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Newsletter



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Spotlight on Cultural Research: CHRC

The Cultural Human Resources Council (CHRC) was conceived and born into a family of over 30 sector councils in the early 1990s – all independent, industry-based organizations covering 50% of the total workforce (e.g. Biotechnology, Tourism, Environment, Automotive Repair Services, Forestry, Mining, etc.). HRSDC (now ESDC) supported them through a Sector Council Program with a very specific objective: to bring employers, employees and educators/trainers around the table to encourage more training and professional development in the workplace. Collecting

Labour Market Information (LMI) data was another important aspect of their work.

The Sector Council Program was closed down in 2013. A few sector councils including CHRC have continued to function – some settling into broader industry associations – but not so in the cultural sector, where no single industry supports CHRC's cross-sector mandate.

CHRC faced a particular challenge as it bridged a workforce of workers/artists who were largely self-employed, as a sector council for the cultural sector, whereas

HRSDC saw the world through an employee/employer lens. Run by a Board that is representative of the eight sub-sectors, CHRC has managed to bring the points of view of self-employed cultural workers to the table and to carve out a place for them in the HRSDC/ESDC universe.

Among its most significant achievements in this area was to get the funding for and oversee a cross-sector *Study of HR Trends and Issues in the Cultural Sector*, accompanied by the first *Labour Market Information Study of the Cultural Workforce*, undertaken in 2010/11 by the Conference Board of Canada under

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CHRC's direction. This ground breaking study is out of date now, but it contains an immensely helpful structure and baseline data for future data collection in this area. The breakdown of provincial and industry/sub-sector information is offered for the first (and so far only) time (e.g. profiles of employers in the industry sub-domains; establishment breakdown by province; etc.).

Another example of data collection that CHRC has spearheaded is a *National Compensation Survey for Arts Administrators*

across the sector. This was carried out in 2003 and again in 2008. It too needs updating.

CHRC's interest in cultural statistics is part of its DNA. It was an active member in the National Advisory Committee on Cultural Statistics which oversaw the creation of the *Canadian Framework for Culture Statistics*, and a strong advocate for the Cultural Satellite Account from its very early years.

Looking forward, CHRC is hopeful that an HR module can be added to the CSA. It is CHRC's conviction that data on

the cultural labour force (artists, cultural workers, employed and self-employed) is very important in determining appropriate programme and policy initiatives at every level of government. It is also important in understanding the very valuable impact of the cultural sector/industries on the economy and job creation. 🌐

Digital Products and the Culture Satellite Account: A Brief Overview

While estimates of the economic importance of culture produced by the Culture Satellite Account (CSA) are reliable and accurate, the underlying methodology needs to be constantly refined in order to keep pace with our rapidly evolving economy. The digital age has profoundly impacted the culture sector, unleashing new digital products and services which have disrupted the traditional creative chain and precipitated new measurement challenges. Statistics Canada is currently exploring how best to capture these changes within the CSA, with a goal of quantifying digital products and services separately from the non-digital elements in each domain and sub-domain. This article will provide a brief overview of the challenges associated with measuring the digital cultural elements of our economy.

It is important to note that statistics always lag behind current economic conditions, as it takes time to collect and organize data that underpin the estimates. It takes even longer for significant structural economic changes to be reflected in national accounting systems (e.g. *The Canadian System of Macroeconomic Accounts* (CSMA)), which struggle to keep

pace with classifying and categorizing new activities and products. As a result of this, many authors have raised questions regarding the efficacy of Gross Domestic Product (GDP), an indicator that was originally invented to measure an economy dominated by farming and factories churning out physical products.¹ Despite some of these higher level debates, this discussion will be limited to the current indicators produced by the CSA (i.e. output, GDP, and jobs), as they are still among the most commonly used measures of economic activity.

The Challenges Associated with Digital Products

Our economy is changing. As Internet speeds increase, and smart devices become more commonplace, a growing amount of economic activity is occurring online. However, existing economic statistics are less adept at measuring the impact of these new and evolving technologies (OECD, 2014). Indeed, there are many critiques of current methodologies (Aepfel, 2015; Aepfel, 2016; Coyle, 2016; Quiggin, 2014), while others have argued that existing accounting frameworks can be modified

to better measure our changing economy (Ahmad & Schreyer, 2016; Moulton, 1999).

The digital economy has created four major challenges that are specific to measuring the economic importance of the culture sector. First, there are new products and players. New actors are producing innovative culture goods and services that are potentially being overlooked by conventional statistical methods, such as surveys and business registers. There are also a growing number of original creative works online. Quantifying these products has become more difficult, which makes estimating their value problematic (UNESCO Institute for Statistics, 2016).

Second, culture content is increasingly crisscrossing international borders during its production process. A song may be written by a writer in Canada, recorded in the U.S., mixed in Australia and then sold all over the world in a digital format. These complex linkages have created numerous measurement challenges. Most notably, revenue data on creative works, especially those in a digital format, and the revenue splits between artists, industries, and digital intermediaries is often not publicly disclosed. Additionally, estimating the value of a product to a

¹ For a good discussion of the critiques, see "The trouble with GDP" *Economist*, 30 April 2016, <http://www.economist.com/news/briefing/21697845-gross-domestic-product-gdp-increasingly-poor-measure-prosperity-it-not-even> and D. Coyne, "Why GDP Statistics are Failing Us", *U.S. Chamber of Commerce Foundation*, 25 September 2016, <https://www.uschamberfoundation.org/article/why-gdp-statistics-are-failing-us>

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national economy that has been produced collaboratively by multiple individuals in many jurisdictions has become more difficult (UNESCO Institute for Statistics, 2016).

