

Economic Impacts of *Star Trek:* *Discovery*

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INTRODUCTION

The television series *Star Trek: Discovery* was created for CBS All Access and debuted in September 2017. The series serves as a prequel to the original *Star Trek* and follows the voyages of the Starfleet ship USS Discovery through the galaxy as its crew members encounter new worlds and alien life forms¹. Season 1 of *Star Trek: Discovery* was filmed in Toronto from January 2017 to October 2017, while Season 2 was filmed from April 2018 to December 2018. Production spending in both seasons has created substantial economic impacts for residents and businesses across Ontario.

The table below summarizes the premiere dates and number of episodes for *Star Trek: Discovery* by season².

Table 1: *Star Trek: Discovery* Season 1 and Season 2

	Season 1	Season 2
Premiere Date	September 24, 2017	January 17, 2019
Number of Episodes	15	14

MNP LLP (MNP) was engaged by the Motion Picture Association – Canada to conduct an independent economic impact assessment of the production of the series *Star Trek: Discovery* on the Ontario economy. For the study, MNP used production expenditure data provided by CBS to estimate the economic impacts that occurred from the first two seasons of production.

SEASON 1 AND SEASON 2 PRODUCTION SPENDING

Based on data provided by CBS, the first two seasons of *Star Trek: Discovery* resulted in total production spending in Ontario of \$257.2 million. As shown in Table 2, Ontario production spending for Season 1 was \$145.6 million, while Ontario production spending for Season 2 was \$111.6 million. Spending on crew and other labour accounted for 53 percent of the total Ontario spending, while the remaining 47 percent went towards purchases of goods and services.

Table 2: Season 1 and Season 2 Production Spending in Ontario³

	Season 1 (millions)	Season 2 (millions)	Total (millions)	Percent of Spending
Crew and Other Labour ⁴	\$81.1	\$54.1	\$135.2	53%
Purchases of Goods and Services	\$64.5	\$57.5	\$122.0	47%
Total Spending in Ontario	\$145.6	\$111.6	\$257.2	100%

¹ Retrieved from <https://www.cbs.com/shows/star-trek-discovery/>

² Retrieved from https://www.imdb.com/title/tt5171438/locations?ref=tt_dt_dt

³ Based on Season 1 and 2 production spending

⁴ Please note that direct production expenditures in Ontario excludes spending on non-resident labour.

ONTARIO VENDORS

Each season of production has seen the engagement of well over one hundred businesses from communities across Ontario. For example, as shown in Table 3, during Season 1 production, a total of 158 businesses were engaged from 29 different Ontario communities. One hundred and thirty-one of the businesses were located in 14 communities within the Greater Toronto Area (GTA), while 27 businesses were located in 15 communities in other regions of Ontario.

Table 3: Vendor Engagement – Season 1⁵

	Number of Businesses	Number of Communities
Ontario Businesses		
<i>Businesses Located Within the GTA</i>	131	14
<i>Businesses Located Outside the GTA</i>	27	15
Total	158	29

Each season of production has involved purchases of goods and services from many different types of businesses, including film and television production facilities, catering companies, hotels, vehicle and equipment rental agencies, retailers (furniture, clothing), cleaners and alteration companies, storage companies, audio and video companies, infrastructure companies (waste management, electrical), professional services firms (including law firms and accounting), and automobile shops.⁶

ECONOMIC IMPACTS OF PRODUCTION SPENDING

Economic impacts quantify the economic contributions that an industry, project, or organization makes to a region. In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are economic output, GDP, and employment:

- **Economic Output** is the total gross value of goods and services produced by a given company or industry measured by the price paid to the producer. This is the broadest measure of economic activity. Economic output measures the value of all sales of goods and services, including all final purchase and intermediate inputs, which results in the double counting of intermediate purchases. For example, a film catering company buys groceries from a market for \$1,000 and adds value to it by creating meals for a film production cast and crew for which the catering company is paid \$3,000. Economic output would total \$4,000 – the value of all sales in the chain of activity. The value of the groceries is therefore counted twice – once as an intermediate good for the catering company and again in the value of the meals created.
- **Gross Domestic Product (“GDP”)**, or value-added, refers to the additional value of a good or service over the cost of inputs used to produce it from the previous stage of production. Thus, GDP is equal to the unduplicated value of goods and services produced. GDP isolates only the additional value of goods and services produced and is defined as economic output, less intermediate inputs. Using the previous example of the catering company, the value-added totals only \$3,000 (as opposed to \$4,000 in economic output). This is because value-added subtracts the sale of the purchased groceries (intermediate input) of \$1,000 from the total sales price of \$4,000, resulting in value-added of \$3,000.

