrict our sample of workers to professionals and technicians only⁹ because most arts occupations fall into these occupation groups and the human capital characteristics of arts workers are more similar to professionals and technicians than to the general work force.¹⁰

Table 1 compares the characteristics of arts workers and non-arts workers (i.e. all other workers of any occupation group) within the HES and Census. In both data sources, arts workers account for 3.7% of the total work force.¹¹ In the HES, arts workers are more likely than non-arts workers to be female, NZ European, have a Bachelor's degree or above, living in the Auckland region, working part-time and self-employed.

Consistent with the notion that most arts occupations fall under the professional and technicians occupation groups, arts workers are substantially more likely to be professionals than non-arts workers, and also more likely to be technicians. Finally, arts workers work fewer hours and live in smaller households than non-arts workers on average.

Although the patterns are broadly similar, there are some small differences between the HES and Census descriptive statistics. Arts workers in the HES are more likely to have a post-school qualification and to be self-employed, and less likely to have a school qualification than arts workers in the Census. The GSS descriptive statistics are broadly similar to the HES statistics, whilst the HLFS statistics contains some noticeable differences.

⁸ This list was provided to us by the Ministry for Culture and Heritage.

⁹ There are eight 1-digit occupational groups: managers, professionals, technicians and trades workers, community and personal service workers, clerical and administrative workers, sales workers, machinery operators and drivers, and labourers.

¹⁰ Alper and Wassall (2006) note that earlier work comparing artists to the general work force has been criticised because one would expect artists to be more comparable to workers of occupations where more education is required.

¹¹ All proportions based on IDI data reported in this study have been calculated using rounded counts. To protect confidentiality the underlying counts have been weighted and rounded while unweighted counts have been randomly rounded to base 3.

Table 1: Worker characteristics by data source: HES and Census

	HES		Census	
	Arts	Non-arts	Arts	Non-arts
Female	0.557	0.468	0.591	0.473
Ethnicity				
NZ European	0.785	0.670	0.807	0.699
Māori & Pacific	0.063	0.118	0.053	0.122
Asian	0.139	0.180	0.115	0.153
MELAA & Other	S	0.027	0.025	0.025
Migrant	0.316	0.356	0.321	0.335
Age				
Under 25	0.114	0.125	0.117	0.135
25 to 34	0.278	0.240	0.283	0.232
35 to 44	0.241	0.218	0.247	0.212
45 to 54	0.228	0.231	0.214	0.233
55 and above	0.127	0.186	0.139	0.187
Highest qualification				
No qualification	0.038	0.119	0.036	0.100
School qualification	0.177	0.273	0.271	0.352
Post-school certificate or diploma	0.316	0.283	0.219	0.200
Bachelor's degree	0.278	0.185	0.252	0.172
Postgraduate degree	0.190	0.134	0.189	0.120
Missing	S	0.006	0.033	0.055
Partnership status				
Has a partner	0.696	0.697	0.613	0.577
Does not have a partner	0.304	0.303	0.276	0.257
Missing	0	0	0.111	0.166
Dependent child status				
Has a dependent child	0.456	0.446	0.545	0.506
Does not have a dependent child	0.392	0.401	0.386	0.385
Missing	0.152	0.152	0.069	0.108
Region				
Auckland	0.468	0.350	0.444	0.340
Wellington	0.127	0.112	0.152	0.113
Canterbury	0.114	0.135	0.113	0.134
Rest of North Island	0.190	0.300	0.203	0.301
Rest of South Island	0.089	0.103	0.088	0.112
Full-time/part-time status				
Full-time	0.709	0.820	0.754	0.807
Part-time	0.278	0.177	0.246	0.193
Missing	S	0.003	0	0
Employment type				
Paid employee	0.582	0.796	0.661	0.847
Employer	0.063	0.058	0.055	0.055
Self-employed	0.329	0.108	0.278	0.088
Missing	0.038	0.038	0	0
Multiple jobs	0.076	0.056	0.105	0.066
Occupation type				
Professional	0.709	0.220	0.726	0.217
Technician	0.228	0.131	0.203	0.121
Other	0.051	0.649	0.071	0.661
Mean labour income	56,900*	61,700		
Mean total income	62,400	65,100	55,000***	56,600
Mean age	39.13***	40.69	39.34***	40.67
Mean total hours worked	35.36***	38.97	35.54***	38.18
Mean life satisfaction score	4.13	4.10		
Observations	876	23,292	81,498	2,146,365

Sources: Household Economic Survey 2018/19, Census of Population and Dwellings 2018

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1.

S: Suppressed due to low sample counts. Demographic and job characteristics of arts and non-arts workers in the full sample. The broad definition of arts workers is used.

For example, arts workers in the HLFS are more likely to have a Bachelor's degree and to be a paid employee than arts workers in the HES. They are also less likely to have a postschool certificate, live in Auckland, and be self-employed.

Using the HES data, we find that mean labour income is lower for arts workers than for non-arts workers (\$56,900 compared to \$61,700), and mean total income (i.e. labour income plus other income) is also lower for arts workers than for non-arts workers (\$62,400 compared to \$65,100).¹² The gap in total income is smaller than the gap in labour income because total income includes government and private transfers, which are more likely to be directed to lower earners. The earnings gap of about \$5,000 (8%) is modest compared to the gaps in Stroombergen (2015) and Creative New Zealand (2019), who both find that arts workers earn 28-31% less than non-arts workers. The Census data suggests that there is only a relatively small gap in total income between arts workers and non-arts workers. The smaller gap using Census data compared to that documented using the HES data could be because Census income data are banded and right-censored at \$150,001 (so differences within each band and above the top-code are ignored).

In relation to wellbeing, the HES data show that the mean life satisfaction score for arts workers (4.13 out of 5) is only slightly higher than the mean score for non-arts workers (4.10), despite arts workers having lower mean income. Appendix Table 3 shows that using a 0-10 scale, the mean life satisfaction score is slightly higher for arts workers (7.81 vs 7.75) based on GSS data but identical between the two groups (both 7.92) based on HLFS data.

Table 2 replicates Table 1 but restricts the sample to professionals and technicians only. The restriction reduces the HES and Census arts samples by 5-7% but reduces the non-arts samples by two-thirds, thus arts workers make up 9.2% of the professional and technician work force.

As in Table 1, arts workers are more likely than non-arts workers to be female, NZ European, living in the Auckland region, working part-time, and self-employed. They also work fewer hours and live in smaller households on average. Unlike Table 1, they are less likely to be migrants.

Most notably, while the general arts workers have much higher qualifications than the general non-arts workers (Table 1), the educational profile of the professional and technician arts workers is broadly similar to that of non-arts professionals and technicians (Table 2). Again, there are some differences between the HES and Census statistics. Arts workers in the HES are less likely to have a school qualification and more likely to have a postschool certificate qualification and to be self-employed. Workers are broadly similar between the HES and GSS, whilst arts workers in the HLFS are somewhat different to arts workers in the HES.

¹² All income measures used in this study are gross (i.e. before taxes and compulsory payroll deductions are taken) and annual.

Table 2: Worker characteristics by data source (professionals and technicians): HES and Census

	HES		Census	
	Arts	Non-arts	Arts	Non-arts
Female	0.560	0.409	0.582	0.424
Ethnicity				
NZ European	0.773	0.694	0.808	0.721
Māori & Pacific	0.053	0.082	0.051	0.085
Asian	0.147	0.188	0.116	0.165
MELAA & Other	S	0.030	0.025	0.028
Migrant	0.333	0.400	0.322	0.368
Age				
Under 25	0.120	0.093	0.112	0.098
25 to 34	0.280	0.271	0.284	0.263
35 to 44	0.253	0.236	0.251	0.235
45 to 54	0.227	0.224	0.216	0.228
55 and above	0.120	0.175	0.137	0.176
Highest qualification				
No qualification	S	0.060	0.035	0.052
School certificate	0.160	0.143	0.266	0.217
Post-school certificate or diploma	0.320	0.306	0.220	0.219
Bachelor's degree	0.293	0.259	0.255	0.256
Postgraduate degree	0.187	0.229	0.192	0.216
Missing	S	S	0.032	0.040
Partnership status				
Has a partner	0.707	0.724	0.621	0.616
Does not have a partner	0.293	0.276	0.270	0.244
Missing	0	0	0.109	0.140
Dependent child status				
Has a dependent child	0.453	0.439	0.541	0.515
Does not have a dependent child	0.387	0.404	0.392	0.397
Missing	0.160	0.156	0.067	0.088
Region				
Auckland	0.467	0.355	0.446	0.353
Wellington	0.120	0.130	0.152	0.133
Canterbury	0.133	0.138	0.112	0.135
Rest of North Island	0.200	0.284	0.204	0.279
Rest of South Island	0.080	0.095	0.085	0.100
Full-time/part-time status				
Full-time	0.720	0.883	0.764	0.867
Part-time	0.267	0.115	0.236	0.133
Missing	0.987	0.997	0	0
Employment type				
Paid employee	0.573	0.820	0.650	0.853
Employer	0.067	0.045	0.056	0.043
Self-employed	0.347	0.112	0.289	0.099
Missing	S	0.023	0.006	0.004
Multiple jobs	0.080	0.052	0.104	0.066
Occupation type				
Professional	0.747	0.626	0.781	0.642
Technician	0.253	0.374	0.219	0.358
Mean labour income	57,900***	71,700		
Mean total income	63,600***	74,900	56,200***	66,500
Mean age	39.16***	40.74	39.41***	40.80
Mean total hours worked	35.40***	39.99	35.85***	39.36
Mean life satisfaction score	4.14	4.16		
Observations	831	8,250	75,735	726,927

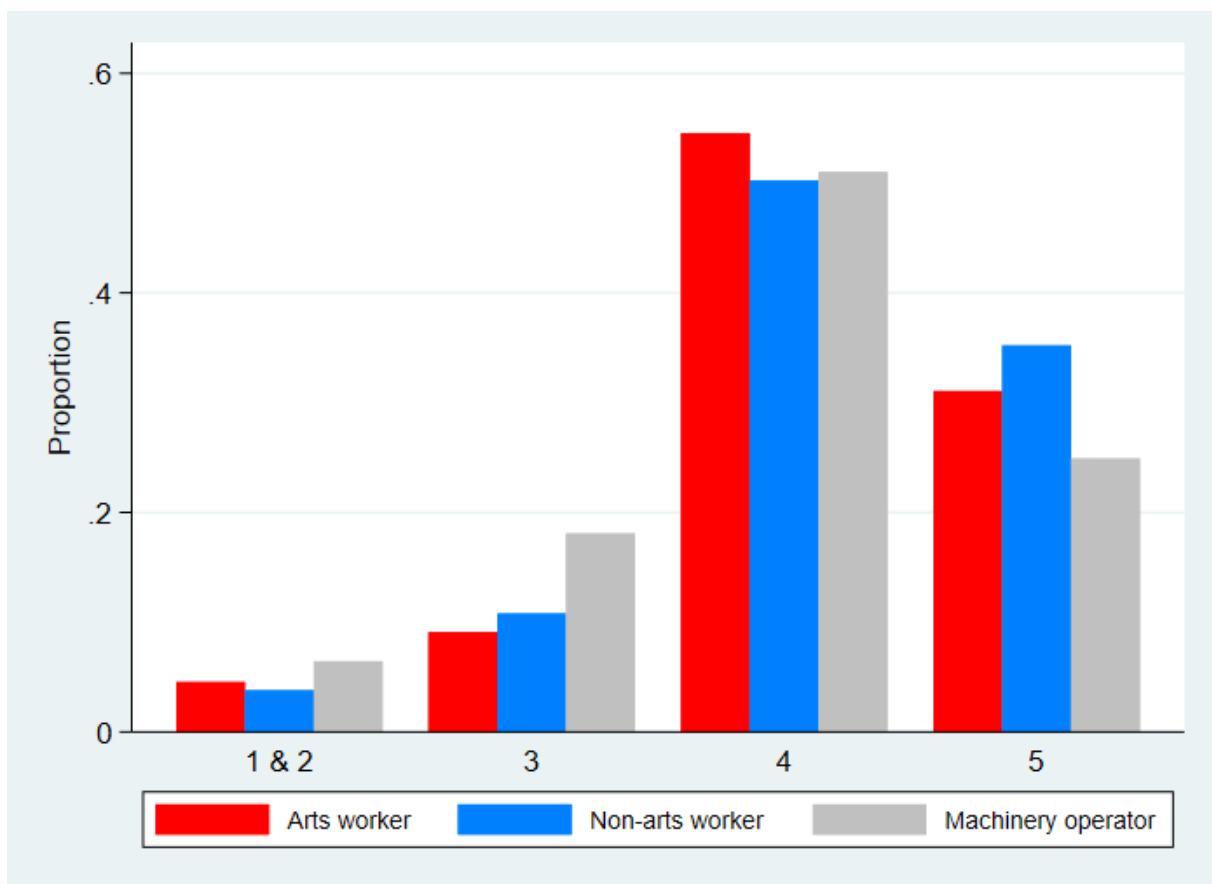
Sources: Household Economic Survey 2018/19, Census of Population and Dwellings 2018

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1.

S: Suppressed due to low sample counts. Demographic and job characteristics of arts and non-arts workers in the sample of professionals and technicians. The broad definition of arts workers is used.

Similar to Table 1, Table 2 shows that mean labour and total income is lower for arts workers than for non-arts workers. Restricting the HES sample to professionals and technicians leaves mean income for art workers largely unchanged, however mean income for non-arts workers increases by about \$10,000, resulting in a significantly wider earnings gap between the two groups of workers. Among professionals and technicians, mean labour income for arts workers is \$57,900, compared with \$71,700 for non-arts workers (see Table 2). However, this does not coincide with a wider gap in life satisfaction, with both types of workers having a mean life satisfaction score of approximately 4.15. Similar patterns are found when using the HLFS and GSS data (Appendix Table 4): restricting the sample leads to a wider earnings gap but not a wider life satisfaction gap.

Figure 1: Distribution of life satisfaction score by worker group (HES)



Source: Household Economic Survey 2018/19

Notes: This figure shows the proportion of workers who reported each score within the 1 to 5 life satisfaction scale, where 1 is very dissatisfied and 5 is very satisfied. The proportions reporting scores of 1 and 2 were combined to protect confidentiality. The arts worker and non-arts worker groups contain professionals and technicians only.

Figure 1 plots the distribution of life satisfaction scores for arts workers and non-arts workers. As a comparison, we also plot the distribution of life satisfaction scores for machinery operators, since this group is used as a comparison group in later analyses. The distribution between arts workers and non-arts workers is relatively similar, whilst the distribution for

machinery operators is noticeably different. Arts workers and non-arts workers are similarly likely to report any score between 1 and 5, whilst machinery operators are more likely to report scores of 3 or below and less likely to report a score of 5.¹³

Table 3 compares arts workers and non-arts workers (all occupation types) across our two arts sector definitions using the Census data. Using the broad definition, arts workers account for 3.7% of the work force and 9.4% of professionals and technicians, compared with 0.7% and 1.9% respectively using the narrow definition. Average demographic characteristics (sex, ethnicity, migrant status, age, qualification, partnership status, and dependent child status) are similar across the two definitions. In contrast, differences in job characteristics are apparent. For example, arts workers defined using the broad definition are substantially more likely to be paid employees and substantially less likely to be self-employed than arts workers defined using the narrow definition. Furthermore, arts workers defined using the broad definition are more likely to be technicians, and less likely to be working part-time and multiple jobs than arts workers defined using the narrow definition. These differences highlight the sensitivity of the arts worker profile to arts sector definition. Since non-arts workers make up 96-99% of the work force, changing the definition of arts workers makes little difference to the average characteristics of non-arts workers.