A third challenge is the difficulty associated with obtaining data from private companies operating in the culture sector. While many have detailed statistics related to their customers' consumption of digital cultural products, these companies are sometimes hesitant or refuse to share this information with regulators or statistical agencies. This has been a major obstacle when corporations are not registered in a country; due to jurisdictional issues and outdated regulations these companies operate in a legal grey area. For example, the American company Netflix refused to disclose revenue, content and subscriber data to the Canadian Radio-television and Telecommunications Commission in 2014. Even if the data were to be accessible, companies do not collect data in a consistent manner. In order to ensure reliability, private data would have to be cleaned and validated by Statistics Canada before it could be used.

A final major challenge is that content creators and publishers are increasingly allowing their digital content to be accessed for 'free,' and fewer consumers are buying physical culture goods. This has two implications. Primarily, it means the transaction that was originally captured in national accounting systems when an individual bought a product is no longer occurring. Second, these products are still being consumed and valued by consumers. In economic terms, these goods have high 'consumer surplus,' which is the difference between what a consumer is willing to pay for a product, and the price they actually pay. For 'free' digital goods, consumers pay nothing for the good, but still benefit.

As the benefits are not being captured, a variety of approaches can be undertaken to measure 'free' products within existing national accounting systems. First, statistical agencies can 'impute' or assign prices to digital culture goods. Many accounting frameworks do this for several types of goods and services in the economy. Indeed, the U.S. Bureau of Economic Analysis (BEA) already does this for artistic works -- in 2013, the agency reclassified long-lived

artwork and other forms of creative work such as research and development in their accounting system as investments (Crawford et al., 2014). This means films, music and books are now treated like assets, which are assigned value based on their estimated future value (Soloveichik, 2011; Economist, 2013). However, it will take time to develop a standard method for assigning such prices to cultural digital goods. Further, these sorts of valuations will likely not meet the needs or data quality requirements of all jurisdictions.

Second, information can be collected on downloads, advertising, and revenues for digital products in order to estimate their value. However, as discussed, much of this data is proprietary as private companies are unwilling to disclose usage and revenue statistics with governments (UNESCO Institute for Statistics, 2016). Further, for a majority of culture products, advertising revenues do not capture the full benefits, as consumers pay nothing or very little for the product. Economists from the Federal Reserve Bank of Philadelphia and the U.S. Bureau of Economic Analysis have created an experimental methodology which treats the act of consuming 'free' products as a series of negotiations, and assigns value to the time consumers spend watching ads in two ways: first, by estimating a value for the time that consumers spend watching ads associated with the culture product (i.e. if the advertising firm were to 'pay' consumers for watching their ads) and second by estimating a value that the consumer would be willing to pay the content producer for their culture product. However, the authors conclude that this method adds very little to national GDP (Nakamura, Samuels & Soloveichik, 2016).

Third, statistical agencies can attach value to the product. Some authors have noted that 'free' digital goods can be priced based on comparisons with similar products that do have a price; thus, a free newspaper article would be given the same value as an article with a paywall. However, this technique might be difficult to apply to some goods that are produced with free labour, such as Wikipedia articles or YouTube videos (Aepfel, 2016). Others have developed a methodology to value the time individuals spend on the Internet as a way to approximate value for a culture product.

The authors assume that while consumers do not pay a price for the free digital service, the time that consumers dedicate to paying attention to these products has a value that can be measured (Brynjolfsson & Oh, 2012).

It is important to note that there is a great deal of debate within the economics field regarding the value of 'free' culture content. Some economists contend that the value of digital products is already captured elsewhere in accounting systems, and that these 'free' products contribute very little to national economies. Others argue that the benefits are not properly measured by existing accounting methods (Coyle, 2016). Indeed, some have argued that their value should be measured using techniques beyond national accounting frameworks, such as through economic impact modelling or social cost benefit frameworks (Tessler, 2016). However, a great deal of work is currently being undertaken at the national and international level to better examine this issue and find solutions to this measurement challenge (UNESCO Institute for Statistics, 2016).

Digital Products and the Culture Satellite Account

Despite these challenges, the CSA currently captures some activity associated with digital products and services. Economic activity is included in CSA estimates if it meets specific criteria that would indicate it is cultural. The concepts and definitions underpinning these criteria, defined in the *Canadian Framework for Culture Statistics* (CFCS), have been designed to be 'format agnostic' or 'technology neutral.' This means that for the vast majority of activity, the format of a product (i.e. digital or non-digital) does not influence its placement in a domain or sub-domain. For example, activity associated with the online content of a newspaper is placed in the same (sub-)domain as the hard copy version. In both instances, the activity is categorized by the CFCS according to the primary activity which applies regardless of the medium of their product.

However, while the CFCS is format agnostic, the coding system used to classify industries in the Canadian economy is not always neutral. In particular, any publishing company that publishes only on the Internet

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(without a print version) is currently classified into a catch-all *North American Industry Classification System* (NAICS) code for activities related to online activity (51913 Internet publishing and broadcasting). This means that as newspapers, periodicals and book publishers abandon the physical format and move their publications online, they are no longer found in the Publishing Industries NAICS code (511).

