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MEASURING SUCCESS

THE IMPACT OF THE INTERACTIVE DIGITAL MEDIA SECTOR IN ONTARIO

PREPARED FOR:

interactive ontario

PREPARED BY:

Nordicity

About Interactive Ontario

Interactive Ontario (IO) is a not-for-profit industry trade association committed to the growth of the Ontario interactive digital media (IDM) industry.

Interactive Ontario fosters growth in the IDM industry in Ontario through government advocacy, events, trade missions, research reports, connections to business development opportunities and meaningful partnerships with complementary organizations. IO hosts over 30 events each year, providing knowledge sharing and networking in this quickly evolving industry.

IO represents approximately 330 IDM companies, with a diverse group of members ranging from SMEs (small & medium enterprises) to large international corporations. They produce innovative experiences in a variety of subsectors including video games, eLearning, transmedia storytelling, mobile apps, augmented and virtual reality, web series and more.

Project Partners

Support for this project was provided by the Ontario Media Development Corporation, the City of Toronto, Ubisoft, Bell Fund, Canadian Media Producers Association and the Canada Media Fund. We thank them for making this study possible.

Disclaimer

Funding for this study was provided by the organizations listed above. Any opinions, findings, conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the organizations or government agencies that provided funding for this project. No organization, government, or government agency is in any way bound by the recommendations contained in this document.

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Executive Summary

Headlines

- **There are 877 Ontario-based IDM companies.**
- **The IDM industry directly employs 10,900 FTEs** and its economic activity supports a grand total of 16,900 FTEs in the wider economy.
- The IDM industry generated **$1.4 billion of GDP** in 2015. This GDP contribution corresponds to **$420 million in taxes** across all levels of government.

Mandate and Methodology

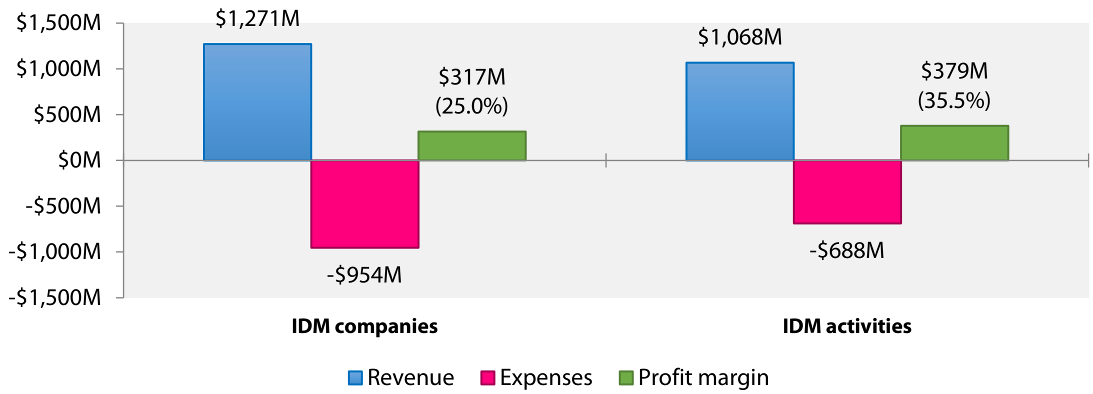
- The data presented in this study is based on an online survey of IDM companies in Ontario, and a series of stakeholder interviews.
- The survey captured data from over 100 IDM companies between August and September 2016, or about 12% of all IDM companies in Ontario.
- Results from the survey were analyzed using Nordicity's proprietary economic impact model to estimate GDP, employment and fiscal impacts.

Profile of the IDM Industry in Ontario

- **IDM companies** are defined as firms that:
    - Create digital content and environments that provide users with a rich interactive experience – either with content itself or with other users; or
    - Provide services that directly enable these products/services.
- **The IDM industry encapsulates a broad cross section of companies.** For example, these parameters most clearly describe firms that directly create digital content, such as video games and apps. This study also includes advertising and design firms whose work is compatible with the above definition, but excludes those companies that primarily design websites (for reasons explained below).
- **While IDM describes a wide range of commercial activities, use of the term also changes over time.** For instance, previous definitions of IDM would not have included mention of virtual, augmented or mixed reality. On the other hand, what might once have been considered a specialized IDM skill are now often excluded, such as dedicated web design.
- **Not all IDM companies are exclusively engaged in IDM-related activities**, as defined above. For example, a linear film production company may also operate a division dedicated to IDM activities. Accordingly, the economic, employment and fiscal impacts assessed in this study are stated separately for: all activities conducted by Ontario IDM companies; and just those activities that focus on IDM.
- **The IDM industry in Ontario consists of 877 companies**, the vast majority of which (86%) were founded since 2000. Nearly half (46%) of these firms were founded since 2010.