Mean total income for workers in the 'narrow' arts sector is \$10,800 lower than that for workers in the broader arts sector, whilst mean total income for non-arts workers remains unchanged. Consequently, the income gap is much wider when the narrow definition is used.

The fall in mean total income for arts workers suggests that the broad definition contains relatively higher paying occupations than those in the narrow definition. This highlights how the selection of occupations to be considered as arts-related is a non-trivial exercise which may significantly influence our empirical results. Unfortunately, we cannot formally test the sensitivity of our results to definition differences due to the lack of statistical power when using the narrow definition. Instead, we note that our empirical results reflect the impact of working in a broad range of arts occupations, which may be different to working in a narrowly-defined range of arts occupations.

¹³ Appendix Figure 1 plots the distribution of life satisfaction scores using the GSS data. Despite using a wider response scale, the distribution is very similar to the distribution in Figure 1. Arts workers and non-arts workers (professionals and technicians only) are similarly likely to report any score between 0 and 10 (except for a score of 7), whilst machinery operators are more likely to report scores of 5 or 6 and less likely to report scores of 8 and 9.

Table 3: Worker characteristics by arts worker definition

	Broad		Narrow	
	Arts	Non-arts	Arts	Non-arts
Female	0.591	0.473	0.547	0.477
Ethnicity				
NZ European	0.807	0.699	0.836	0.702
Māori	0.033	0.071	0.040	0.070
Pacific	0.020	0.051	0.016	0.050
Asian	0.115	0.153	0.087	0.153
MELAA	0.015	0.013	0.011	0.013
Other	0.010	0.012	0.011	0.012
Migrant	0.321	0.335	0.329	0.335
Age				
Under 25	0.117	0.135	0.114	0.135
25 to 34	0.283	0.232	0.224	0.234
35 to 44	0.247	0.212	0.243	0.213
45 to 54	0.214	0.233	0.237	0.233
55 and above	0.139	0.187	0.181	0.186
Highest qualification				
No qualification	0.036	0.100	0.035	0.098
School certificate	0.271	0.352	0.273	0.350
Post-school certificate or diploma	0.219	0.200	0.183	0.200
Bachelor's degree	0.252	0.172	0.266	0.175
Postgraduate degree	0.189	0.120	0.216	0.122
Missing	0.033	0.055	0.027	0.055
Partnership status				
Has a partner	0.613	0.577	0.632	0.578
Does not have a partner	0.276	0.257	0.287	0.257
Missing	0.111	0.166	0.081	0.165
Dependent child status				
Has a dependent child	0.545	0.506	0.555	0.508
Does not have a dependent child	0.386	0.385	0.389	0.385
Missing	0.069	0.108	0.057	0.107
Region				
Auckland	0.444	0.340	0.400	0.343
Wellington	0.152	0.113	0.186	0.114
Canterbury	0.113	0.134	0.107	0.134
Rest of North Island	0.203	0.301	0.209	0.298
Rest of South Island	0.088	0.112	0.098	0.111
Part-time	0.246	0.193	0.404	0.194
Employment type				
Paid employee	0.661	0.847	0.346	0.843
Employer	0.055	0.055	0.048	0.055
Self-employed	0.278	0.088	0.594	0.091
Unpaid employee	0.006	0.004	0.011	0.010
Multiple jobs	0.105	0.066	0.185	0.067
Occupation type				
Professional	0.726	0.217	0.989	0.231
Technician	0.203	0.121	0.007	0.125
Other	0.071	0.661	0.004	0.644
Mean total income	55,000***	56,600	44,200***	56,600
Mean age	39.34***	40.67	41.12***	40.62
Mean total hours worked	35.53***	38.18	31.36***	38.13
Observations	81,498	2,146,365	15,135	2,212,725

Source: Census of Population and Dwellings 2018

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1. Demographic and job characteristics of arts and non-arts workers in the full sample.

Table 4 replicates Table 3 but restricts the sample to professionals and technicians. Again, average demographic characteristics are similar across the two definitions while job characteristics are not. Arts workers defined using the broad definition are more likely to be paid employees, and technicians than arts workers defined using the narrow definition. They are less likely to be working part-time, self-employed, and working multiple jobs. Following the same pattern when restricting the sample to professionals and technicians under the broad definition, mean total income for arts workers remains unchanged whilst mean total income for non-arts workers increases by just under \$10,000.

In summary, arts workers earn about 10% less than their non-arts counterparts on average (8% according to the HES and 11% according to the HLFS, see Table 1 and Appendix Table 3). Among professionals and technicians the corresponding gap is about 20% (19% according to the HES and 21% according to the HLFS, see Table 2 and Appendix Table 4). Depending on the data source, the gap in total income is 3-15% for all workers and 15-22% for professionals and technicians.

In the remaining analyses we focus on professionals and technicians. We also employ the broad definition of the arts sector, because the narrow definition results in very small arts worker observation counts: around 50 to 160 across the HES, HLFS and GSS, compared to around 190 to 810 when using the broad definition. Such small counts preclude meaningful statistical analysis. We also restrict the analysis to ages 18-64, to keep the focus on the 'traditional' working age population, as including younger teenagers and older people tends to introduce more noise into the analysis.

Table 4: Worker characteristics by arts worker definition (professionals and technicians)

	Broad		Narrow	
	Arts	Non-arts	Arts	Non-arts
Female	0.582	0.424	0.546	0.437
Ethnicity				
NZ European	0.808	0.721	0.836	0.727
Māori	0.032	0.051	0.040	0.050
Pacific	0.019	0.034	0.016	0.033
Asian	0.116	0.165	0.087	0.162
MELAA	0.015	0.015	0.011	0.015
Other	0.010	0.013	0.010	0.013
Migrant	0.322	0.368	0.329	0.364
Age				
Under 25	0.112	0.098	0.113	0.099
25 to 34	0.284	0.263	0.223	0.266
35 to 44	0.251	0.235	0.244	0.236
45 to 54	0.216	0.228	0.238	0.226
55 and above	0.137	0.176	0.182	0.172
Highest qualification				
No qualification	0.035	0.052	0.035	0.051
School certificate	0.266	0.217	0.272	0.220
Post-school certificate or diploma	0.220	0.219	0.182	0.220
Bachelor's degree	0.255	0.256	0.267	0.256
Postgraduate degree	0.192	0.216	0.216	0.213
Missing	0.032	0.040	0.027	0.039
Partnership status				
Has a partner	0.621	0.616	0.633	0.617
Does not have a partner	0.270	0.244	0.286	0.246
Missing	0.109	0.140	0.081	0.138
Dependent child status				
Has a dependent child	0.541	0.515	0.554	0.516
Does not have a dependent child	0.392	0.397	0.389	0.397
Missing	0.067	0.088	0.056	0.087
Region				
Auckland	0.446	0.353	0.399	0.361
Wellington	0.152	0.133	0.186	0.134
Canterbury	0.112	0.135	0.107	0.133
Rest of North Island	0.204	0.279	0.209	0.273
Rest of South Island	0.085	0.100	0.098	0.099
Part-time	0.236	0.133	0.404	0.138
Employment type				
Paid employee	0.650	0.853	0.345	0.844
Employer	0.056	0.043	0.048	0.045
Self-employed	0.289	0.099	0.596	0.108
Unpaid employee	0.006	0.004	0.011	0.004
Multiple jobs	0.104	0.066	0.185	0.068
Occupation type				
Professional	0.781	0.642	0.993	0.649
Technician	0.219	0.358	0.007	0.351
Mean total income	56,200***	66,500	44,300***	66,000
Mean age	39.41***	40.80	41.16***	40.66
Mean total hours worked	35.85***	39.36	31.39***	39.18
Observations	75,735	726,927	15,078	787,584

Source: Census of Population and Dwellings 2018

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1. Demographic and job characteristics of arts and non-arts workers in the sample of professionals and technicians.

4 Methodology

We undertake two main analyses. The first analysis decomposes the pay gap between arts workers and non-arts workers into various factors that may explain the gap. The second analysis examines the potential impact of arts sector employment on wellbeing. The methods for these analyses are respectively outlined in sections 4.1 and 4.2.

4.1 Decomposition of the pay gap

4.1.1 Mincerian equation

Our starting point is a Mincerian equation which expresses labour income as a function of other variables:

$$Y_i = \alpha + \beta_X X_i + \epsilon_i \quad (1)$$

where i indexes individuals, Y is labour income, X is a vector of variables pertaining to personal demographic and job characteristics, and α and β_X are parameters to be estimated. Each element of vector β_X captures the effect of the corresponding characteristic on labour income, holding constant other observed factors. In the literature, income often enters the regression in natural logarithms. As well as addressing heteroskedasticity, this ensures estimation results are scale free and unit free,¹⁴ and enables the coefficient on the education variables (an element of X) to be interpreted as the return to the extra education.

4.1.2 Blinder-Oaxaca decomposition

Equation (1) is estimated separately for arts workers and non-arts workers. To decompose the gap in mean labour income between the two groups we use the Blinder(1973)-Oaxaca (1973) method:

$$\bar{Y}_N - \bar{Y}_A = (\bar{X}_N - \bar{X}_A)\hat{\beta}_N + \bar{X}_A(\hat{\beta}_N - \hat{\beta}_A) \quad (2)$$

where subscript N denotes the non-arts group ('majority' group), subscript A the arts group (the 'disadvantaged' group), \bar{Y} is mean of log labour income Y , \bar{X} is a row of mean values of X and $\hat{\beta}$ is the estimated β from equation (1). The first term on the right-hand side of equation (2) measures the gap due to differences in observed characteristics. In the literature, this gap is also referred to as the composition gap, the endowment gap, or the explained gap. The second term measures the gap due to differences in returns to characteristics. This gap is also known as the coefficient gap, the returns gap, or the unexplained gap.

¹⁴ Since $\ln(X*Y)=\ln X+\ln Y$, the estimated parameters remain the same whether income is weekly or annual, in dollars or in pounds. Only the intercept term α will change, but it is not a parameter of interest.

A well-known issue with the Blinder-Oaxaca decomposition method is the so-called index number problem, which arises because decomposition results vary with the choice of the reference group. If the estimated coefficients (returns) for non-arts workers are used as the non-discriminatory basis, the decomposition involves addressing the question: What would labour income for arts workers be if they were to have the same set of coefficients as estimated for non-arts workers? And vice versa if the estimated coefficients for arts workers are used as the benchmark.

It is argued that the ‘true’ non-discriminatory basis should lie somewhere between the arts coefficients and the non-arts coefficients:

$$\beta^* = \Omega \hat{\beta}_A + (I - \Omega) \hat{\beta}_B \quad (3)$$

where Ω is a weighting matrix and I is the identity matrix. The literature has proposed different weighting schemes to deal with the underlying index problem.¹⁵ In this study, we present the results with $\Omega = 1$, as the common argument is that arts workers are underpaid compared to non-arts workers (and not that non-arts workers are overpaid compared to arts workers), implying that non-arts workers are fairly paid. Equation (2) has been written for the case where non-arts coefficients ($\hat{\beta}_N$) are used as the non-discriminatory basis.

4.1.3 Detailed decomposition

A detailed decomposition can be used to determine how much each characteristic contributes to explaining the gap. A detailed decomposition can be written as:

$$E = \sum_{k=1}^K (\bar{X}_{Nk} - \bar{X}_{Ak}) \hat{\beta}_{Nk} \quad (4)$$

$$C = \hat{\beta}_{N0} - \hat{\beta}_{A0} + \sum_{k=1}^K \bar{X}_{Ak} (\hat{\beta}_{Nk} - \hat{\beta}_{Ak}) \quad (5)$$

where E is the composition gap, C is the coefficient gap, and subscript k denotes the k^{th} covariate. Equation (4) expresses the composition gap as the sum of the K composition weights. The composition weights reflect the relative contribution of each covariate based on the magnitude of the difference in the mean value of the covariate, weighted by the effect of the covariate in group N. Equation (5) expresses the coefficient gap as the sum of the K coefficient weights. The

¹⁵ Oaxaca (1973) proposed using either the coefficients for the majority group ($\Omega = 1$) or the coefficients for the disadvantaged group ($\Omega = 0$) as the non-discriminatory basis. Reimers (1983) proposed using the mean coefficients ($\Omega = 0.5$), while Cotton (1988) proposed weighting the coefficients by group size. By contrast, Neumark (1988) estimated a pooled model over both groups to obtain β^* .

coefficient weights reflect the relative contribution of each covariate based on the magnitude of the difference in the size of the effect, weighted by the mean value of the covariate in group A.

4.2 Impact of arts employment on wellbeing

4.2.1 Regression model

To examine the impact of arts employment on wellbeing, we estimate a reduced-form model:

$$W_i = \alpha + \beta_Z Z_i + \beta_Y Y_i + \beta_X X_i + \epsilon_i \quad (6)$$

where i indexes individuals, W is a measure of wellbeing, Z is a dummy variable capturing whether or not a worker is employed in the arts sector, Y is income, and X is a vector of characteristics that influence wellbeing. α , β_Z , β_Y and β_X are parameters to be estimated, with β_Z capturing the total direct effects of arts employment on wellbeing, holding constant other observed factors.

Z can be interacted with other control variables to examine whether the effects of arts employment differ by those variables. Given the findings (see sections 2.2 and 2.3) that arts workers might be motivated by pecuniary income differently than other workers, we interact the arts employment dummy with income to test for the presence of a differential impact of income on wellbeing:

$$W_i = \alpha + \beta_Z Z_i + \beta_Y Y_i + \beta_I (Z_i \times Y_i) + \beta_X X_i + \epsilon_i \quad (7)$$

Based on theory and existing evidence (see Throsby (1994) and Steiner and Schneider (2013)), we expect β_I to be negative, i.e. income has a smaller impact on wellbeing for arts workers than for non-arts workers. If β_I is statistically insignificant, equation (7) is reduced to equation (6).

Income enters the regression in natural logarithms to reflect the generally accepted view that income has a diminishing effect on wellbeing. Measures of subjective wellbeing such as life satisfaction are ordinal, yet in our regressions we treat wellbeing as cardinal. Such treatment is common in the economic literature following the influential finding by Ferrer-i-Carbonell and Frijters (2004) that assuming ordinality or cardinality of happiness scores makes little difference. Assuming cardinality allows the researcher to make use of a wide range of models to address important issues such as endogeneity and differential impacts, as ordinal regressions are limited in dealing with such issues.¹⁶

¹⁶ While the cardinality assumption is commonly used, the assumption is not uncontroversial (see Bond and Lang (2019)).

4.2.2 Endogeneity

A methodological issue arises because arts employment in equations (6)-(7) is potentially endogenous. While a significant positive relationship between arts employment and wellbeing can suggest that arts workers have higher wellbeing, it is unable to determine whether or not the employment *per se* leads to the higher wellbeing. This endogeneity could be due to reverse causality, where an inclination to be happy leads people to become artists. Endogeneity may also arise from omitted variables (or selection on unobservables), where both arts employment and wellbeing are driven by the same unobserved factors. Such unobserved factors could be individual idiosyncratic characteristics (such as artistic talent). This is related to the issue of selection bias, because arts workers are unlikely to be a random subset of the population. Ignoring the potential endogeneity of arts employment may lead to biased estimates of its impact on wellbeing.