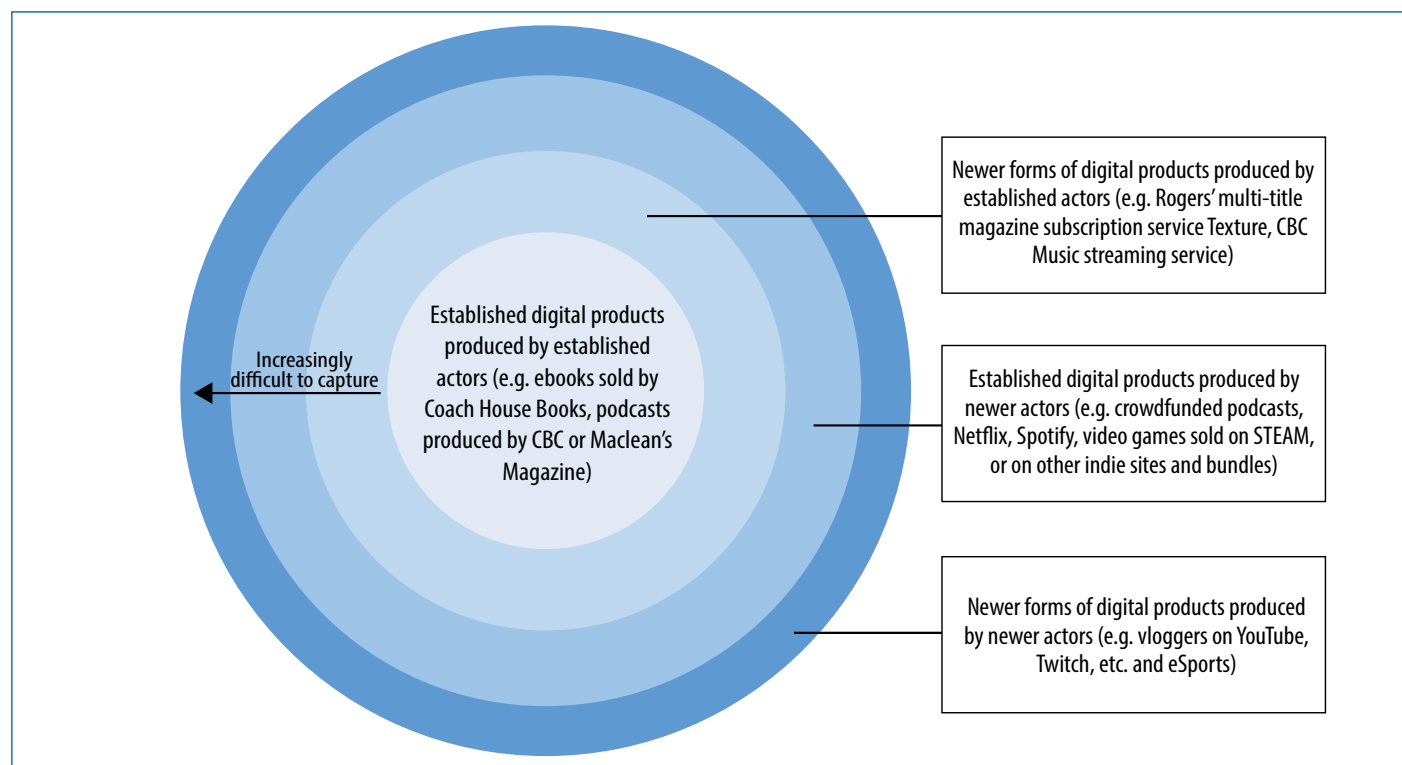
This is problematic in two ways. First, in the CSA, any activity in the catch-all code is grouped into the Multi domain. Thus, any publications that are *only* published online are excluded from the Written and

Published Works domain. Second, this has raised issues with the Annual Survey of Service Industry surveys² associated with these cultural industries, as they currently only survey companies in the 511 NAICS code. Thus, as more and more content moves exclusively online, the surveys will be excluding companies engaged in online activity. However, it is important to note that Statistics Canada is currently reviewing this problem, which has already been addressed for the related product coding system, the *North American Product Classification System* (NAPCS).

While this activity may be allocated to the Multi domain, and not in the Written and Published Works domain where one might expect it, the activity associated with these digital products is still being captured within the CSA. Further, any activity associated with culture businesses that are surveyed by Statistics Canada's *Annual Survey of Service Industries* is also included and used to further refine the data. As depicted in the centre of *Figure 1*, established digital products (e.g. e-books or podcasts) and newer forms of digital products (e.g. multi-title magazine subscription services) produced by established actors (e.g. Rogers or CBC) are being captured in the CSA.

² The *Annual Survey of Service Industries* are a series of surveys of arts, cultural, heritage and sport industries that are undertaken by Statistics Canada. The information gathered from these surveys are used to calculate 'split factors' for the CSA. Split factors help distinguish what cultural activity from non-cultural activity in the *Canadian System of Macroeconomic Accounts*.

Figure 1 – Capturing Digital Products in the Culture Satellite Account³



³ Please note that this model is meant for illustrative purposes only, in order to emphasize the difficulty of obtaining certain types of data. The specific examples provided may end up in different categories upon validation with Statistics Canada.