⁵ Vendor analysis includes businesses only. Individuals involved with the production are not included.

⁶ Vendor list provided by CBS.

- **Employment** is measured in terms of full-time equivalents (“FTEs”). One FTE is the equivalent of one person working full-time for a full year. One FTE is also the same as one “person-year” of employment. For example, one person working full time for a year equates to one FTE. Two people each working full time for half a year also equate, to one FTE.

Economic impacts can be estimated at the direct, indirect, and induced levels:

- **Direct impacts** are those that occur in “front-end” operations. In the context of film and television production, these are impacts that occur within the productions themselves.
- **Indirect impacts** arise from changes in activity for suppliers of the “front-end” businesses. In the context of film and television production, these are impacts that occur within supplier companies and organizations.
- **Induced impacts** arise from shifts in spending on goods and services as a result of changes to the payroll of the directly and indirectly affected businesses. In the context of film and television production, these are impacts that occur due to the spending of production and supplier employees.

The **total economic impact** is the sum of the direct, indirect, and induced impacts.

MNP estimated the economic impacts of the production of *Star Trek: Discovery* using the 2014 Statistics Canada provincial input-output model for Ontario (the latest model available). The Statistics Canada model is the most widely used system for measuring economic impacts in Canada.

As shown in Table 4, production spending in Season 1 and Season 2 produced an estimated \$470.7 million in total economic output, \$317.9 million in total GDP and 4,199 FTEs in total employment.

Table 4: Estimated Impacts of Season 1 and Season 2 Production Spending in Ontario

	Season 1 Impacts	Season 2 Impacts	Total
Production Spending in Ontario (millions)	\$145.6	\$111.6	\$257.2
Total Economic Output (millions)	\$269.7	\$201.0	\$470.7
Total GDP (millions)	\$184.3	\$133.6	\$317.9
Total Employment (FTEs)	2,459	1,740	4,199

According to CBS, Season 1 and Season 2 of *Star Trek: Discovery* are estimated to have benefitted from approximately \$17.0 million in federal tax incentives and \$57.9 million in provincial tax incentives.⁷ The incentives provided by the Government of Ontario are estimated to have resulted in the following total impacts:

- \$8.13 in total economic output per dollar of Ontario tax incentive received by the production.
- \$5.49 in total GDP per dollar of Ontario tax incentive received by the production.

COMPARISONS WITH OTHER INDUSTRIES

To provide perspective on the size of the economic impacts of the production of Season 1 and Season 2 of *Star Trek: Discovery*, it is useful to compare the impacts with those created by other industries. Two examples of other industries are new home construction and tourism.

- **New Home Construction** – The estimated total employment supported by the Season 1 production of *Star Trek: Discovery* is equivalent to the direct and indirect employment supported by the construction of 1,130 new homes in the Toronto region.⁸ The estimated total employment supported by the production of both Season 1 and Season 2 is equivalent to that supported by the construction of 1,930 new homes in the Toronto region.
- **Tourism/International Visitors** – The estimated total employment in Ontario supported by the production of Season 1 of *Star Trek: Discovery* is equivalent to the employment supported by the spending of 189,000 international visitors to Ontario. The estimated total employment in Ontario supported by the production of both Season 1 and Season 2 is equivalent to the employment supported by the spending of 323,000 international visitors to Ontario.⁹

ADDITIONAL IMPACTS

Television series such as *Star Trek: Discovery* produce additional economic impacts, as well as broader social and community benefits. In addition to economic impacts that arise through production spending, impacts can result from infrastructure spending, film induced tourism, and personal spending by out-of-province cast and crew:

⁷ The production also received approximately \$0.3 million in Quebec and \$0.1 million in BC provincial tax incentives.