This study uses two approaches to address endogeneity. The first approach involves comparing the estimated coefficient on arts employment when a minimal number of control variables are included with the corresponding coefficient when a broad range of other relevant variables are included. If the coefficient is much reduced and becomes insignificant, this is an indication that these other factors are important determinants of wellbeing and arts employment is another outcome of these factors (determined jointly with wellbeing). The second approach involves estimating the models using a range of measures representing different aspects of wellbeing. Although these approaches offer no conclusive proof, together they provide insights into the extent to which the estimated association is likely to represent a causal effect.¹⁷

¹⁷ A strong econometric method to address endogeneity is to use an instrumental variable (IV). A valid IV – one that is correlated with arts employment but not correlated with the unobserved factors that influence wellbeing – is extremely rare. Furthermore, it is not simple to allow for interaction effects, which is one focus of this study, in IV models.

5 Estimation results: decomposition of the pay gap between arts and non-arts workers

5.1 Baseline analysis

This section presents the baseline analysis of the pay gap between (professional/technician) arts and non-arts workers. Table 5 summarises the Blinder-Oaxaca decomposition results (i.e. from estimating equations 2, 4 and 5) across different specifications using the HES data. Appendix Table 5 provides the detailed results. The results of the underlying regressions (i.e. from estimating equation 1) used to perform the decomposition analysis are presented in Appendix Table 7.

Table 5: Pay gap decomposition results

	(1)	(2)	(3)	(4)	(5)
Non-arts mean income	10.9539*** (0.0092)	10.9539*** (0.0092)	10.9539*** (0.0092)	10.9539*** (0.0092)	11.0196*** (0.0084)
Arts mean income	10.6175*** (0.0404)	10.6175*** (0.0405)	10.6175*** (0.0404)	10.6175*** (0.0404)	10.7485*** (0.0361)
Difference	0.3364*** (0.0415)	0.3364*** (0.0415)	0.3364*** (0.0415)	0.3364*** (0.0415)	0.2710*** (0.0371)
Composition gap	0.0605*** (0.0229)	0.0641*** (0.0236)	0.0189 (0.0277)	0.2246*** (0.0399)	0.1651*** (0.0393)
Coefficients gap	0.2716*** (0.0395)	0.2716*** (0.0393)	0.2856*** (0.0393)	0.1399*** (0.0372)	0.1084*** (0.0352)
Interaction	0.0043 (0.0188)	0.0007 (0.0190)	0.0318 (0.0238)	-0.0282 (0.0345)	-0.0025 (0.0366)
<i>Controls</i>					
Demographics	Yes	Yes	Yes	Yes	Yes
Family characteristics	No	Yes	Yes	Yes	Yes
Geographic location	No	No	Yes	Yes	Yes
Job characteristics	No	No	No	Yes	Yes
Income measure	Labour	Labour	Labour	Labour	Total
Observations	9,021	9,021	9,021	9,021	9,036

Source: Estimated using Household Economic Survey 2018/19

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Detailed results shown in Appendix Table 5. Underlying pay regression results shown in Appendix Table 7.

In our sample of professional and technician workers, mean log labour income is 10.95 for non-arts workers and 10.62 for arts workers, yielding a difference of 0.34.¹⁸ Column 1 presents the results from the specification that only controls for basic demographics (sex, ethnicity, migrant

¹⁸ These figures correspond with incomes of \$57,200 and \$40,800 for non-arts and arts workers respectively, which are smaller than the corresponding means of \$71,700 and \$57,900 shown in Table 2. This is because $\bar{Y} > e^{\ln(\bar{Y})}$. Note that the log transformation enables estimation results to be scale free and unit free. Thus, the focus should be on the relative contribution of the explained gap and the unexplained gap to the total gap, not on the absolute size of the gap(s).

status, age, highest qualification). The composition gap is estimated to be 0.06, which indicates that if arts workers had the same demographic characteristics as non-arts workers, their mean *log* income would increase by 0.06 (or about 6% in income *level*).¹⁹ This result shows that differences in observed demographic characteristics only explain 18% of the pay gap. The coefficients gap is estimated to be 0.27, i.e. if arts workers had the same returns to characteristics as non-arts workers, their mean log income would increase by 0.27. This accounts for 81% of the gap, indicating that a large proportion of the pay gap remains unexplained by worker characteristics.

In column 2 we add controls for family characteristics (having a partner and having a dependent child), which are designed to proxy for the availability to work. The results are virtually the same as in column 1, suggesting that differences in family characteristics do not contribute to explaining the pay gap between arts and non-arts workers. In column 3 we additionally control for geographic location. This reduces the estimate of the composition gap to 0.02 and increases the estimate of the coefficients gap to 0.29. Differences in location appear to work in the opposite direction to differences in demographic variables: rather than explaining part of the pay gap, the pay gap would be even larger if arts workers were similarly distributed across regions as non-arts workers. The negative estimate on the rest of the North Island dummy (Appendix Table 7) suggests that if arts workers lived in the rest of the North Island as much as non-arts workers, the pay gap would be larger. This is consistent with the observation in Table 2 that arts workers are more likely to live in Auckland. Being a large urban centre, Auckland likely offers arts workers better opportunities and higher incomes than smaller towns in the rest of the North Island.

Column 4 adds controls for job characteristics (relating to the individual's primary occupation), including (weekly) total hours worked, a dummy for being self-employed, and a dummy for working multiple jobs. This is our preferred specification because it includes the full set of available controls. Controlling for job characteristics significantly increases the estimated composition gap from 0.02 to 0.22,²⁰ meaning differences in observed characteristics now explain about two-thirds of the pay gap.²¹ This shows that the pay gap between arts and non-arts workers is largely driven by differences in job characteristics, rather than differences in personal demographics. The most important variable for explaining the gap is total hours worked. If arts workers worked as many hours per week as non-arts workers, the pay gap would be almost halved. Table 2 shows that arts workers work fewer hours on average than non-arts workers. This

¹⁹ An increase by 0.06 in log is equivalent to an increase by 6.2% ($=e^{0.06}$) in level.

²⁰ The specification in column 4 includes endogenous choice variables, such as how many hours to work and where to live, which are different to the demographic characteristics people are endowed with. Thus, we interpret the composition gap as the increase in mean income if arts workers had the same characteristics *and* made the same personal and job-related choices as non-arts workers.

²¹ When omitting the region variables, the estimate of the composition gap is slightly larger at 0.25, thus their inclusion in our preferred specification does not materially affect our interpretations of the decomposition results.

might reflect that arts employment offers limited opportunities which constrains arts workers from working more hours when they would like to. Alternatively, it may reflect that arts workers choose to work less because they are satisfied with the amount they do. Creative New Zealand (2019) finds that creative professionals who are happy with the time they spend on their creative careers work for a median of 40 hours per week. Thus, the former explanation might be more credible.

Other important variables which explain the pay gap are self-employment and sex. Arts workers are more likely to be self-employed and female, characteristics which the underlying regressions in Appendix Table 7 show are associated with lower income (at least in the case for arts workers). Hence, the decomposition results suggest that if fewer arts workers were self-employed and/or female, the pay gap would be smaller. In contrast, the pay gap would be larger if more arts workers were non-European, since being non-European is associated with lower income.

These results also show that about a third of the pay gap is due to differences in returns to characteristics. This gap, which is termed the 'unexplained' gap in the literature, can be due to several factors, including omitted characteristics, unobservable characteristics, differences in behaviour or preferences, or discrimination. Given that the explained gap tends to increase as we control for more factors (e.g. compare column 3 with column 2), the unexplained gap is likely to be smaller if we were able to control for factors likely to influence labour income but unobserved to the econometrician, such as skills and motivation.

In column 5 we decompose the gap in total income (i.e. the sum of labour income and non-labour income). Total income is used in this case as a proxy for labour income because some of our data sources (Census and GSS) collect the former but not the latter. Mean (log) total income is 11.01 for non-arts workers and 10.75 for arts workers, yielding a difference of 0.26. Roughly 61% is explained by difference in observed characteristics, which is less than the proportion that is explained when decomposing the labour income gap (67%). This is to be expected because the model only controls for variables typically associated with labour income but does not control for those associated with other income, such as financial wealth (for investment income) and property ownership (for rental income). Total hours worked remains as the most important variable for explaining the gap, followed by self-employment and sex. Differences in age, ethnicity and region also explain some of the gap. Hence, these results are fairly consistent with the decomposition results on labour income.

In summary, differences in observed characteristics explain about two thirds of the pay gap between arts and non-arts workers. This means that if arts workers had the observed

characteristics of non-arts workers, their mean income would increase by about 14% (i.e. two thirds of the raw gap of 20%). It appears that differences in job characteristics contribute more to explaining the gap than differences in demographics, with the gap being mostly driven by differences in hours worked.

5.2 Robustness analysis

As a robustness exercise, we perform the decomposition analysis using data from the Census, HLFS, and GSS. Table 6 summarises the results of estimating our preferred specification across the three data sources. Detailed results are presented in Appendix Table 6 and the results of the underlying regressions in Appendix Table 8.

Table 6: Pay gap decomposition results (robustness analysis)

	Census	GSS	HLFS
	(1)	(2)	(3)
Non-arts mean income	10.8711*** (0.0010)	10.9424*** (0.0102)	11.0753*** (0.0150)
Arts mean income	10.6129*** (0.0036)	10.6201*** (0.0409)	10.7933*** (0.0620)
Difference	0.2582*** (0.0037)	0.3222*** (0.0421)	0.2820*** (0.0638)
Composition gap	0.1816*** (0.0031)	0.1550*** (0.0337)	0.1359** (0.0565)
Coefficients gap	0.1059*** (0.0030)	0.1741*** (0.0371)	0.1596*** (0.0537)
Interaction	-0.0293*** (0.0021)	-0.0068 (0.0262)	-0.0135 (0.0417)
<i>Controls</i>			
Demographics	Yes	Yes	Yes
Family characteristics	Yes	Yes	Yes
Geographic location	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes
Income measure	Total	Total	Labour
Observations	798,777	5,544	2,184

Source: Estimated using Census of Population and Dwellings 2018, General Social Survey 2014-2018, Household Labour Force Survey June 2020

Column 1 reports the decomposition results from using the Census data. Total income is used because the Census does not collect labour income. The gap in log income between arts and non-arts workers is 0.26, of which roughly 70% can be explained by differences in observed characteristics. This is slightly larger than the proportion of the earnings gap that can be explained by observed differences in our baseline analysis (61%). Similar to our baseline results, differences

in total hours worked explains about 44% of the earnings gap. Differences in self-employment status, sex, and age also help to explain the gap, whilst differences in ethnicity and region work in the opposite direction.

The decomposition results based on the GSS data are reported in column 2. Again, total income is used due to the lack of labour income in GSS data. The gap in log income between arts and non-arts workers is 0.32, of which 48% can be explained by differences in observed characteristics. This is lower than the 61% that is explained in HES total income (column 5, Table 5) but is unsurprising given that HES income is continuous while GSS income is reported in bands. Total hours worked is the most important variable for explaining the gap, followed by self-employment status, sex, and age. The gap would be wider if arts workers had the same regional characteristics as non-arts workers, however, differences in ethnicity do not appear to help explain the income gap.

Column 3 contains the decomposition results from using the HLFS data. The gap in log labour income between arts and non-arts workers is 0.28, of which 48% can be explained by differences in observed characteristics. This is the same as the proportion explained when using GSS data but is substantially smaller than the explained proportion in the HES baseline results. Unlike the HES and Census results, the most important variable for explaining the HLFS pay gap is self-employment status, closely followed by total hours worked. There are no other differences in characteristics which explain a statistically significant proportion of the pay gap. Furthermore, in this case the gap does not widen if arts workers have the ethnicity and regional characteristics of non-arts workers.

Overall, the robustness analysis shows that the baseline results are not particularly sensitive to data sources. Across all data sources, differences in observed characteristics explain at least 48% of the pay gap between arts and non-arts workers. Our control variables explain a larger part of the pay gap in the HES and Census than in the HLFS and GSS, which could be due to the data features of the latter two sources. In particular, the HLFS data were collected during a period when the labour market (and the rest of the economy) was not operating normally, so the 'standard' model is likely to omit important factors pertaining to this period. Our GSS data are pooled over a five-year period (2014-2018), thus they are likely to contain more heterogeneity than the other data sources. The common theme from the decomposition analysis is that differences in job characteristics (total hours worked and self-employment status) explain most of the pay gap, followed by differences in some demographic characteristics (sex and age).

6 Estimation results: impact of arts employment on wellbeing

6.1 Baseline analysis

This section presents the baseline results on the impact of employment in the arts on wellbeing based on equations (6) and (7). Our baseline model uses the HES data and life satisfaction as the dependent variable in all specifications. The mean life satisfaction score for the estimation sample (i.e. across arts and non-arts workers) is 4.156.

Table 7: Regression results: relationship between arts employment and life satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)
Arts worker	-0.0111 (0.0423)	-0.0376 (0.0424)	0.7293* (0.3882)	0.6459* (0.3806)	0.5040 (0.4533)	-0.3999 (0.6755)
Log income	0.0773*** (0.0139)	0.0790*** (0.0165)	0.0898*** (0.0153)	0.0911*** (0.0178)	0.1014*** (0.0189)	0.1733*** (0.0207)
Arts worker x Log inc.			-0.0693* (0.0361)	-0.0639* (0.0354)	-0.0501 (0.0416)	0.0302 (0.0582)
Intercept	3.3115*** (0.1530)	3.8238*** (0.2101)	3.1742*** (0.1688)	3.7094*** (0.2194)	3.5562*** (0.2328)	2.6370*** (0.2794)
<i>Controls</i>						
Demographics	No	Yes	No	Yes	Yes	Yes
Job characteristics	No	Yes	No	Yes	Yes	Yes
Income measure	Labour	Labour	Labour	Labour	Total	Household
Observations	4,401	4,401	4,401	4,401	4,401	4,401
Adj. R-squared	0.0067	0.0537	0.00732	0.0542	0.0549	0.0654

Source: Estimated using Household Economic Survey 2018/19

Notes: Dependent variable: life satisfaction score (scale: 1-5). Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Detailed results are presented in Appendix Table 9.

Table 7 summarises the results of our wellbeing regressions, with the detailed results presented in Appendix Table 9. The first specification (column 1), which controls for labour income and an arts worker dummy, shows that labour income is positively associated with life satisfaction but there is no statistically significant difference in life satisfaction between arts and non-arts workers. The second specification adds a range of demographic and job-related variables as potential determinants of life satisfaction. This addition improves the explanatory power of the model (with adjusted R-squared increasing from 0.7% to 5.4%, see column 2). However, there is still no statistically significant difference in life satisfaction between arts and non-arts workers. In the absence of a compensating differential, it would be natural to question why people become arts workers when they earn less income than other workers with similar labour market characteristics.