As you move to the outer concentric circles of the model, information is more difficult to capture. Thus, products produced by newer actors (e.g. crowdfunded podcasts) may not be getting captured in the CSA. Further, activity associated with newer

forms of digital products, (e.g. video content produced by vloggers on Twitch, a video platform and community for gamers), is not being surveyed by Statistics Canada's annual surveys, and therefore is very likely not being included in CSA estimates. For example, it is

common for new actors, such as vloggers on Twitch, to self-identify as "content creators" and some may even incorporate their businesses. However, this activity may not be captured, as it depends on how it is reported

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(e.g. as a business, or as personal income) and how their products are classified.

A New-ish Digital Product: Podcasts

Podcasts are an example of a digital product that is difficult to capture in the CSA. These downloadable digital media files were first created in 2001, but struggled to gain market share and listeners. Yet in the past few years, podcasts have exploded due to the diffusion of smart devices, improved podcast apps, and the increased popularity of hit podcasts such as 'Serial,' which has been downloaded over 100 million times since it was created in 2014 (Economist, 2016a).

Podcasts generate revenue in a combination of ways. Many crowdfund through Kickstarter, Patreon, or other funding platforms. Others generate revenue directly from regular listeners or have 'freemium' models, where some content is available for free, while other content is only available to paid subscribers. Some have sought venture capital funding,

while others have been funded by foundations. A majority rely on native ad sales, where the host records an informal endorsement of a product which is played at some point during the podcast (Freidman, 2015).

Activity associated with some podcasts is already captured in the CSA, especially those produced by established media organizations that are currently surveyed by Statistics Canada. However, Statistics Canada's Industry Surveys currently do not ask detailed questions on podcast revenues or resources, thus developing approximations or 'split factors' to separate digital from non-digital activity is challenging. Moreover, it is very unlikely that the CSA is capturing activity associated with podcasts produced by newer actors, which have multiplied in recent years. Furthermore, valuing these digital products is difficult, as previously discussed.

Statistics Canada is currently examining how to better measure the digital economy. In 2014, the agency published a draft

version of *Canada's Digital Economy Measurement Framework*, which made several recommendations in order to improve measurement and data sources (Statistics Canada, 2014). Recommendations include revising surveys to better improve data collection on household spending, e-commerce sales, digital products and Internet usage by Canadians. The report also discusses methods that can be used in conjunction with traditional data collection methods, such as web-scraping and partnerships with other government and non-government agencies to obtain external data sources. The agency's Industry Surveys are currently being revised to better capture information on digital products (Chung, Kotsovos & Uhrbach, 2016). However, many challenges remain including low response rates, unavailability of private data sources, and the valuation of 'free' products. 🌐

Refer to page 9 for a complete list of references.

Statistical Overview of Employment Trends for Cultural Workers and the Overall Labour Force in Canada

In 2014, Hill Strategies published a report entitled "Statistical Profile of Artists and Cultural Workers in Canada." It is based on the 2011 *National Household Survey* and historical data from the *Labour Force Survey*. The report assesses employment trends for artists alongside cultural workers and the overall labour force. In contrast to the *Culture Satellite Account* (CSA), for which culture industries and products in 2010 were used to calculate the results for this article, Hill Strategies uses occupations in 2011 to compute the statistics. For the purpose of this piece, the same data are used to shed light on cultural workers in comparison to the overall

labour force, mainly examining the size and earnings by different categories for each group.

Data for cultural workers is based on 50 occupation codes, covering heritage, culture and nine art occupations (actors and comedians; artisans and craftspersons; authors and writers; conductors, composers and arrangers; dancers; musicians and singers; other performers; producers, directors, choreographers, and related occupations; visual artists). *Experienced labour force* which is defined as "persons who, during the week of Sunday, May 1 to Saturday, May 7, 2011, were employed

[as well as] the unemployed who had last worked for pay or in self-employment in either 2010 or 2011"¹ is used to compile the records where employed and self-employed persons are included in each occupation. Average earnings of the cultural workers and the overall labour force are comprised of wages and salaries, plus the net self-employment income, and is estimated for individuals who reported earnings either above or below \$0. For more details on the methodology used to compile the data, please refer to the Hill Strategies' report.

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¹ NHS Dictionary, Statistics Canada, <http://www12.statcan.gc.ca/nhs-enm/2011/ref/dict/pop031-eng.cfm>, consulted August 6, 2016.

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Table 1 shows figures for cultural workers and the overall labour force in terms of the size of the workforce, and their average income before and after tax, as well as the average

earnings. Roughly 3.8% of the overall labour force work in the cultural sector. Cultural workers' average income before and after tax is 12.5% and 10.6% lower, respectively, than

the overall labour force, and their average earnings are close to 14% less than that of the general workforce.

Table 1 – Comparison of Total Workers and Income, Culture Versus Total Labour Force

Number/income/earnings	Cultural Workers	Overall Labour Force
Number of workers	671,085	17,587,615
Average income before tax	\$42,100	\$48,113
Average income after tax	\$35,377	\$39,558
Average earnings	\$39,059	\$45,397

Subsequent analysis of the two groups is broken down by the following categories: gender, highest completed level of education, age group, demographic group and language most often spoken at home.