⁸ Will Dunning Inc., *Economic Impacts of New Home Construction – Toronto 2017*. Retrieved from <https://www.chba.ca/CHBADocs/CHBA/HousingCanada/Information-Statistics/Impacts/1%20Toronto%20City%20Economic%20Impacts%20of%20New%20Home%20Construction%202018.pdf>

⁹ This refers to overseas overnight visitors to Ontario. Ontario Ministry of Tourism, Culture and Sport. *Tourism Regional Economic Impact Model (TREIM)*. Retrieved from: http://www.mtc.gov.on.ca/en/research/quick_facts/facts.shtml

- **Infrastructure Impacts.** Infrastructure spending includes expenditures associated with production facilities and equipment. While the economic impacts of infrastructure spending have not been assessed in this report, it is important to note that the economic impacts that arise from infrastructure spending can be significant.
- **Film Induced Tourism Impacts.** Film induced tourism (FIT) is the phenomenon of films and television programs encouraging viewers to visit the country or region where filming occurred.¹⁰ FIT and its related tourism concepts, which include the effects of TV, films, movies and media culture, has increasingly been viewed as an important component of tourism marketing. Television series are especially likely to reach much larger audiences than specifically targeted tourism promotion.¹¹
- **Personal Spending by Out-of-Province Cast and Crew.** This includes spending by out-of-province cast and crew on such things as vacations or other personal purchases while in Ontario.

While we have not identified the broader benefits of the production of *Star Trek: Discovery* in this study, it is worth noting that television series can generate additional economic, community, and social benefits. These may include the creation of opportunities for trainees or interns, the development of business partnerships, the creation of spin-off companies and contributions to community and culture.

¹⁰ Oxford Economics. *The Economic Impact of the UK Film Industry*. Oxford, 2007.

¹¹ Croy, Glen W. Monash University. *The Lord of the Rings, New Zealand, and Tourism: Image Building with Film*. March 2004.

APPENDIX A – ECONOMIC IMPACT METHODOLOGY

The main goal of an economic impact study is to quantify the economic contributions that an organization, industry, or project makes to a region.

MNP estimated the economic impact of the production of *Star Trek: Discovery* using the 2014 Statistics Canada provincial input-output multipliers for Ontario (the latest multipliers available). Statistics Canada's input-output model is the most widely used system for measuring economic impacts in Canada and provides a measure of the interdependence between an industry and the rest of the economy.¹² The provincial economic multipliers show the direct, indirect and induced effects on economic metrics, and can be used to measure the quantitative impact of a change in the production or expenditure of a particular industry.

In general, economic impacts are viewed as being restricted to quantitative, well-established measures of economic activity. The most commonly used of these measures are output, GDP and employment:

- **Output** – the total gross value of all business revenue. This is the broadest measure of economic activity.
- **Gross Domestic Product (GDP)** – the “value added” to the economy (the unduplicated total value of goods and services).
- **Employment** – the number of jobs created or supported (in full-time equivalents or FTEs¹³).

Economic impacts may be estimated at the direct, indirect and induced levels:

- **Direct impacts** are due to changes to front-end businesses that receive expenses or operating revenue as a direct consequence of the activities of an industry or project.
- **Indirect impacts** are due to changes in the activity of suppliers of the front-end businesses.
- **Induced impacts** are due to shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.

In this analysis, MNP estimated the impact on the Ontario economy of a set of direct expenditures related to the filming of Season One and Season Two of *Star Trek: Discovery*. The television series, like other productions, has an amount of direct expenditure, which in turn stimulates so-called indirect impacts across the industry supply chain. These expenditures also create or support jobs, as firms add or retain labour to meet rising demand. This, in turn, raises incomes and stimulates what are known as induced impacts, as higher incomes flow through to consumption. The total economic impact of the production spending is the sum of each of these direct, indirect and induced impacts.

¹² Note that Statistics Canada's input-output model is based on the assumption that there is no social safety net, i.e. those that do not earn wages have no income from social assistance or unemployment programs, and therefore all induced spending is new spending in the economy. Economic impacts estimated with a social safety net assumption would be slightly lower.

¹³ One FTE is equivalent to one person-year of employment.

A step-by-step overview of our approach to estimating the economic impacts of *Star Trek: Discovery* is provided below.