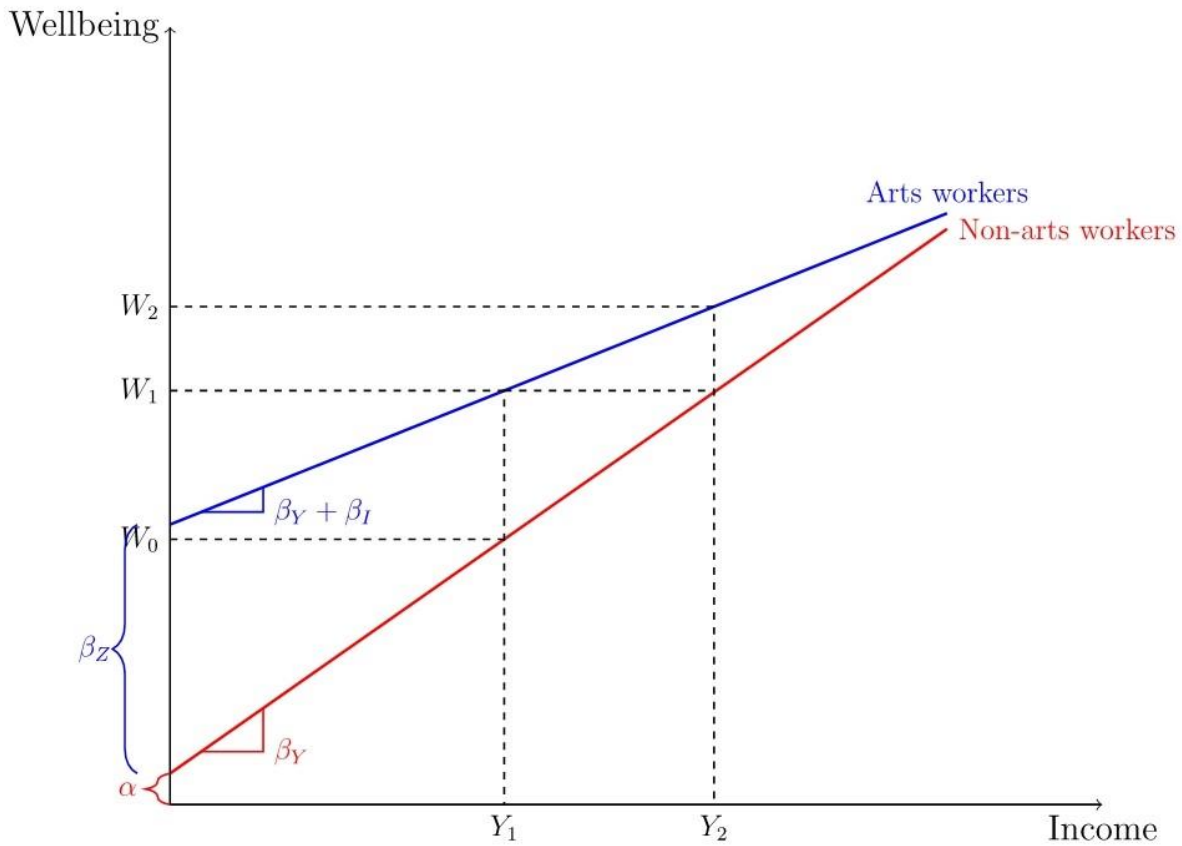
Following Throsby (1994) and Steiner and Schneider (2013), we hypothesise that the impact of income on wellbeing is different between the two types of workers. This is modelled by adding to the second specification a variable which interacts labour income with the arts worker dummy, as in equation (7). We find that the impact of income on life satisfaction is smaller for arts workers than non-arts workers, as indicated by the negative coefficient on the interaction term (column 3). Moreover, the coefficient on the arts worker dummy suggests that being an arts worker is associated with an increase of 0.73 in life satisfaction score, which is almost a step change (e.g. from 'satisfied' to 'very satisfied') in our five-point scale of life satisfaction. Controlling for demographic and jobs characteristics in column 4 increases the goodness of fit but makes no material changes to the coefficients of interest. The art dummy coefficient decreases in magnitude as the added variables pick up some of the effect of being an arts worker, but it remains statistically significant. The coefficients on income and the interaction term are also robust to the inclusion of the control variables. This suggests that arts workers' higher life satisfaction is (partly) attributable to the arts employment itself, rather than, for example, being more educated or experiencing the autonomy that comes from being self-employed.

To aid with the interpretation of these results, Figure 2 presents the relationship between labour income and wellbeing based on the estimates from column 4. The blue line represents the relationship for arts workers, and the red line for non-arts workers. The positive slopes show that income has a positive impact on wellbeing for both groups of workers. The slope of the blue line is flatter than the slope of the red line, which depicts the estimation result that the coefficient on income (β_Y) is positive but the coefficient on the arts dummy income interaction term (β_I) is negative. Furthermore, the intercept of the blue line is higher than the intercept of the red line by a distance of β_Z . This depicts the estimation result that the coefficient on the arts dummy is positive.

Overall, Figure 2 shows that over a certain range of income, arts workers have higher wellbeing than non-arts workers.²² Another way of interpreting Figure 2 is that to achieve the same level of wellbeing (W_1), arts workers require a lower level of income (Y_1) than non-arts workers (Y_2). This is consistent with the descriptive statistics in section 3.3, which show that arts workers earn less than non-arts workers on average but have the same mean life satisfaction score. Thus, the estimates in column 4 support the notion that arts employment provides a compensating wage differential in the form of higher wellbeing.

²² If we extend the lines to much higher income levels, eventually non-arts workers will have higher wellbeing, but very high-income earners are not the focus of this study.

Figure 2: Relationship between labour income and wellbeing for arts workers and non-arts workers



$$W_i = \alpha + \beta_Z Z_i + \beta_Y Y_i + \beta_I (Z_i \times Y_i) + \beta_X X_i + \epsilon_i$$

	Non-arts workers	Arts workers
Intercept	α	$\alpha + \beta_Z$
Effect of income on wellbeing	β_Y	$\beta_Y + \beta_I$

In columns 5 and 6 we swap labour income for total (personal) income and household income respectively. The use of household income can allow for the possibility that their partners' income enables arts workers to have high wellbeing despite having relatively low-paying jobs. Total income and household income both have larger effects on life satisfaction than labour income, however there are no differential effects between arts workers and non-arts workers and the coefficient on the arts worker dummy is no longer significant. We interpret these as suggesting that when income is not directly linked to personal work effort, it has a similar effect on arts workers and non-arts workers alike and that conditional on that income, there is no statistically significant difference in life satisfaction between arts and non-arts workers.

In summary, two main findings emerge from our analysis. First, consistent with a wide body of literature (e.g. see the review by Clark (2018)), income in general has a positive effect on wellbeing. Second, when income is directly linked to personal work effort, arts workers appear to

be content with less pay and that other things being equal, being an arts worker is associated with higher wellbeing. This implies that being able to work in the arts provides arts workers with psychic income which compensates them for their lower pecuniary income.

6.2 Robustness analysis

This section assesses the robustness of our baseline analysis by examining an alternative population group, other data sources and other measures of wellbeing.

6.2.1 *Placebo group analysis*

A possible reason for arts workers and non-arts workers having the same average life satisfaction score is that survey respondents answer the life satisfaction question randomly, such that the mean life satisfaction score is similar across occupational groups. To address this concern, we consider a ‘placebo’ group of workers in place of arts workers. Note that in this study we essentially consider arts employment as a ‘treatment’ and examine if this treatment has any effect on wellbeing. We hypothesise that arts employment has a positive effect on life satisfaction, which compensates for the lower life satisfaction associated with lower income, resulting in similar average life satisfaction scores between arts and non-arts workers. This hypothesis will be weakened if there is a group of workers who have similar labour income and who do not receive the arts employment ‘treatment’ but have similar life satisfaction to non-arts professionals and technicians. We label this group the ‘placebo’ group.

Our chosen placebo group is machinery operators and drivers (shortened to ‘machinery operators’), with the control group being non-arts professionals and technicians (for brevity we drop the ‘non-arts’ reference hereafter). Since we restrict our sample of arts workers to professionals and technicians, there are no arts workers in the machinery operators group. Hence, there is no overlap between the three groups: machinery operators, arts professionals and technicians, and non-arts professionals and technicians.

Machinery operator and driver occupations are usually low paying and have low social prestige. We expect workers in these occupations to have a lower average life satisfaction score than professionals and technicians because they have lower income and do not experience the positive aspects associated with arts employment.

Appendix Table 10 presents descriptive statistics comparing machinery operators to professionals and technicians. Machinery operators are more likely to be Māori/Pacific and have school or no qualifications than professionals and technicians. They are also less likely to be female, living in Wellington, and working part-time. Machinery operators earn average labour income of \$55,900, which is less than that for non-arts professionals and technicians (\$71,700)

but similar to what arts professionals and technicians earn (\$57,900, see Table 2). In line with expectation, machinery operators are less satisfied with life (3.95 compared to 4.16) than non-arts professionals and technicians on average.

Appendix Table 11 (column 1) presents the results of regressing life satisfaction on a machinery operator dummy (where dummy = 1 if the worker is a machinery operator, 0 if they are a professional or technician) and our full set of control variables. The coefficient on the machinery operator dummy is statistically significant and negative, which confirms that machinery operators are less satisfied with life than professionals and technicians, even when controlling for demographic and job characteristics. This demonstrates that there are differences in life satisfaction amongst different occupations that are consistent with theory and common beliefs. The results from this analysis lend support to the effect of arts employment on wellbeing: both machinery operators and arts workers earn similar amounts of labour income that are significantly less than what non-arts professionals and technicians earn, yet, of the two lower-paid groups, only machinery operators exhibit lower levels of wellbeing.

6.2.2 Using the GSS and HLFS data

To assess the sensitivity of our results to data sources and measures of wellbeing, we repeat our regression analysis using data from the GSS and HLFS surveys. For conciseness, we only report the results from our preferred specification, which regresses wellbeing on the arts worker dummy, labour income, an interaction between these two variables, and our full set of controls. Table 8 summarises these results, while detailed results are reported in Appendix Table 12. Since the dependent variables (wellbeing) are measured on different scales, their means (for the estimation sample) are also reported to help the reader gauge the magnitude of the estimated coefficients across specifications.

Columns 1-3 show the estimated impact of arts employment on life satisfaction, job satisfaction and sense of purpose using the GSS data. Total income is used because labour income is not available in the GSS. Column 1 shows that there is no statistically significant relationship between being an arts worker and life satisfaction, nor is there any differential impact of total income on life satisfaction between arts workers and non-arts workers. This is consistent with the results based on total income in our baseline analysis (Table 7, column 5).²³

Although not a direct measure of wellbeing, job satisfaction has been found to be positively correlated with life satisfaction (Unanue et al., 2017; Creative New Zealand, 2019). In line with

²³ Performing our placebo group analysis using the GSS data (Appendix Table 11, column 3), we find similar results to those obtained from the HES (column 2): compared to non-arts professionals and technicians, machine operators are associated with significantly lower life satisfaction after controlling for total income and other factors.

previous studies, we find that arts workers are more satisfied with their jobs than non-arts workers, even when controlling for demographic and job characteristics (column 2).²⁴ Unlike Steiner and Schneider (2013), we do not find that the effect of income on job satisfaction is different between arts and non-arts workers (result not shown).²⁵

Table 8: Regression results: relationships between arts employment and alternative measures of wellbeing (robustness analysis)

	GSS			HLFS	
	(1)	(2)	(3)	(4)	(5)
Dependent variable	LS	JS	Purpose	LS	WHO-5
Scale of dep. var.	0-10	1-5	0-10	0-10	0-100
Mean dep. var.	7.703	4.043	8.162	7.921	64.33
Arts worker	0.2011 (0.9266)	0.1022** (0.0431)	1.4546* (0.8585)	0.7789 (1.3944)	9.3658 (16.6078)
Log income	0.1719*** (0.0379)	0.0234 (0.0206)	0.1434*** (0.0351)	0.1341** (0.0615)	1.5076** (0.7331)
Arts worker x Log inc.	-0.0157 (0.0865)		-0.1352* (0.0802)	-0.0866 (0.1283)	-0.9596 (1.5281)
Intercept	7.6672*** (0.4381)	4.2220*** (0.2391)	7.3213*** (0.4059)	7.7273*** (0.6420)	65.2295*** (7.6583)
<i>Controls</i>					
Demographics	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes
Income measure	Total	Total	Total	Labour	Labour
Observations	5,535	5,535	5,535	2,184	2,172
Adj. R-squared	0.0502	0.0243	0.0387	0.0499	0.0227

Source: Estimated using General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. LS = life satisfaction, JS = job satisfaction, Purpose = sense of purpose, WHO-5 = mental wellbeing. Detailed results are shown in Appendix Table 12.

Column 3 shows that being an arts worker is associated with a significantly greater sense of purpose, with the coefficient on the arts dummy suggesting that being an arts worker is associated with a one and a half step change on the 0-10 scale of sense of purpose.²⁶ Moreover, total income has a smaller impact on sense of purpose for arts workers than for non-arts workers. This reinforces our baseline results which suggest that being an arts worker is associated with higher

²⁴ Again, we perform our placebo group analysis using the GSS data but this time use job satisfaction as the dependent variable. We find no statistical difference in job satisfaction between machinery operators and non-arts professionals and technicians after controlling for total income and other factors (Appendix Table 11, column 4).

²⁵ The coefficient on the arts dummy in column 2 is small and the coefficient on income is very small and insignificant, which does not justify adding an interaction term of these two variables. Indeed, in the specification that includes the interaction term, the main effects and the interaction effect are individually statistically insignificant.

²⁶ An effect of 1.45 on a scale of 0-10 (Table 8, column 3) is similar to an effect of 0.65 on a scale of 1-5 (Table 7, column 4) and is relatively much larger than the effect of 0.1 on a scale of 1-5 for job satisfaction (Table 8, column 2).

wellbeing, and there is a differential impact of income on wellbeing between arts and non-arts workers.

Columns 4-5 show the estimated impact of arts employment on life satisfaction and mental wellbeing using the HLFS data. Column 4 shows that although being an arts worker is associated with higher life satisfaction, this association is not statistically significant, nor is there any differential impact of labour income on life satisfaction between the two groups of workers. A similar pattern is observed with mental wellbeing (column 5).²⁷

Life satisfaction, WHO-5, and sense of purpose each capture different aspects of wellbeing. Life satisfaction provides a holistic assessment of wellbeing and tends to be focused on the medium term.²⁸ WHO-5 captures short-term, mental wellbeing by measuring feelings and emotions experienced within the last fortnight. Sense of purpose captures long-term wellbeing, since people with a higher sense of purpose are more likely to focus on long-term goals by adjusting their current actions to align with future-oriented life aims that bolster their purposefulness (Pfund, 2023). HLFS June 2020 was fielded at a time when the short-term and medium-term outlook tended to be more pessimistic for arts workers (e.g. the ban and limit on social gatherings precluded many employment opportunities for arts workers). Such an outlook is likely to offset any positive effect that arts employment might usually have on wellbeing, which may explain why arts employment is found to have no significant associations with short-term and medium-term measures of wellbeing (WHO-5 and life satisfaction). If it is personal traits which cause arts workers to have higher wellbeing irrespective of occupation, we would expect them to have higher wellbeing through the Covid-19 lockdown period. Thus, these results are indirect evidence that the positive association between arts employment and wellbeing is likely to be due to arts workers being able to do the work they love, rather than to unobserved characteristics.

In summary, the estimation results on sense of purpose (column 3) reinforce the baseline findings that income has a positive effect on wellbeing, that being an arts worker is associated with higher wellbeing, and that income has a smaller effect on wellbeing for arts worker than for non-arts workers.

6.2.3 Income adequacy

Both the theory (see Throsby, 1994) and our results suggest that arts workers are less concerned with income than other workers. To gain further insight into the relationship between arts

²⁷ Our estimation results for sense of purpose collected in HLFS June 2020 show that being an arts worker is significantly associated with a greater sense of purpose and that income has a smaller effect on wellbeing for arts worker than for non-arts workers. However, some aspects of the model show that it is a poor fit of the data, so we do not report the results in this paper.