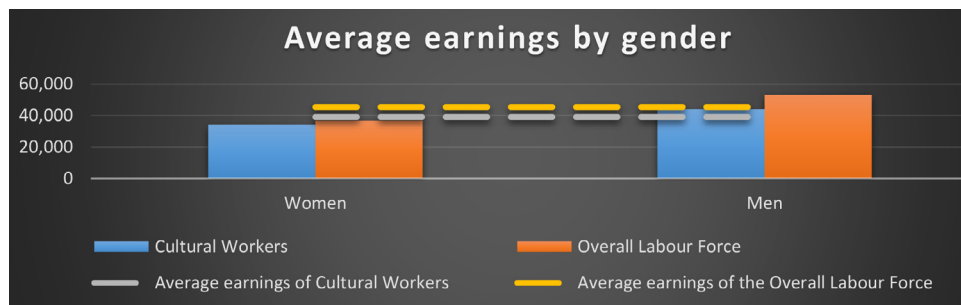
Gender

Approximately 4% of all women in the labour force work in the cultural sector, which is similar to the percentage of men (3.65%). Women constitute 50.5% (335,885) of the workforce in the cultural sector compared

to approximately 48% (8,396,440) in the overall labour force. As illustrated in *Graph 1*, women employed in the cultural sector and in the overall labour force earn significantly less than their male counterparts. The gender earning gap of cultural workers is around 22.6%, which is lower than in the overall labour force at 31%. Similarly, women working in the cultural sector on average earn 12.7% less than all cultural workers. The average earnings of women in the overall labour force, by contrast, are 19% lower than

the general workforce. On the other hand, men on average earn 12.7% and 17.3% more than cultural workers and the average worker in the overall labour force, respectively. It is worth noting that average earnings of women in the cultural sector are 7.3% lower than those of women in the overall labour force. The gap is even greater for men: the average earnings of men working in the cultural sector is 17.3% lower than the average of men in the overall labour force.

Graph 1 – Average Earnings by Gender, Culture Versus Total Labour Force*



*Some totals in the tables may not be equal to 100% due to rounding.

Education

Among those who have a Bachelor's university degree, or higher, in the overall labour force, about 5.7% work in culture. Roughly 37.6% of cultural workers possess this level of education in comparison to 25.2% in the overall workforce. Individuals in the overall labour force, who have achieved this level of education, earn on average 46.6% more

than the overall labour force. In comparison, the average earnings of cultural workers with the same level of education are only 14% higher than the average earnings of the entire culture workforce. Cultural workers with a Bachelor's university degree or higher earn on average only 1% more than those with college, CEGEP, or other non-university certificates or diplomas in the overall labour

force (i.e. \$44,513 versus \$44,068). The difference in earnings, between having no degree to the highest level of education, for the overall work force is around 138.8%, which is more than twice as high as that for cultural workers (63.3%). Even at lower levels of educational attainment, the return on investment is lower for the cultural sector compared to the overall economy. For the

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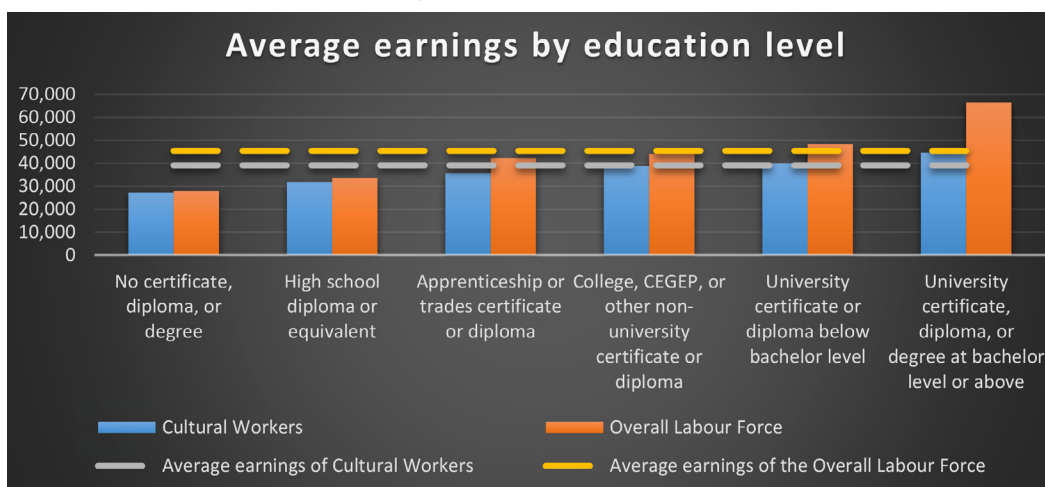
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latter, an apprenticeship, trades certificate or diploma results in 51.77% increase in earnings compared to the average for workers lacking any such education (i.e. not even a high school diploma or equivalent). To put this in perspective, cultural workers with

a university certificate or diploma below the bachelor level increase their average earnings by only 46.15%. Moreover, the most educated in the culture sector earn about \$44,513, which is 33.1% lower than the average earnings of persons with

the same level of schooling in the overall labour force (\$66,538). See *Graph 2* for the full perspective across the various levels of education versus earnings.