²⁸ For example, Clark et al. (2008) find that life satisfaction tends to be affected by life events that occurred in the last 2 years and anticipation of events in the next 2 years.

employment, income, and wellbeing, we examine worker perceptions of income adequacy. The HES, GSS, and HLFS ask respondents if they believe their total household income meets every-day needs for things such as food, accommodation, clothing, and other necessities. Possible responses include ‘not enough money’, ‘only just enough money’, ‘enough money’, and ‘more than enough money’. We dichotomise this measure into a dummy variable that equals one if the individual says they have enough or more than enough money, and zero otherwise. We regress this dummy variable on the arts worker dummy and our full set of controls using OLS (which equates to estimating a linear probability model). Around three-quarters of respondents in each survey report having enough income to meet every-day needs (Appendix Table 13).²⁹

Appendix Table 13 shows that the income adequacy models provide a better fit for the data than those on life satisfaction, job satisfaction and sense of purpose (adjusted R-squared around 0.1-0.13, compared with 0.02-0.07 in Tables 7-8). Based on the HES data (column 1), arts workers are 4.6 percentage points less likely to report having enough income to meet every-day needs, after controlling for labour income and our wide range of demographic and job-related characteristics. Similar results are observed when total household income (instead of personal labour income) is controlled for (column 2). However, based on GSS (column 3) and HLFS (column 4) data, the corresponding effect is very small and statistically insignificant.

Taken together, the results in this section indicate that arts workers are only slightly less likely than non-arts workers to report having adequate income. This could be because the threshold for the measured income adequacy is quite low, only to meet basic needs. Results might be very different when a similar question is asked of the ability to meet discretionary expenses, such as travel, recreation and culture. Nevertheless, these results shed some light into the role of income in shaping arts workers’ wellbeing: arts workers can afford to be less concerned about income because they are in a similar position to non-arts workers in meeting basic needs. Such an attitude towards income might not hold when their income falls below the subsistence level.³⁰

6.3 Disaggregated analysis

This section analyses whether the impact of employment in the arts sector varies across worker characteristics such as different sex and age. Using the HES data, we estimate our baseline model separately by sex (female, male) and age group (18-39, 40-64). Appendix Table 14 presents the results.

²⁹ The linear probability model, which provides similar results to a probit model given that the predicted probability of the dependent variable is 0.72-0.78, is preferred because the estimated coefficients can be directly interpreted as the marginal effects of covariates on the outcome.

³⁰ Unfortunately, this conjecture cannot be easily empirically substantiated, because when their income fails to make ends meet, arts workers tend to exit the arts labour market (and thus become non-arts workers in the data).

Column 1 shows there is a larger positive association between arts employment and life satisfaction for female workers compared to the baseline results for all workers (Table 7, column 4). The coefficient estimate of 1.07 on the arts worker dummy suggests that being a female arts worker is associated with a full step change in the five-point scale of life satisfaction. Furthermore, the negative coefficient on the interaction term indicates that the impact of labour income on life satisfaction is smaller for female arts workers than for female non-arts workers. The total effect of labour income on life satisfaction ($\beta_Y + \beta_I$) for female arts workers is slightly negative; however, this effect is not statistically significant.

We find no statistically significant difference in life satisfaction between arts and non-arts workers who are male (column 2), aged 18-39 (column 3), or aged 40-64 (column 4). Labour income is positively associated with life satisfaction for all three of these demographic groups, but this association does not differ significantly between arts and non-arts workers within each of these demographic groups.

Overall, the disaggregated analyses find no conclusive results. This is because the smaller samples in these analyses increase the standard errors, making it more likely for the estimates to be statistically insignificant.

7 Conclusion

Using New Zealand Census and household survey data, this study examines and decomposes the pay gap between the arts sector and the rest of the economy, and examines whether any remaining gap can be explained by differences in wellbeing between the two groups.

In relative terms, arts workers earn about 10% less than their non-arts counterparts on average but among professionals and technicians this gap is about twice as large. Depending on the data source, the gap in total income (i.e. labour income plus other income) is 3-15% for all workers and 15-22% for professionals and technicians. Using the Blinder-Oaxaca method to decompose mean income, we find that between a half to two thirds of the pay gap between arts and non-arts workers in professional and technician occupations can be explained by differences in observed characteristics between the two groups. The most important variable for explaining the gap is total hours worked. If arts workers worked as many hours per week as non-arts workers, the pay gap would be almost halved.

Consistent with theory, we find that income has a positive effect on general wellbeing, that being an arts worker is associated with higher wellbeing, and that labour income has a smaller effect on wellbeing for arts worker than for non-arts workers. Unlike labour income, total income is found to have no differential impact on wellbeing between arts workers and non-arts workers, as well as having no direct relationship with job satisfaction.

Even though causality cannot be formally established by our econometric methods, we provide indirect evidence that employment in the arts sector has a positive impact on wellbeing. In particular, the estimated coefficients on the arts worker dummy and its interaction with income are robust to the inclusion of a large number of control variables. This indicates that the association between art workers and wellbeing is not driven by selection on observables, and to the extent that selection on unobservables is correlated with selection on observables, the result suggests that at least part of the association is attributable to arts employment itself.

The results based on data collected primarily during a period when short-term and medium-term employment prospects for arts workers were limited show that arts workers have similar levels of short-term wellbeing (WHO-5) and medium-term wellbeing (life satisfaction) to non-arts workers. This finding is not consistent with the notion that arts workers have higher wellbeing due to unobserved characteristics which cause them to be happy irrespective of occupation. Rather, it lends credence to the argument that arts workers have higher wellbeing through being able to do the work they love.

Our results are subject to some limitations. Despite controlling for a wide range of observed characteristics, our results may still suffer from omitted variable bias. There may be unobserved differences between arts workers and non-arts workers which drives the observed relationship between arts employment and wellbeing. A common method to deal with this endogeneity concern is to estimate a fixed-effects model which controls for time-invariant individual factors (Steiner and Schneider, 2013; Bille et al., 2013). Unfortunately, the cross-sectional nature of our data sources means we cannot estimate fixed-effects models. Moreover, the numbers of arts workers in our samples are relatively small. Such small numbers limit the statistical power of our disaggregated analysis (by sex and age group) and prevents us from testing whether individual or distinctive groups of arts-related occupations have different associations with wellbeing, as was found by Fujiwara and Lawton (2016).

When larger samples are available, future research can extend this study by examining heterogeneous impacts of arts employment on wellbeing across genders, age groups or full-time status. Another possible extension is to address potential reverse causality, for instance examining whether children with higher wellbeing are more likely to become arts workers.

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Appendix

Appendix Table 1: Broad list of arts occupations

Code	Description	Code	Description
131113	Advertising Manager	225113	Marketing Specialist
139911	Arts Administrator or Manager	225114	Content Creator (Marketing)
142112	Antique Dealer	225115	Digital Marketing Analyst
142114	Hair or Beauty Salon Manager	232111	Architect
149912	Cinema or Theatre Manager	232311	Fashion Designer
211111	Actor	232312	Industrial Designer
211112	Dancer or Choreographer	232313	Jewellery Designer
211113	Entertainer or Variety Artist	232411	Graphic Designer
211199	Actors, Dancers and Other Entertainers n.e.c	232412	Illustrator
211211	Composer	232413	Multimedia Designer
211212	Music Director	232414	Web Designer
211213	Musician (Instrumental)	232511	Interior Designer
211214	Singer	234911	Conservator
211299	Music Professionals n.e.c	249211	Art Teacher (Private Tuition)
211311	Photographer	249212	Dance Teacher (Private Tuition)
211411	Painter (Visual Arts)	249213	Drama Teacher (Private Tuition)
211412	Potter or Ceramic Artist	249214	Music Teacher (Private Tuition)
211413	Sculptor	261211	Multimedia Specialist
211499	Visual Arts and Crafts Professionals n.e.c	272611	Community Arts Worker
212111	Artistic Director	272612	Recreation Officer / Recreation Coordinator
212112	Media Producer (excluding Video)	362111	Florist
212113	Radio Presenter	391111	Hairdresser
212114	Television Presenter	393213	Dressmaker or Tailor
212211	Author	399311	Gallery or Museum Technician
212212	Book or Script Editor	399312	Library Technician
212311	Art Director (Film, Television or Stage)	399511	Broadcast Transmitter Operator
212312	Director (Film, Television, Radio or Stage)	399512	Camera Operator (Film, Television or Video)
212313	Director of Photography	399513	Light Technician
212314	Film and Video Editor	399514	Make Up Artist
212315	Program Director (Television or Radio)	399515	Musical Instrument Maker or Repairer
212316	Stage Manager	399516	Sound Technician
212317	Technical Director	399517	Television Equipment Operator
212318	Video Producer	399599	Performing Arts Technicians n.e.c
212399	Film, Television, Radio and Stage Directors nec	399611	Signwriter
212411	Copywriter	399912	Interior Decorator
212412	Newspaper or Periodical Editor	399915	Photographer's Assistant
212413	Print Journalist	451411	Gallery or Museum Guide
212414	Radio Journalist	451812	Hair or Beauty Salon Assistant
212415	Technical Writer	451814	Body Artist
212416	Television Journalist	599711	Library Assistant
212499	Journalists and Other Writers n.e.c	599912	Production Assistant
224211	Archivist	639111	Model
224212	Gallery or Museum Curator	639311	Telemarketer
224611	Librarian	711411	Photographic Developer and Printer
225111	Advertising Specialist	711912	Motion Picture Projectionist

Source: Toi Mai Workforce Development Council

Note: Using the ANZSCO codes V1.3.0

Appendix Table 2: Narrow list of arts occupations

Code	Description
211111	Actor
211112	Dancer or Choreographer
211113	Entertainer or Variety Artist
211199	Actors, Dancers and Other Entertainers n.e.c
211211	Composer
211212	Music Director
211213	Musician (Instrumental)
211214	Singer
211299	Music Professionals n.e.c
211311	Photographer
211411	Painter (Visual Arts)
211412	Potter or Ceramic Artist
211413	Sculptor
211499	Visual Arts and Crafts Professionals n.e.c
212111	Artistic Director
212211	Author
212212	Book or Script Editor
212311	Art Director (Film, Television or Stage)
212312	Director (Film, Television, Radio or Stage)
212316	Stage Manager
212317	Technical Director
212399	Film, Television, Radio and Stage Directors n.e.c
232311	Fashion Designer
232313	Jewellery Designer
232412	Illustrator
249211	Art Teacher (Private Tuition)
249212	Dance Teacher (Private Tuition)
249213	Drama Teacher (Private Tuition)
249214	Music Teacher (Private Tuition)
399515	Musical Instrument Maker or Repairer
399915	Photographer's Assistant
639111	Model

Source: Ministry for Culture and Heritage

Note: Using the ANZSCO codes V1.3.0

Appendix Table 3: Worker characteristics by data source: GSS and HLFS

	GSS		HLFS	
	Arts	Non-arts	Arts	Non-arts
Female	0.567	0.471	0.532	0.477
Ethnicity				
NZ European	0.758	0.646	0.749	0.706
Māori & Pacific	0.092	0.186	0.064	0.114
Asian	0.121	0.143	0.146	0.155
MELAA & Other	0.029	0.025	0.043	0.025
Migrant	0.325	0.311	0.330	0.324
Age				
Under 25	0.138	0.134	0.137	0.131
25 to 34	0.246	0.226	0.281	0.236
35 to 44	0.246	0.213	0.247	0.215
45 to 54	0.213	0.240	0.208	0.229
55 and above	0.163	0.188	0.128	0.189
Highest qualification				
No qualification	0.021	0.094	S	0.095
School qualification	0.233	0.314	0.192	0.271
Post-school certificate or diploma	0.313	0.262	0.233	0.251
Bachelor's degree	0.217	0.176	0.360	0.244
Postgraduate degree	0.196	0.134	0.186	0.122
Missing	0.021	0.020	S	0.018
Has a partner	0.688	0.670	0.684	0.681
Has a dependent child	0.383	0.414	0.408	0.414
Region				
Auckland	0.433	0.348	0.359	0.342
Wellington	0.125	0.114	0.199	0.118
Canterbury	0.150	0.135	0.078	0.131
Rest of North Island	0.179	0.296	0.267	0.298
Rest of South Island	0.113	0.107	0.099	0.111
Full-time/part-time status				
Full-time	0.708	0.811	0.794	0.822
Part-time	0.288	0.183	0.206	0.178
Missing	S	0.006	0	0
Employment type				
Paid employee	0.617	0.819	0.696	0.825
Employer	0.033	0.062	0.043	0.061
Self-employed	0.338	0.110	0.260	0.108
Missing	0.013	0.008	S	0.007
Multiple jobs	0.088	0.067	0.115	0.075
Occupation type				
Professional	0.675	0.232	0.765	0.245
Technician	0.246	0.123	0.197	0.105
Other	0.079	0.645	0.039	0.650
Mean labour income			57,100*	63,900
Mean total income	52,000***	59,200	60,100	66,400
Mean age	39.66**	40.86	38.49**	40.76
Mean total hours worked	35.17***	38.58	36.06	36.64
Mean life satisfaction score	7.81	7.75	7.92	7.92
Observations	540	14,334	207	5,853

Sources: General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1 S: Suppressed due to low sample counts. Demographic and job characteristics of arts and non-arts workers in the full sample. The broad definition of arts workers is used.

Appendix Table 4: Worker characteristics by data source (professionals and technicians): GSS and HLFS

	GSS		HLFS	
	Arts	Non-arts	Arts	Non-arts
Female	0.554	0.420	0.526	0.450
Ethnicity				
NZ European	0.761	0.682	0.751	0.714
Māori & Pacific	0.086	0.138	0.060	0.101
Asian	0.126	0.152	0.146	0.167
MELAA & Other	0.027	0.029	0.044	0.019
Migrant	0.333	0.357	0.333	0.365
Age				
Under 25	0.126	0.096	0.142	0.104
25 to 34	0.261	0.257	0.277	0.268
35 to 44	0.243	0.228	0.238	0.237
45 to 54	0.212	0.251	0.211	0.225
55 and above	0.158	0.168	0.132	0.167
Highest qualification				
No qualification	0.018	0.043	S	0.042
School qualification	0.212	0.177	0.198	0.153
Post-school certificate or diploma	0.320	0.284	0.231	0.241
Bachelor's degree	0.230	0.250	0.354	0.352
Postgraduate degree	0.198	0.231	0.185	0.204
Missing	0.023	0.015	S	0.008
Has a partner	0.680	0.692	0.684	0.711
Has a dependent child	0.387	0.431	0.407	0.422
Region				
Auckland	0.432	0.367	0.347	0.349
Wellington	0.131	0.131	0.208	0.127
Canterbury	0.144	0.132	0.077	0.134
Rest of North Island	0.176	0.277	0.270	0.290
Rest of South Island	0.113	0.093	0.099	0.100
Full-time/part-time status				
Full-time	0.721	0.868	0.795	0.866
Part-time	0.275	0.127	0.205	0.134
Missing	S	0.005	0	0
Employment type				
Paid employee	0.604	0.831	0.691	0.886
Employer	0.036	0.052	0.044	0.025
Self-employed	0.351	0.115	0.262	0.089
Missing	0.009	0.002	S	S
Multiple jobs	0.081	0.063	0.120	0.067
Occupation type				
Professional	0.730	0.654	0.796	0.700
Technician	0.266	0.346	0.205	0.300
Mean labour income			57,900***	73,700
Mean total income	53,300***	68,400	60,700***	75,500
Mean age	39.63**	41.02	38.54	40.54
Mean total hours worked	35.27**	39.56	36.12	37.97
Mean life satisfaction score	7.80	7.80	7.95	7.98
Observations	501	5,094	198	2,079

Sources: General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: S: Suppressed due to low sample counts. Demographic and job characteristics of arts and non-arts workers in the sample of professionals and technicians. The broad definition of arts workers is used.

Appendix Table 5: Pay gap decomposition detailed results

	(1)	(2)	(3)	(4)	(5)
Non-arts mean income	10.9539*** (0.0092)	10.9539*** (0.0092)	10.9539*** (0.0092)	10.9539*** (0.0092)	11.0196*** (0.0084)
Arts mean income	10.6175*** (0.0404)	10.6175*** (0.0405)	10.6175*** (0.0404)	10.6175*** (0.0404)	10.7485*** (0.0361)
Difference	0.3364*** (0.0415)	0.3364*** (0.0415)	0.3364*** (0.0415)	0.3364*** (0.0415)	0.2710*** (0.0371)
Composition gap	0.0605*** (0.0229)	0.0641*** (0.0236)	0.0189 (0.0277)	0.2246*** (0.0399)	0.1651*** (0.0393)
Coefficients gap	0.2716*** (0.0395)	0.2716*** (0.0393)	0.2856*** (0.0393)	0.1399*** (0.0372)	0.1084*** (0.0352)
Interaction	0.0043 (0.0188)	0.0007 (0.0190)	0.0318 (0.0238)	-0.0282 (0.0345)	-0.0025 (0.0366)
<i>Contributions to the composition gap</i>					
Female	0.0697*** (0.0140)	0.0662*** (0.0136)	0.0610*** (0.0136)	0.0382*** (0.0113)	0.0271*** (0.0098)
Non-European	-0.0349*** (0.0123)	-0.0341*** (0.0119)	-0.0368*** (0.0119)	-0.0341*** (0.0107)	-0.0342*** (0.0105)
Migrant	-0.0005 (0.0044)	-0.0012 (0.0044)	-0.0032 (0.0044)	-0.0060 (0.0045)	-0.0066 (0.0044)
Age	0.1381*** (0.0520)	0.1049** (0.0506)	0.1104** (0.0514)	0.0466 (0.0404)	0.0668* (0.0400)
Age squared	-0.1258** (0.0506)	-0.0958* (0.0512)	-0.1018** (0.0519)	-0.0319 (0.0424)	-0.0493 (0.0399)
School	0.0052 (0.0079)	0.0056 (0.0080)	0.0045 (0.0079)	0.0018 (0.0069)	0.0028 (0.0061)
Postschool	-0.0004 (0.0017)	-0.0002 (0.0012)	-0.0004 (0.0019)	-0.0008 (0.0033)	-0.0005 (0.0020)
Bachelor	-0.0066 (0.0067)	-0.0059 (0.0064)	-0.0061 (0.0066)	-0.0064 (0.0063)	-0.0040 (0.0045)
Postgrad	0.0156 (0.0097)	0.0143 (0.0094)	0.0151 (0.0096)	0.0145 (0.0088)	0.0113 (0.0071)
Partner		0.0099 (0.0089)	0.0101 (0.0090)	0.0063 (0.0058)	0.0013 (0.0026)
Dependent child		-0.0007 (0.0015)	-0.0006 (0.0014)	0.0014 (0.0024)	0.0023 (0.0034)
Dep. child missing		0.0012 (0.0046)	0.0012 (0.0045)	0.0006 (0.0022)	0.0000 (0.0006)
Wellington			-0.0006 (0.0016)	-0.0005 (0.0013)	-0.0002 (0.0008)
Canterbury			-0.0003 (0.0033)	-0.0002 (0.0019)	-0.0002 (0.0022)
Rest of N.I.			-0.0301*** (0.0100)	-0.0178** (0.0083)	-0.0248*** (0.0090)
Rest of S.I.			-0.0034 (0.0029)	-0.0032 (0.0025)	-0.0038 (0.0028)
Total hours				0.1513*** (0.0239)	0.1153*** (0.0215)
Self-employed				0.0592*** (0.0193)	0.0556*** (0.0182)
Multiple jobs				0.0056 (0.0043)	0.0062 (0.0042)
Income measure	Labour	Labour	Labour	Labour	Total
Observations	9,021	9,021	9,021	9,021	9,036

Source: Estimated using Household Economic Survey 2018/19

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Reference groups are 'no qualification' for the education variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. Underlying pay regression results shown in Appendix Table 7. Variable definitions are provided in Appendix Table 15.

Appendix Table 6: Pay gap decomposition detailed results (robustness analysis)

	Census (1)	GSS (2)	HLFS (3)
Non-arts mean income	10.8711*** (0.0010)	10.9424*** (0.0102)	11.0753*** (0.0150)
Arts mean income	10.6129*** (0.0036)	10.6201*** (0.0409)	10.7933*** (0.0620)
Difference	0.2582*** (0.0037)	0.3222*** (0.0421)	0.2820*** (0.0638)
Composition gap	0.1816*** (0.0031)	0.1550*** (0.0337)	0.1359** (0.0565)
Coefficients gap	0.1059*** (0.0030)	0.1741*** (0.0371)	0.1596*** (0.0537)
Interaction	-0.0293*** (0.0021)	-0.0068 (0.0262)	-0.0135 (0.0417)
<i>Contributions to the composition gap</i>			
Female	0.0379*** (0.0010)	0.0180** (0.0087)	0.0070 (0.0069)
Non-European	-0.0182*** (0.0008)	-0.0057 (0.0049)	-0.0174 (0.0123)
Migrant	-0.0034*** (0.0003)	-0.0026 (0.0051)	-0.0022 (0.0057)
Age	0.1428*** (0.0053)	0.1526** (0.0771)	0.0899 (0.0916)
Age squared	-0.1293*** (0.0048)	-0.1301* (0.0714)	-0.0887 (0.0906)
School	-0.0035*** (0.0006)	0.0064 (0.0073)	0.0035 (0.0085)
Postschool	-0.0001 (0.0002)	0.0067 (0.0072)	-0.0002 (0.0015)
Bachelor	0.0002 (0.0004)	0.0017 (0.0039)	-0.0009 (0.0086)
Postgrad	0.0071*** (0.0006)	0.0011 (0.0043)	0.0082 (0.0095)
Partner	-0.0004** (0.0002)	0.0003 (0.0021)	-0.0001 (0.0026)
Dependent child	-0.0002** (0.0001)	-0.0018 (0.0026)	-0.0006 (0.0047)
Wellington	0.0012*** (0.0002)	-0.0004 (0.0012)	-0.0021 (0.0105)
Canterbury	-0.0034*** (0.0003)	0.0014 (0.0023)	-0.0121 (0.0090)
Rest of N.I.	-0.0181*** (0.0007)	-0.0227** (0.0100)	-0.0257 (0.0157)
Rest of S.I.	-0.0039*** (0.0003)	-0.0071 (0.0052)	-0.0027 (0.0072)
Total hours	0.1112*** (0.0019)	0.0817*** (0.0194)	0.0714** (0.0335)
Self-employed	0.0555*** (0.0013)	0.0546*** (0.0187)	0.0956*** (0.0308)
Multiple jobs	0.0068*** (0.0004)	0.0010 (0.0021)	0.0129 (0.0086)
Income measure	Total	Total	Labour
Observations	798,777	5,544	2,184

Source: Estimated using Census of Population and Dwellings 2018, General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Missing variables for partner and dependent child are included but not shown. Reference groups are 'no qualification' for the education variables, 'no partner' for the partner variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. Underlying pay regression results shown in Appendix Table 8. Variable definitions are provided in Appendix Table 15.

Appendix Table 7: Pay regression results

	(1)		(2)		(3)		(4)		(5)	
	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts
Female	-0.3990*** (0.0186)	-0.4784*** (0.0768)	-0.3846*** (0.0186)	-0.4541*** (0.0756)	-0.3804*** (0.0186)	-0.4188*** (0.0788)	-0.215*** (0.0176)	-0.2622*** (0.0714)	-0.2005*** (0.0160)	-0.1875*** (0.0649)
Non-European	-0.0891*** (0.0203)	-0.3747*** (0.1179)	-0.0798*** (0.0204)	-0.3665*** (0.1139)	-0.0950*** (0.0206)	-0.3959*** (0.1114)	-0.0976*** (0.0189)	-0.3665*** (0.0985)	-0.1091*** (0.0176)	-0.3629*** (0.0954)
Migrant	-0.0660*** (0.0198)	-0.0097 (0.0901)	-0.0763*** (0.0201)	-0.0251 (0.0893)	-0.0950*** (0.0204)	-0.0653 (0.0880)	-0.0855*** (0.0187)	-0.1212 (0.0814)	-0.0779*** (0.0175)	-0.1319* (0.0759)
Age	0.0979*** (0.0053)	0.0869*** (0.0222)	0.0928*** (0.0058)	0.0660** (0.0262)	0.0921*** (0.0058)	0.0695*** (0.0262)	0.0717*** (0.00538)	0.0294 (0.0244)	0.0715*** (0.0050)	0.0426* (0.0228)
Age squared	-0.0010*** (0.0001)	-0.0009*** (0.0003)	-0.0009*** (0.0001)	-0.0007** (0.0003)	-0.0009*** (0.0001)	-0.0007** (0.0003)	-0.000678*** (6.32e-05)	-0.0002 (0.0003)	-0.0007*** (0.0001)	-0.0004 (0.0003)
School	0.1831*** (0.0427)	-0.1574 (0.2308)	0.1932*** (0.0426)	-0.1683 (0.2329)	0.1908*** (0.0427)	-0.1352 (0.2358)	0.199*** (0.0386)	-0.0529 (0.2098)	0.1748*** (0.0336)	-0.0813 (0.1737)
Postschool	0.3201*** (0.0374)	0.0842 (0.1990)	0.3165*** (0.0369)	0.0477 (0.1998)	0.3215*** (0.0370)	0.0967 (0.2020)	0.300*** (0.0337)	0.1848 (0.1803)	0.2716*** (0.0289)	0.1125 (0.1494)
Bachelor	0.4729*** (0.0392)	0.2533 (0.1997)	0.4693*** (0.0388)	0.2269 (0.2004)	0.4574*** (0.0393)	0.2342 (0.2040)	0.444*** (0.0358)	0.2452 (0.1833)	0.4070*** (0.0306)	0.1610 (0.1495)
Postgrad	0.5531*** (0.0403)	0.4190** (0.2018)	0.5461*** (0.0399)	0.3838* (0.2025)	0.5306*** (0.0403)	0.4042** (0.2045)	0.511*** (0.0366)	0.3877** (0.1821)	0.4906*** (0.0317)	0.3056** (0.1494)
Partner			0.1979*** (0.0324)	0.4946*** (0.1343)	0.2014*** (0.0324)	0.5042*** (0.1340)	0.196*** (0.0284)	0.3161*** (0.1079)	0.1150*** (0.0250)	0.0559 (0.1034)
Dependent child			-0.0359* (0.0206)	-0.0559 (0.0941)	-0.0294 (0.0207)	-0.0492 (0.0946)	0.0347* (0.0191)	0.1147 (0.0876)	0.0574*** (0.0175)	0.1714** (0.0842)
Dep. child missing			0.1107*** (0.0370)	0.3370** (0.1622)	0.1151*** (0.0368)	0.3333** (0.1621)	0.127*** (0.0320)	0.1551 (0.1414)	0.0876*** (0.0287)	0.0446 (0.1252)

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	(1)		(2)		(3)		(4)		(5)	
	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts
<i>Continued from previous page</i>										
Wellington					0.0402 (0.0268)	-0.1169 (0.1192)	0.0471* (0.0252)	-0.0950 (0.1066)	0.0285 (0.0241)	-0.0522 (0.0978)
Canterbury					-0.0625** (0.0279)	-0.2475* (0.1299)	-0.0415* (0.0248)	-0.1452 (0.1057)	-0.0634*** (0.0238)	-0.1647* (0.0939)
Rest of N.I.					-0.0908*** (0.0233)	-0.3294*** (0.0938)	-0.0829*** (0.0214)	-0.1946** (0.0856)	-0.0851*** (0.0200)	-0.2745*** (0.0878)
Rest of S.I.					-0.1920*** (0.0347)	-0.2119* (0.1130)	-0.143*** (0.0305)	-0.1987** (0.0874)	-0.1326*** (0.0276)	-0.2424*** (0.0820)
Total hours							0.874*** (0.0388)	0.8916*** (0.0930)	0.6673*** (0.0361)	0.6626*** (0.0975)
Self-employed							-0.0569 (0.0364)	-0.2723*** (0.0871)	-0.0667* (0.0366)	-0.2489*** (0.0799)
Multiple jobs							-0.135*** (0.0428)	-0.2037 (0.1383)	-0.0898** (0.0409)	-0.2037 (0.1253)
Intercept	8.5968*** (0.1116)	8.9198*** (0.4945)	8.5752*** (0.1162)	9.0207*** (0.5364)	8.6444*** (0.1183)	9.0572*** (0.5365)	5.743*** (0.167)	6.7209*** (0.4980)	6.6428*** (0.1582)	7.5622*** (0.4254)
Income measure	Labour	Labour	Labour	Labour	Labour	Labour	Labour	Labour	Total	Total
Observations	8,211	810	8,211	810	8,211	810	8,211	810	8,217	819
Adj. R-squared	0.150	0.107	0.156	0.125	0.162	0.134	0.317	0.323	0.276	0.256

Source: Estimated using Household Economic Survey 2018/19

Notes: Dependent variable is income. Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Reference groups are 'no qualification' for the education variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. Variable definitions are provided in Appendix Table 15.