Graph 2 – Average Earnings by Education Level, Culture Versus Total Labour Force



Age Group

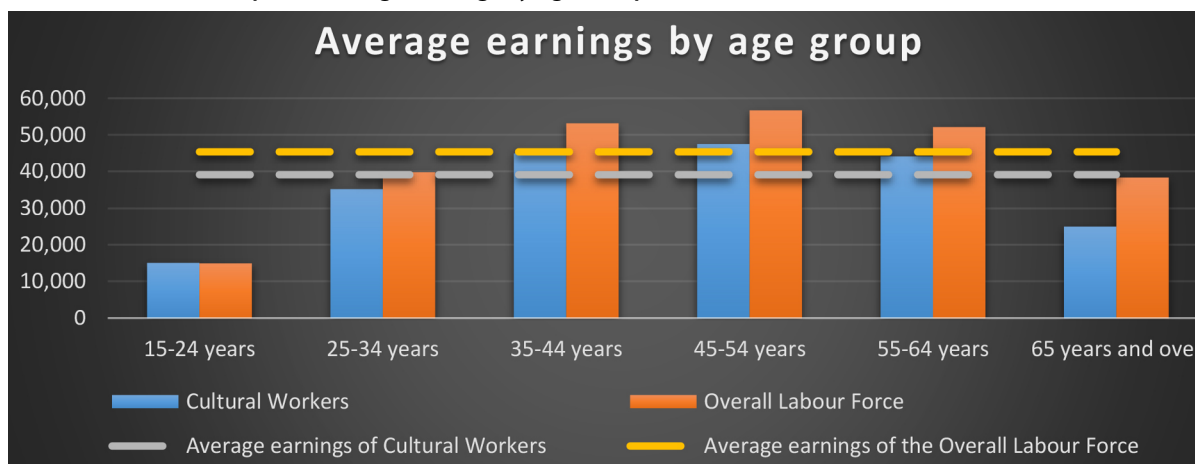
The highest number of workers in the cultural sector (172,075) fall into the 25-34 age group, representing 25.6% of all cultural workers, whereas individuals in the same age group for the overall labour force comprise 20.5% of the general workforce. On the other hand, the age group of 45-54 for the overall workforce has the highest representation (4,441,310) or 25.5% of the overall labour force. The number of cultural workers in the same age group (153,445) represents 22.9% of the total culture workforce. The proportion of youth (ages 15-24) in the

overall labour force (14%) is higher than for cultural workers (10.8%). Cultural workers aged 25-34 comprise the largest cohort in the overall labour force (4.8%), followed by those aged 65 and over (4.14%).

For cultural workers, and the overall labour force, the earnings of people between ages of 35 and 64 are above the overall average. Three age groups, 35-44, 45-54, and 55-64, of cultural workers earn 15.2%, 21.6%, and 13.1% more, respectively, than the overall average for cultural workers. These rates are even higher for the overall labour force, at

16.9%, 25%, and 14.7%, respectively. The average earnings of persons aged 65 and over in the cultural sector is approximately 36.2% lower than the overall average earnings in the same sector. The gap for this age group drops to less than half (15.6%) when comparing the overall labour force. Moreover, cultural workers in this age group earn 35% less, on average, versus the same age group in the overall labour force. Conversely, the average earnings of cultural workers aged 15-24 is almost 1% higher than the same age group for the overall labour force. *Graph 3* offers a broader view between age groups.

Graph 3 – Average Earnings by Age Group, Culture Versus Total Labour Force



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Demographic Group

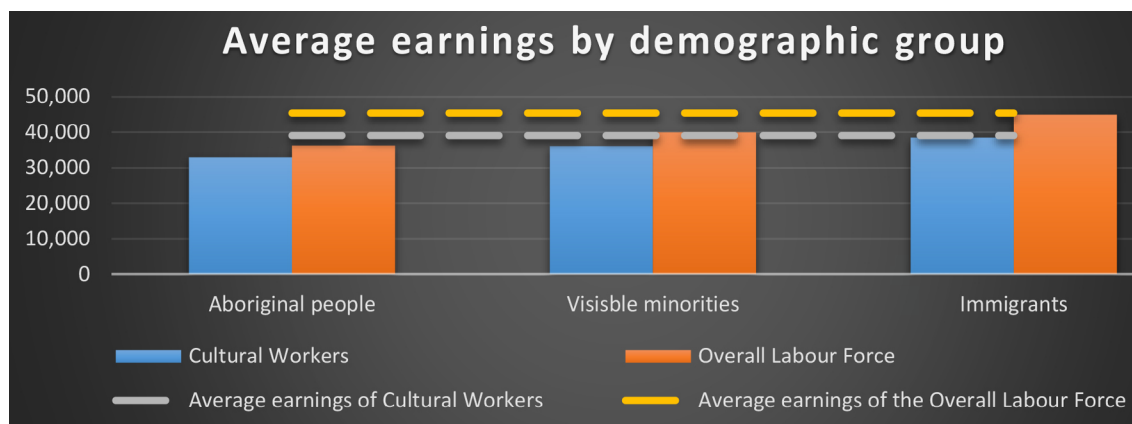
Graph 4 illustrates statistics for three demographic groups: Aboriginal people, visible minorities and immigrants. These three groups collectively represent 38.8% of all cultural workers, and 43% of the overall labour force. The number of immigrants in the cultural sector (140,675) represents 3.7% of all immigrants in the overall labour force. They are the largest group out of the three noted above, for both cultural workers and

within the overall labour force. Immigrants represent 54% of the total number of cultural workers, of the combined total of the three groups, for which the equivalent is about 51% for the overall labour force. However, the categories of immigrant and visible minority are not mutually exclusive, as many respondents represent both.