Appendix Table 8: Pay regression results (robustness analysis)

	Census		GSS		HLFS	
	(1)		(2)		(3)	
	Non-arts	Arts	Non-arts	Arts	Non-arts	Arts
Female	-0.2049*** (0.0017)	-0.2412*** (0.0057)	-0.2230*** (0.0193)	-0.1567** (0.0705)	-0.0906*** (0.0229)	-0.1002 (0.0870)
Non-European	-0.1759*** (0.0020)	-0.2065*** (0.0077)	-0.1366*** (0.0201)	-0.0967 (0.0789)	-0.0543** (0.0246)	-0.2467* (0.1474)
Migrant	-0.0375*** (0.0018)	-0.0734*** (0.0065)	-0.0890*** (0.0198)	-0.2281*** (0.0856)	-0.0035 (0.0244)	-0.0353 (0.0943)
Age	0.0811*** (0.0005)	0.1018*** (0.0018)	0.0767*** (0.0062)	0.1218*** (0.0281)	0.0399*** (0.0084)	0.0972*** (0.0318)
Age squared	-0.0008*** (0.0000)	-0.0011*** (0.0000)	-0.0008*** (0.0001)	-0.0013*** (0.0003)	-0.0004*** (0.0001)	-0.0011*** (0.0004)
School	0.1254*** (0.0031)	0.0724*** (0.0125)	0.1019** (0.0474)	-0.1394 (0.1517)	0.1050* (0.0537)	-0.0780 (0.1912)
Postschool	0.2378*** (0.0032)	0.1168*** (0.0128)	0.2145*** (0.0435)	-0.2888* (0.1502)	0.1528*** (0.0526)	0.0263 (0.1910)
Bachelor	0.4496*** (0.0032)	0.2585*** (0.0128)	0.4341*** (0.0454)	0.0642 (0.1396)	0.3348*** (0.0513)	0.2361 (0.1640)
Postgrad	0.5584*** (0.0033)	0.2974*** (0.0132)	0.5422*** (0.0455)	0.0361 (0.1463)	0.4573*** (0.0530)	0.2203 (0.1913)
Partner	0.1296*** (0.0020)	0.0944*** (0.0068)	0.0724*** (0.0181)	0.0911 (0.0656)	0.0556** (0.0240)	0.0694 (0.0819)
Partner missing	0.0968*** (0.0034)	0.0799*** (0.0130)			0.0399***	0.0972***
Dependent child	-0.0192*** (0.0018)	-0.0269*** (0.0065)	-0.0270 (0.0189)	-0.0642 (0.0795)	0.0304 (0.0278)	-0.1243 (0.1107)
Dep. child missing	-0.1085*** (0.0037)	-0.1413*** (0.0146)				
Wellington	0.0300*** (0.0025)	-0.0613*** (0.0082)	0.0050 (0.0268)	-0.0558 (0.1038)	0.0540 (0.0344)	0.0245 (0.1257)
Canterbury	-0.0653*** (0.0025)	-0.1546*** (0.0093)	-0.0808*** (0.0280)	-0.0634 (0.0922)	-0.0164 (0.0355)	-0.2530 (0.1571)
Rest of N.I.	-0.1105*** (0.0020)	-0.2386*** (0.0076)	-0.1245*** (0.0224)	-0.2487** (0.0981)	-0.0791*** (0.0286)	-0.3861*** (0.1414)
Rest of S.I.	-0.1293*** (0.0028)	-0.2575*** (0.0104)	-0.2194*** (0.0305)	-0.2974** (0.1369)	-0.1004*** (0.0335)	-0.2965* (0.1609)
Total hours	0.7049*** (0.0018)	0.7880*** (0.0050)	0.6538*** (0.0413)	0.5777*** (0.0851)	1.0121*** (0.0354)	0.9792*** (0.1281)
Self-employed	-0.1226*** (0.0027)	-0.2959*** (0.0064)	-0.0621* (0.0363)	-0.2429*** (0.0816)	-0.1821** (0.0801)	-0.4521*** (0.1323)
Multiple jobs	-0.0934*** (0.0031)	-0.1770*** (0.0090)	-0.1102*** (0.0386)	-0.0527 (0.1104)	-0.0528 (0.0504)	-0.2334* (0.1204)
Intercept	6.3080*** (0.0116)	5.8721*** (0.0380)	6.7268*** (0.1998)	6.4693*** (0.6392)	6.2920*** (0.2018)	5.7302*** (0.6965)
Income measure	Total	Total	Total	Total	Labour	Labour
Observations	723,699	75,081	5,049	498	1,998	186
Adj. R-squared	0.341	0.415	0.347	0.330	0.480	0.467

Source: Estimated using Census of Population and Dwellings 2018, General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Dependent variable is income. Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Reference groups are 'no qualification' for the education variables, 'no partner' for the partner variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. The GSS regressions include year dummy variables (not shown). Variable definitions are provided in Appendix Table 15.

Appendix Table 9: Detailed regression results: relationship between arts employment and life satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)
Arts worker	-0.0111 (0.0423)	-0.0376 (0.0424)	0.7293* (0.3882)	0.6459* (0.3806)	0.5040 (0.4533)	-0.3999 (0.6755)
Log income	0.0773*** (0.0139)	0.0790*** (0.0165)	0.0898*** (0.0153)	0.0911*** (0.0178)	0.1014*** (0.0189)	0.1733*** (0.0207)
Arts worker x Log inc.			-0.0693* (0.0361)	-0.0639* (0.0354)	-0.0501 (0.0416)	0.0302 (0.0582)
Female		0.0974*** (0.0256)		0.0976*** (0.0256)	0.0996*** (0.0256)	0.0770*** (0.0252)
Non-European		-0.1136*** (0.0288)		-0.1136*** (0.0288)	-0.1106*** (0.0288)	-0.0982*** (0.0289)
Migrant		-0.0429 (0.0276)		-0.0425 (0.0276)	-0.0422 (0.0276)	-0.0423 (0.0275)
Age		-0.0338*** (0.0082)		-0.0343*** (0.0082)	-0.0349*** (0.0082)	-0.0301*** (0.0081)
Age squared		0.0004*** (0.0001)		0.0004*** (0.0001)	0.0004*** (0.0001)	0.0004*** (0.0001)
School		0.0217 (0.0583)		0.0181 (0.0583)	0.0188 (0.0583)	0.0050 (0.0580)
Postschool		0.0255 (0.0531)		0.0229 (0.0531)	0.0232 (0.0530)	0.0118 (0.0527)
Bachelor		0.1329** (0.0550)		0.1307** (0.0550)	0.1308** (0.0549)	0.1126** (0.0545)
Postgrad		0.1652*** (0.0560)		0.1626*** (0.0560)	0.1598*** (0.0559)	0.1412** (0.0555)
Partner		0.2916*** (0.0372)		0.2924*** (0.0372)	0.3022*** (0.0371)	0.2575*** (0.0380)
Dependent child		-0.0407 (0.0295)		-0.0390 (0.0295)	-0.0425 (0.0295)	0.0315 (0.0351)
Dep. child missing		-0.0271 (0.0454)		-0.0247 (0.0454)	-0.0198 (0.0453)	-0.0008 (0.0452)
Wellington		0.0659* (0.0376)		0.0653* (0.0376)	0.0672* (0.0375)	0.0701* (0.0374)
Canterbury		0.0441 (0.0392)		0.0437 (0.0392)	0.0470 (0.0392)	0.0596 (0.0391)
Rest of N.I.		0.0451 (0.0309)		0.0446 (0.0309)	0.0467 (0.0309)	0.0638** (0.0309)
Rest of S.I.		0.0264 (0.0428)		0.0263 (0.0428)	0.0272 (0.0428)	0.0514 (0.0427)
Total hours		-0.0422 (0.0322)		-0.0438 (0.0322)	-0.0333 (0.0309)	-0.0245 (0.0294)
Self-employed		0.0775** (0.0371)		0.0750** (0.0371)	0.0740** (0.0371)	0.0676* (0.0369)
Multiple jobs		0.0258 (0.0516)		0.0246 (0.0515)	0.0221 (0.0515)	0.0047 (0.0512)
Household size						-0.0376*** (0.0125)
Intercept	3.3115*** (0.1530)	3.8238*** (0.2101)	3.1742*** (0.1688)	3.7094*** (0.2194)	3.5562*** (0.2328)	2.6370*** (0.2794)
Income measure	Labour	Labour	Labour	Labour	Total	Household
Observations	4,401	4,401	4,401	4,401	4,401	4,401
Adj. R-squared	0.00672	0.0537	0.00732	0.0542	0.0549	0.0654

Source: Estimated using Household Economic Survey 2018/19

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. Reference groups are 'no qualification' for the education variables, 'no partner' for the partner variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. Variable definitions are provided in Appendix Table 15.

Appendix Table 10: Worker characteristics: Machinery operator vs. Professional/Technician

	Machinery operator	Professional/ Technician
Female	0.150	0.409
Ethnicity		
NZ European	0.534	0.694
Māori & Pacific	0.263	0.082
Asian	0.173	0.188
MELAA & Other	S	0.030
Missing	S	0.007
Migrant	0.361	0.400
Age		
Under 25	0.105	0.093
25 to 34	0.195	0.271
35 to 44	0.211	0.236
45 to 54	0.256	0.224
55 and above	0.226	0.175
Highest qualification		
No qualification	0.323	0.060
School qualification	0.323	0.143
Post-school certificate or diploma	0.271	0.306
Bachelor's degree	0.060	0.259
Postgraduate degree	0.023	0.229
Missing	S	S
Has a partner	0.699	0.724
Dependent child status		
Has a dependent child	0.429	0.439
Does not have a dependent child	0.391	0.404
Missing	0.180	0.156
Region		
Auckland	0.383	0.355
Wellington	0.060	0.130
Canterbury	0.143	0.138
Rest of North Island	0.316	0.284
Rest of South Island	0.105	0.095
Full-time/part-time status		
Full-time	0.925	0.883
Part-time	0.068	0.115
Missing	S	S
Employment type		
Paid employee	0.857	0.820
Employer	0.023	0.045
Self-employed	0.105	0.112
Missing	0.023	0.023
Multiple jobs	0.038	0.052
Mean labour income	55,900***	71,658
Mean total income	57,800***	74,924
Mean age	42.51***	40.74
Mean total hours worked	45.37***	39.99
Mean life satisfaction score	3.95***	4.16
Observations	1,563	8,250

Source: Household Economic Survey 18/19

Notes: Asterisks denote statistically significant differences from non-arts workers: ***p<0.01, **p<0.05, *p<0.1
 S: Suppressed due to low sample counts. Demographic and job characteristics of machinery operators and (non-arts) professionals and technicians.

Appendix Table 11: Detailed regression results: relationship between employment in machinery operators and drivers occupations and wellbeing

	HES		GSS	
	(1)	(2)	(3)	(4)
Dependent variable	LS	LS	LS	JS
Scale of dep. var.	1-5	1-5	0-10	1-5
Mean dep. var.	4.124	4.124	7.664	4.019
Machinery operator	-0.1028*** (0.0359)	-0.1034*** (0.0359)	-0.1478** (0.0655)	-0.0237 (0.0369)
Log income	0.0793*** (0.0168)	0.0884*** (0.0181)	0.1657*** (0.0370)	0.0442** (0.0208)
Female	0.0934*** (0.0259)	0.0942*** (0.0259)	0.1493*** (0.0467)	0.0461* (0.0263)
Non-European	-0.1091*** (0.0274)	-0.1068*** (0.0274)	0.0870* (0.0485)	0.0855*** (0.0273)
Migrant	-0.0290 (0.0274)	-0.0285 (0.0274)	0.1178** (0.0490)	0.0564** (0.0276)
Age	-0.0363*** (0.0079)	-0.0368*** (0.0079)	-0.1293*** (0.0141)	-0.0397*** (0.0079)
Age squared	0.0004*** (0.0001)	0.0004*** (0.0001)	0.0015*** (0.0002)	0.0005*** (0.0001)
School	0.0193 (0.0463)	0.0178 (0.0463)	-0.0512 (0.0826)	-0.0175 (0.0465)
Postschool	-0.0096 (0.0431)	-0.0108 (0.0431)	0.0155 (0.0794)	0.0532 (0.0447)
Bachelor	0.1244*** (0.0472)	0.1238*** (0.0472)	0.0848 (0.0875)	0.0646 (0.0492)
Postgrad	0.1640*** (0.0485)	0.1609*** (0.0486)	0.0646 (0.0901)	0.0578 (0.0507)
Partner	0.2916*** (0.0370)	0.2997*** (0.0369)	0.6890*** (0.0464)	-0.0035 (0.0261)
Dependent child	-0.0581** (0.0288)	-0.0601** (0.0288)	-0.0480 (0.0490)	0.0655** (0.0276)
Dep. child missing	-0.0547 (0.0445)	-0.0498 (0.0445)		
Wellington	0.0848** (0.0379)	0.0863** (0.0379)	0.1055 (0.0685)	-0.0483 (0.0385)
Canterbury	0.0565 (0.0385)	0.0592 (0.0385)	0.0077 (0.0693)	-0.0394 (0.0390)
Rest of N.I.	0.0805*** (0.0303)	0.0811*** (0.0303)	0.1311** (0.0553)	-0.0548* (0.0311)
Rest of S.I.	0.0437 (0.0418)	0.0436 (0.0418)	0.1409* (0.0733)	-0.0068 (0.0412)
Total hours	-0.0569* (0.0340)	-0.0460 (0.0329)	0.0500 (0.0555)	-0.0092 (0.0312)
Self-employed	0.0449 (0.0391)	-0.0042 (0.0535)	0.0587 (0.0675)	0.1667*** (0.0380)
Multiple jobs	-0.0010 (0.0535)	0.0426 (0.0391)	-0.1377 (0.0886)	0.0422 (0.0498)
Intercept	3.9162*** (0.2094)	3.7753*** (0.2224)	7.6435*** (0.4185)	4.0904*** (0.2354)
Income measure	Labour	Total	Total	Total
Observations	4,755	4,755	5,913	5,907
Adj. R-squared	0.0651	0.0655	0.0557	0.0215

Source: Estimated using Household Economic Survey 2018/19, General Social Survey 2014-2018

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. LS = life satisfaction, JS = job satisfaction. Reference groups are 'no qualification' for the education variables, 'no dependent child' for the dependent child variables, and 'Auckland' for the region variables. Variable definitions are provided in Appendix Table 15.

Appendix Table 12: Detailed regression results: relationship between arts employment and alternative measures of wellbeing (robustness analysis)

	GSS			HLFS	
	(1)	(2)	(3)	(4)	(5)
Dependent variable	LS	JS	Purpose	LS	WHO-5
Scale of dep. var.	0-10	1-5	0-10	0-10	0-100
Mean dep. var.	7.703	4.043	8.162	7.921	64.33
Arts worker	0.2011 (0.9266)	0.1022** (0.0431)	1.4546* (0.8585)	0.7789 (1.3944)	9.3658 (16.6078)
Log income	0.1719*** (0.0379)	0.0234 (0.0206)	0.1434*** (0.0351)	0.1341** (0.0615)	1.5076** (0.7331)
Arts worker x Log inc.	-0.0157 (0.0865)		-0.1352* (0.0802)	-0.0866 (0.1283)	-0.9596 (1.5281)
Female	0.1661*** (0.0455)	0.0413 (0.0260)	0.3613*** (0.0422)	0.1927*** (0.0636)	-1.9064** (0.7590)
Non-European	0.0569 (0.0497)	0.0738*** (0.0284)	0.1206*** (0.0460)	0.0393 (0.0760)	2.6745*** (0.9085)
Migrant	0.0922* (0.0489)	0.0630** (0.0279)	-0.0302 (0.0453)	-0.0970 (0.0684)	0.1526 (0.8171)
Age	-0.1251*** (0.0145)	-0.0352*** (0.0083)	-0.0712*** (0.0135)	-0.0788*** (0.0213)	-0.8148*** (0.2547)
Age squared	0.0014*** (0.0002)	0.0004*** (0.0001)	0.0009*** (0.0002)	0.0009*** (0.0002)	0.0106*** (0.0030)
School	0.0447 (0.0997)	-0.0278 (0.0569)	-0.0676 (0.0924)	-0.2614* (0.1536)	-3.4768* (1.8439)
Postschool	0.1408 (0.0929)	0.0963* (0.0530)	0.1259 (0.0861)	-0.3193** (0.1451)	-3.4635** (1.7426)
Bachelor	0.2055** (0.0974)	0.1089* (0.0556)	0.1112 (0.0903)	-0.4213*** (0.1445)	-4.2062** (1.7353)
Postgrad	0.1809* (0.0992)	0.0941* (0.0566)	0.1749* (0.0919)	-0.4986*** (0.1512)	-4.4767** (1.8137)
Partner	0.6505*** (0.0469)	-0.0108 (0.0268)	0.2695*** (0.0434)	0.4972*** (0.0653)	1.5587** (0.7799)
Dependent child	-0.0176 (0.0495)	0.0648** (0.0283)	0.1990*** (0.0459)	0.1678** (0.0707)	-0.6024 (0.8438)
Wellington	0.0850 (0.0675)	-0.0520 (0.0385)	0.0608 (0.0625)	-0.1313 (0.0929)	-0.6236 (1.1080)
Canterbury	-0.0087 (0.0693)	-0.0330 (0.0395)	0.1732*** (0.0642)	-0.1293 (0.0998)	-1.6987 (1.1927)
Rest of N.I.	0.1312** (0.0562)	-0.0522 (0.0320)	0.2162*** (0.0520)	0.2073*** (0.0779)	0.6831 (0.9322)
Rest of S.I.	0.1224 (0.0751)	-0.0549 (0.0429)	0.1648** (0.0696)	0.1627 (0.1038)	-0.7661 (1.2372)
Total hours	-0.0171 (0.0534)	-0.0157 (0.0305)	-0.0430 (0.0495)	0.0350 (0.0945)	0.0256 (1.1277)
Self-employed	0.0612 (0.0645)	0.1891*** (0.0368)	0.0617 (0.0598)	0.0455 (0.1133)	0.4467 (1.3558)
Multiple jobs	-0.1440* (0.0864)	0.0369 (0.0493)	0.0955 (0.0800)	0.0436 (0.0952)	-0.5570 (1.1360)
Intercept	7.6672*** (0.4381)	4.2220*** (0.2391)	7.3213*** (0.4059)	7.7273*** (0.6420)	65.2295*** (7.6583)
Income measure	Total	Total	Total	Labour	Labour
Observations	5,535	5,535	5,535	2,184	2,172
Adj. R-squared	0.0502	0.0243	0.0387	0.0499	0.0227

Source: Estimated using General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. LS = life satisfaction, JS = job satisfaction, Purpose = sense of purpose, WHO-5 = mental wellbeing. The GSS regressions include year dummy variables (not shown). Variable definitions are provided in Appendix Table 15.