All three demographic groups, on average, earn less than the overall average earnings of cultural workers and the overall workforce.

The biggest gap is estimated for the Aboriginal people: they earn 15.7% less than the overall average for cultural workers, and over 20% lower than the overall labour force. Aboriginal cultural workers earn on average 9.3% less than Aboriginal people in the overall labour force. Similarly, visible minorities and immigrants in the culture sector earn 9.5% and 14.4% less, respectively, in comparison to the same groups within the overall labour force.

Graph 4 – Average Earnings by Demographic Group, Culture Versus Total Labour Force



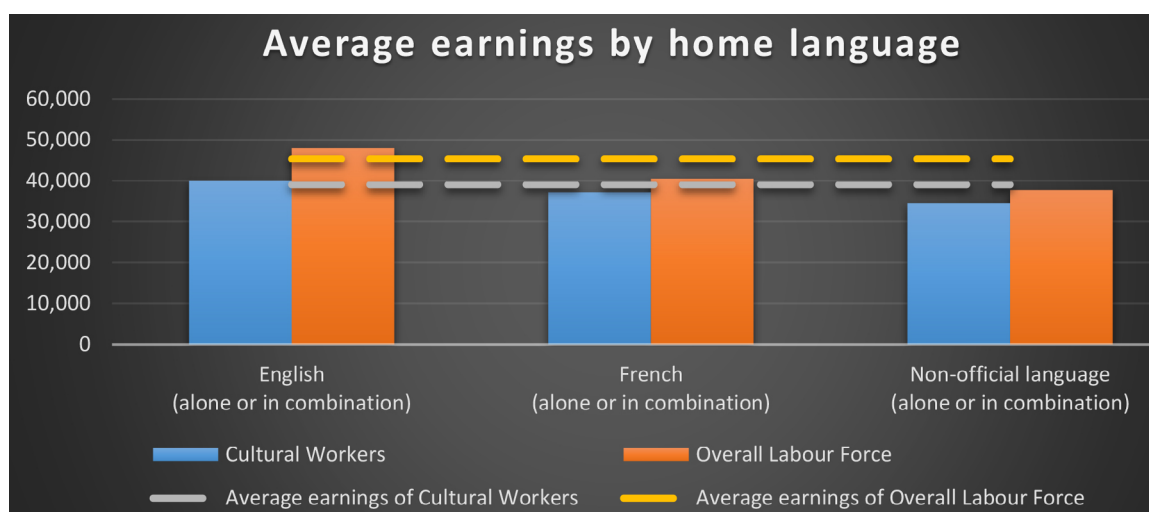
Home Language

The languages most spoken at home are not always the same as those in the workplace, especially in Canada where the working language of most businesses is either English, French, or a mixture thereof. Examining languages most spoken at home provides useful insights into how these linguistic differences may impact earnings. As such, all references to “speakers” below reflect the predominant language spoken at home. Additionally, some combined totals may exceed 100%, reflecting the fact that some workers report speaking equally in more than one language at home.

Close to 4% of English speakers in the overall workforce work in the culture sector. A similar proportion is estimated for French speakers. Among speakers of a non-official language, the equivalent total is about 3%. Around 71% of all cultural workers reported being English speakers, 22% as French, and approximately 10% as another, non-official language. These figures are highly comparable with those for the overall labour force, at 70%, 21%, and 12%, respectively. Cultural workers who are English speakers earn 2.7% above the average of all cultural workers. Speakers of French and non-official languages earn on average almost 5% and 12% less, respectively, than all workers in the cultural

sector. By contrast, those differences are more pronounced for the overall labour force. The average earnings of English speakers are nearly 6% higher than the average earnings of the overall workforce. In comparison, French speakers earn on average 11% less than the overall labour force, and those who reported a non-official language earned 17% less. Estimates of the average earnings for each language group in the culture sector are significantly lower than the totals of each group within the overall labour force. These differences stand at 16% lower for English speakers, 8% for French, and nearly 7% for speakers of non-official languages. 🌐

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*Continued from page 8***Graph 5 – Average Earnings by Home Language, Culture Versus Total Labour Force***Refer to page 10 for a complete list of references.*

Sources

Digital Products and the Culture Satellite Account: A Brief Overview:

Aepfel, T. (2016). *New Measures of the U.S. Economy*. MIT IDE Research Brief, <http://ide.mit.edu/sites/default/files/publications/IDE%20Research%20Brief%20v05%20.pdf>. Accessed 21 September 2016.

Aepfel, T. (2015, July 16). *Silicon Valley Doesn't Believe U.S. Productivity is Down*. Wall Street Journal. <http://www.wsj.com/articles/silicon-valley-doesnt-believe-u-s-productivity-is-down-1437100700>. Accessed 3 October 2016.

Ahmad, N. & Schreyer, P. (2016). *Are GDP and Productivity Measures Up to the Challenges of the Digital Economy?* <http://www.csls.ca/ipm/30/ahmadandschreyer.pdf>. Accessed 21 September 2016.

Brynjolfsson, E. & Oh, J. H. (2012). *The Attention Economy: Measuring the Value of Free Digital Services on the Internet*. Thirty Third International Conference on Information Systems. <http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1045&context=icis2012>. Accessed 13 December 2016.