Appendix Table 13: Detailed regression results: relationship between arts employment and income adequacy (robustness analysis)

	HES		GSS	HLFS
	(1)	(2)	(3)	(4)
Mean dep. var.	0.739	0.739	0.776	0.721
Arts worker	-0.0457** (0.0230)	-0.0602*** (0.0226)	-0.0178 (0.0205)	-0.0191 (0.0311)
Log income	0.0812*** (0.0089)	0.1657*** (0.0107)	0.1396*** (0.0098)	0.1332*** (0.0170)
Female	0.0317** (0.0139)	0.0094 (0.0135)	0.0330*** (0.0123)	0.0135 (0.0184)
Non-European	-0.0939*** (0.0156)	-0.0778*** (0.0155)	-0.0937*** (0.0135)	-0.0985*** (0.0220)
Migrant	-0.0422*** (0.0150)	-0.0436*** (0.0148)	-0.0309** (0.0132)	-0.0586*** (0.0198)
Age	-0.0140*** (0.0044)	-0.0099** (0.0043)	-0.0182*** (0.0039)	-0.0086 (0.0062)
Age squared	0.0002*** (0.0001)	0.0001** (0.0001)	0.0002*** (0.0000)	0.0001 (0.0001)
School	0.0822*** (0.0316)	0.0678** (0.0311)	0.0850*** (0.0270)	0.1142** (0.0445)
Postschool	0.0837*** (0.0288)	0.0725** (0.0283)	0.1029*** (0.0252)	0.0753* (0.0421)
Bachelor	0.1590*** (0.0298)	0.1426*** (0.0292)	0.1307*** (0.0264)	0.1687*** (0.0419)
Postgrad	0.1805*** (0.0304)	0.1601*** (0.0298)	0.1804*** (0.0269)	0.1700*** (0.0439)
Partner	0.1557*** (0.0202)	0.1267*** (0.0203)	0.1327*** (0.0127)	0.1311*** (0.0189)
Dependent child	-0.1118*** (0.0160)	-0.0370** (0.0188)	-0.1175*** (0.0134)	-0.1094*** (0.0205)
Dep. child missing	0.0554** (0.0246)	0.0804*** (0.0242)		
Wellington	0.0761*** (0.0204)	0.0790*** (0.0201)	0.1133*** (0.0183)	0.0869*** (0.0269)
Canterbury	0.0869*** (0.0213)	0.0996*** (0.0210)	0.1216*** (0.0188)	0.0749*** (0.0289)
Rest of N.I.	0.0638*** (0.0168)	0.0798*** (0.0166)	0.0872*** (0.0152)	0.1024*** (0.0226)
Rest of S.I.	0.0716*** (0.0233)	0.0926*** (0.0230)	0.0724*** (0.0204)	0.0903*** (0.0301)
Total hours	0.0026 (0.0174)	0.0233 (0.0158)	-0.0285** (0.0145)	-0.0674** (0.0273)
Self-employed	0.0238 (0.0201)	-0.0096 (0.0275)	0.0359** (0.0175)	0.0393 (0.0275)
Multiple jobs	0.0102 (0.0280)	0.0132 (0.0198)	-0.0286 (0.0234)	0.0295 (0.0329)
Household size		-0.0392*** (0.0067)		
Intercept	-0.0753 (0.1141)	-1.1658*** (0.1459)	-0.4964*** (0.1135)	-0.4670*** (0.1795)
Income measure	Labour	Household	Total	Labour
Observations	4,407	4,404	5,541	2,178
Adj. R-squared	0.1005	0.1315	0.1238	0.1202

Source: Estimated using Household Economic Survey 18/19, General Social Survey 2014-2018, Household Labour Force Survey June 2020

Notes: Standard errors in parentheses. ***p<0.01, **p<0.05, *p<0.1. The GSS regression includes year dummy variables (not shown). Variable definitions are provided in Appendix Table 15.

Appendix Table 14: Detailed regression results: relationship between arts employment and life satisfaction (disaggregated analysis)

	Female (1)	Male (2)	Age 18-39 (3)	Age 40-64 (4)
Mean dep. var.	4.193	4.123	4.139	4.169
Arts worker	1.0652** (0.4665)	-0.6352 (0.7701)	0.7987 (0.5110)	0.2485 (0.5845)
Log income	0.0811*** (0.0261)	0.1057*** (0.0246)	0.0558** (0.0271)	0.1140*** (0.0236)
Arts worker x Log inc.	-0.1085** (0.0442)	0.0579 (0.0697)	-0.0748 (0.0481)	-0.0297 (0.0536)
Female			0.1127*** (0.0391)	0.1021*** (0.0340)
Non-European	-0.1359*** (0.0416)	-0.0988** (0.0399)	-0.1495*** (0.0428)	-0.0883** (0.0390)
Migrant	-0.0574 (0.0403)	-0.0180 (0.0381)	-0.0415 (0.0431)	-0.0418 (0.0361)
Age	-0.0255** (0.0124)	-0.0415*** (0.0110)	-0.0580 (0.0413)	-0.0050 (0.0322)
Age squared	0.0003** (0.0001)	0.0005*** (0.0001)	0.0008 (0.0007)	0.0001 (0.0003)
School	0.1777* (0.1044)	-0.0445 (0.0705)	-0.0528 (0.0932)	0.0510 (0.0760)
Postschool	0.2357** (0.0965)	-0.0701 (0.0636)	-0.0617 (0.0883)	0.0645 (0.0666)
Bachelor	0.3054*** (0.0958)	0.0728 (0.0696)	0.0993 (0.0893)	0.1405** (0.0703)
Postgrad	0.3869*** (0.0970)	0.0270 (0.0710)	0.1686* (0.0919)	0.1427** (0.0710)
Partner	0.3130*** (0.0461)	0.2513*** (0.0658)	0.1843*** (0.0563)	0.4125*** (0.0519)
Dependent child	-0.0287 (0.0442)	-0.0582 (0.0400)	-0.0141 (0.0440)	-0.0218 (0.0413)
Dep. child missing	0.0264 (0.0610)	-0.0806 (0.0728)	-0.0649 (0.0664)	0.0656 (0.0633)
Wellington	0.0652 (0.0551)	0.0627 (0.0513)	0.0693 (0.0568)	0.0731 (0.0498)
Canterbury	0.0041 (0.0587)	0.0634 (0.0527)	-0.0314 (0.0578)	0.1033* (0.0530)
Rest of N.I.	0.0788* (0.0443)	0.0123 (0.0433)	-0.0890* (0.0470)	0.1407*** (0.0409)
Rest of S.I.	0.0501 (0.0618)	-0.0025 (0.0595)	-0.1562** (0.0676)	0.1510*** (0.0554)
Total hours	-0.0848** (0.0419)	0.0503 (0.0535)	0.0116 (0.0521)	-0.0752* (0.0413)
Self-employed	0.0618 (0.0607)	0.0877* (0.0470)	0.0871 (0.0704)	0.0851* (0.0443)
Multiple jobs	0.0046 (0.0668)	0.0484 (0.0815)	0.0802 (0.0946)	-0.0050 (0.0619)
Intercept	3.6886*** (0.3180)	3.4459*** (0.3180)	4.3944*** (0.6278)	2.6805*** (0.8429)
Income measure	Labour	Labour	Labour	Labour
Observations	2,118	2,286	1,824	2,580
Adj. R-squared	0.0593	0.0510	0.0494	0.0675

Source: Estimated using Household Economic Survey 2018/19

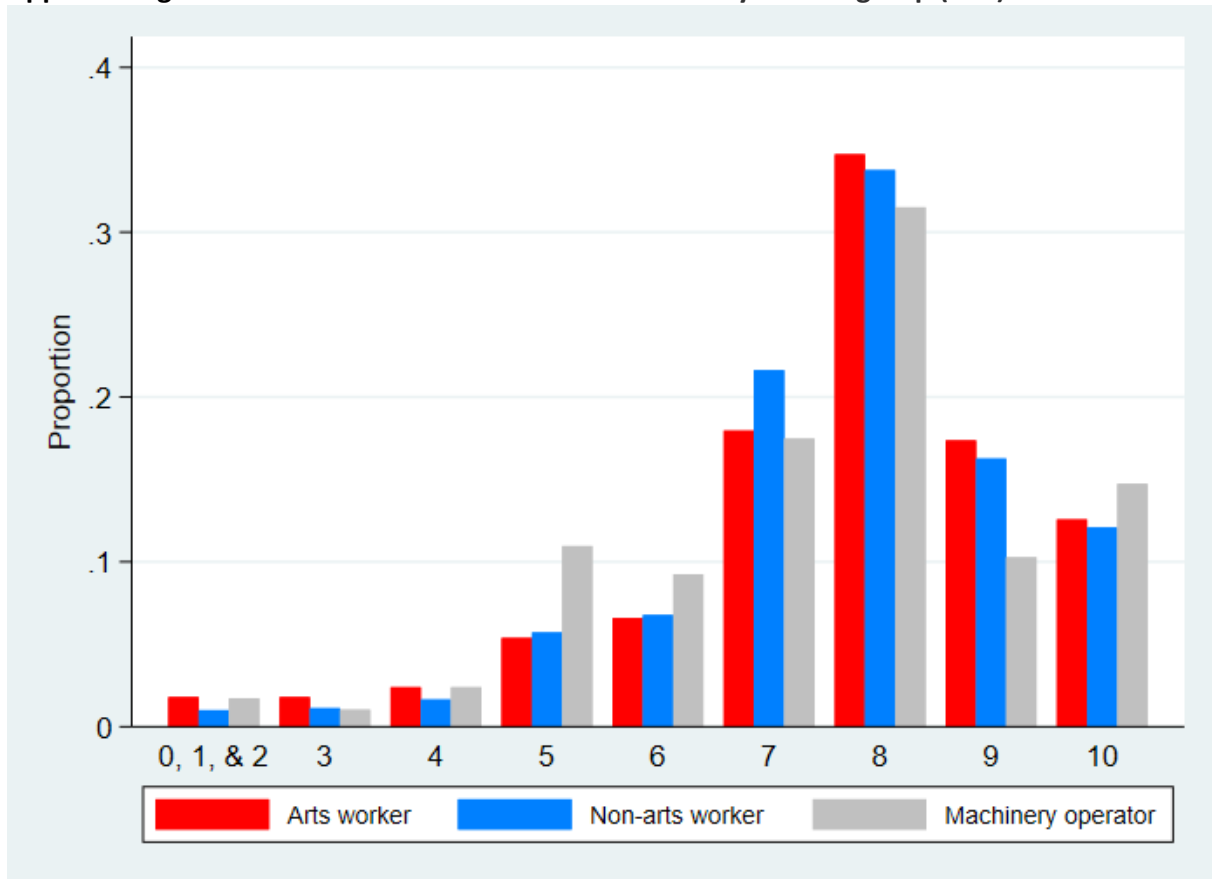
Notes: Dependent variable: life satisfaction score (scale: 1-5). Standard errors in parentheses. ***p<0.01,

**p<0.05, *p<0.1. Variable definitions are provided in Appendix Table 15.

Appendix Table 15: Variable definitions

Name	Description
Arts worker	Equals 1 if primary occupation is arts-related, 0 otherwise (see Appendix Table X for the list of arts-related occupations)
Labour income	Log gross annual labour income
Total income	Log gross annual income from all sources
Household income	Log gross annual household income from all sources
Life satisfaction	"How do you feel about your life right now?" Scale: HES: 1 (very dissatisfied) to 5 (very satisfied); GSS and HLFS: 0 (completely dissatisfied) to 10 (completely satisfied)
Job satisfaction	"Think about the last four weeks in your job. How do you feel about your job?" Scale: 1 (very dissatisfied) to 5 (very satisfied)
Sense of purpose	"To what extent do you feel the things you do in your life are worthwhile?" Scale: 0 (not at all worthwhile) to 10 (completely worthwhile)
WHO-5 index	Index that measures current mental wellbeing. Scores range from 0 (worst imaginable mental wellbeing) to 100 (best imaginable mental wellbeing)
Income adequacy	"I would like you to think about how well your (you and your partners combined) total income meets your everyday needs for such things as accommodation, food, clothing and other necessities. Would you say you have not enough money, only just enough money, enough money, or more than enough money?"
Sex	Equals 1 if female, 0 if male
Non-European	Equals 1 if prioritised ethnicity is Māori, Pacific, Asian or other, 0 if NZ European
Migrant	Equals 1 if born overseas, 0 if born in New Zealand
Age	Age in years
Highest qualification	Highest qualification attained. Reference group is no qualification. School = NCEA L1 - L3 certificate or other secondary school qualification Postschool = L4 certificate, L5-L6 diploma, or other post school qualification below L7 Bachelor = Bachelor's degree Postgrad = Honours, Masters, or Doctorate degree
Partner	Equals 1 if has a partner, 0 otherwise
Dependent child	Equals 1 if has at least one dependent child, 0 otherwise
Region	The region the household lives in. Reference group is Auckland.
Total hours worked	Log total hours worked in all jobs
Self-employed	Equals 1 if self-employed, 0 otherwise
Multiple jobs status	Equals 1 if work more than one job, 0 if work only one job
Household size	Number of people in household

Appendix Figure 1: Distribution of life satisfaction score by worker group (GSS)



Source: General Social Survey 2014-2018

Notes: This figure shows the proportion of workers who reported each score within the 0 to 10 life satisfaction scale, where 0 is completely dissatisfied and 10 is completely satisfied. The proportions reporting scores of 0, 1 and 2 were combined to protect confidentiality. The arts worker and non-arts worker groups contain professionals and technicians only.

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