Crawford, J., Jankowski, J. E. & Moris, F. A. (2014). *Measuring R&D in the National Economic Accounting System*. Bureau of Economic Analysis. http://www.bea.gov/scb/pdf/2014/11%20November/1114_measuring_r&d_in_the_national_economic_accounting_system.pdf. Accessed 13 December 2016.

Chung, L., Kotsovos, D. & Uhrbach, M. (2016, May 10). 'The Measurement of Digital Culture Products at Statistics Canada.' *International Symposium on the Measurement of Digital Cultural Products*. http://www.colloquemesurenumerique.stat.gouv.qc.ca/documents/presentations/Session%205_3_CHUNG-The%20Measurement%20of%20Digital%20Culture%20Products%20at%20Statistics%20Canada.pdf. Accessed 19 October 2016.

Coy, Peter. (2013, September 23). *The Rise of the Intangible Economy: U.S. GDP Counts R&D, Artistic Creation*. Bloomberg. <http://www.bloomberg.com/news/articles/2013-07-18/the-rise-of-the-intangible-economy-u-dot-s-dot-gdp-counts-r-and-d-artistic-creation>. Accessed 22 September 2016.

Coyle, D. (2016). *Why GDP Statistics Are Failing Us*. U.S. Chamber of Commerce Foundation. <https://www.uschamberfoundation.org/article/why-gdp-statistics-are-failing-us>. Accessed 21 September 2016.

Economist. (2013, April 3). *Boundary Problems*. <http://www.economist.com/news/finance-and-economics/21582498-america-has-changed-way-it-measures-gdp-boundary-problems>. Accessed 13 December 2016.

Continued on page 10

Continued from page 9

Economist. (2016a, January 23). *Easy on the Ears*. <http://www.economist.com/news/business-and-finance/21688740-handful-successful-presenters-are-dispelling-myths-about-medium-podcasts-are-gaining>. Accessed 19 October 2016.

Economist. (2016b, April 7). *2016: The year the podcast came of age*. <http://www.economist.com/blogs/prospero/2016/04/easy-listening>. Accessed 19 October 2016.

Friedman, A. (2015, March 20). *The Economics of the Podcast Boom*. Columbia Journalism Review. http://www.cjr.org/first_person/the_economics_of_the_podcast_boom.php. Accessed 23 September 2016.

Moulton, Brent R. (1999). *GDP and the Digital Economy: Keeping up with the Changes*. Bureau of Economic Analysis. <http://www.bea.gov/papers/pdf/03.moulton.pdf>. Accessed 22 September 2016.

Nakamura, L., Samuels, J. & Soloveichik, R. (2015). *Valuing "Free" Media in GDP: An Experimental Approach*. Working Paper 16-24. Working Papers Research Department. Federal Reserve Bank of Philadelphia. <https://www.bea.gov/papers/pdf/Valuing-Free-Media-in-GDP-An-Experimental-Approach.pdf>. Accessed 23 September 2016.

OECD. (2016). *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris. DOI: <http://dx.doi.org/10.1787/9789264221796-en>. Accessed 20 September 2016.

Quiggin, J. (2014). "National accounting and the digital economy". *Economic Analysis and Policy*, 44, 136-142. <http://dx.doi.org/10.1016/j.eap.2014.05.008>.

Soloveichik, Rachel. (June 2011). *Research Spotlight: Artistic Originals as Capital Assets*. Bureau of Economic Analysis. https://www.bea.gov/scb/pdf/2011/06%20June/0611_artistic.pdf. Accessed 13 December 2016.

Statistics Canada. (2014, April 4). *Canada's Digital Economy Measurement Framework: A working draft for comment*. Internal Document.

Statistics Canada. (2011). *Canadian Framework for Culture Statistics*. Statistics Canada Catalogue no. 87-542-X. Ottawa. <http://www.statcan.gc.ca/pub/87-542-x/2011001/section/s2-eng.htm>. Accessed 26 September 2016.

Tessler, A. (2016). 'Valuation Approaches'. *Taking It to the Streets: Summit on the Value of Libraries, Archives and Museums in a Changing World*, Library and Archives Canada, Ottawa, Ontario, December 5 & 6, 2016, Oxford Economics, 2 December 2016.

UNESCO Institute for Statistics. (2016). *The Globalization of Culture Trade: A Shift in Consumption. International flows of cultural goods and services 2004-2013*. Montreal, <http://doi.org/10.15220/978-92-9189-185-6-en>. Accessed 20 September 2016.

Varian, Hal. (2009). *Predicting the Present with Google Trends*. Google Inc. https://static.googleusercontent.com/media/www.google.com/en//googleblogs/pdfs/google_predicting_the_present.pdf. Accessed 13 December 2016.

Worstell, T. (2015, November 5). *We're still measuring the digital economy all wrong: No way is Facebook worth \$10 per user*. Forbes. <http://www.forbes.com/sites/timworstell/2015/11/05/were-still-measuring-the-digital-economy-all-wrong-no-way-is-facebook-worth-10-per-user/#54f6d9623671>. Accessed 27 September 2016.

Statistical Overview of Employment Trends for Cultural Workers and the Overall Labour Force in Canada:

Hill Strategies. (2014). *A Statistical Profile of Artists and Cultural Workers in Canada – Based on the 2011 National Household Survey and the Labour Force Survey*. Ottawa.

Statistics Canada. (2016). *Provincial and Territorial Culture Indicators, 2010 to 2014*. Statistics Canada catalogue no. 13-604-M. Ottawa.