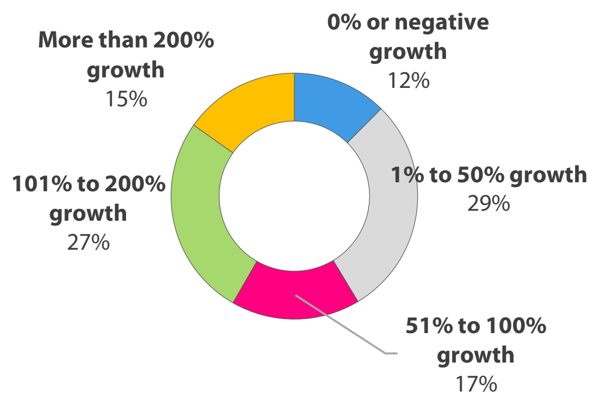
- Ontario IDM companies generated $1.3 billion of revenue in 2015 on expenditures of $954 million, for an implied **profit margin of 25.0%.**

IDM Industry in Ontario: Revenues, Expenses and Profit Margin



- **Ontario IDM companies anticipate overall revenue growth of 61% in the next 12 months**.

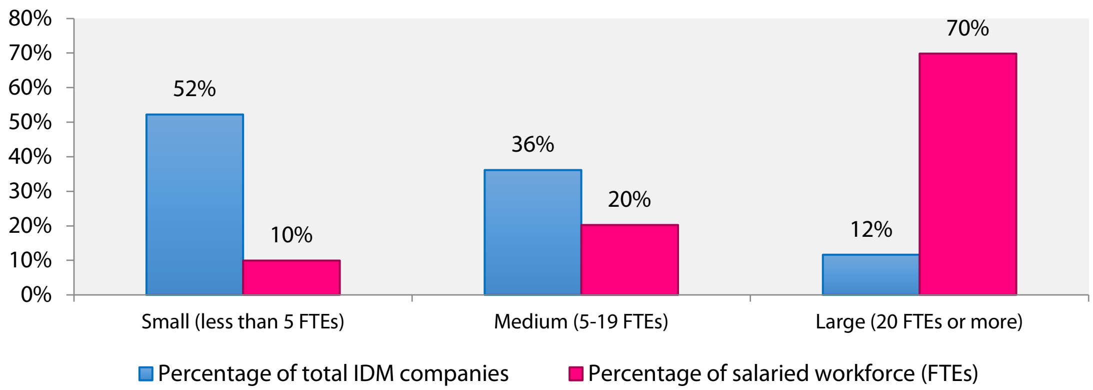
Percentage of IDM Companies Expecting Change in Revenue



Employment in Ontario's IDM Industry

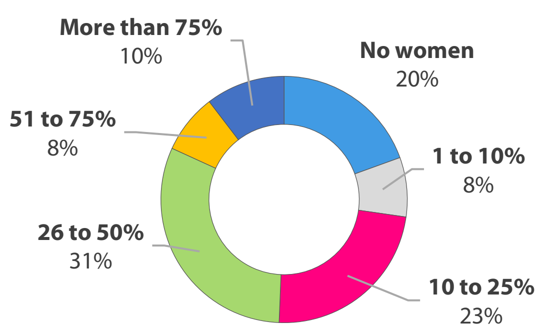
- **IDM companies directly employ 10,900 FTEs**, and of these, 8,670 FTEs specifically perform IDM-related activities at an **average salary of $52,400**.
- The IDM industry is mainly composed of small companies, with **70% of all employment in the IDM industry in Ontario concentrated at the largest 12% of firms** (i.e. companies that employ 20 or more FTEs).

Distribution of Employment at IDM Companies, by Company Size



- **The average age of IDM workers is 32,** and 89% of companies report an average age of under 40.
- IDM companies in Ontario are planning for significant growth over the next 12-24 months, with **44% overall employment growth anticipated (4,810 FTEs).**
- **The IDM workforce in Ontario is 25% female**, with about 49% of companies having more than the average number of female employees.

Percentage of Female Employees at IDM Companies (as a Percentage of Companies)



Impact of the IDM industry in Ontario

- The Ontario IDM industry generated a grand total of **$1.4 billion in GDP** in 2015. Of this amount, $1.2 billion in GDP was driven by IDM-related activities.
- Altogether, **the Ontario IDM industry supported the employment of 16,900 FTEs and labour income of $854 million**. Of these amounts, 12,620 FTEs were supported by IDM-related functions and $640 million was specific to IDM-related activities.
- **The Ontario IDM industry generated $420 million in taxes (across all levels of government)**, of which $251 million was related to IDM activities.
- The industry also helps to develop its own workforce (via collaboration with academic institutions), to change the perception of the communities in which it operates, and to contribute to a wide variety of charitable causes.

Barriers and Challenges

- **Access to public funding was the most significant challenge faced by IDM companies in Ontario**, with many citing cash flow issues related to the structure and eligibility criteria of grants and tax credits.
- The next most significant barriers cited by respondents were: **access to experienced talent in Ontario**; and **access to business clients (e.g., publishers)**. Together, these issues suggest that Ontario IDM companies can find it difficult to establish a sufficiently robust network to support their operations (i.e., employees) and sales (i.e., clients).
- In addition to the challenge of networking in Ontario, companies noted that **frequent and rapid disruption in the industry impedes strategic planning**, it is **expensive to access emerging technologies**, and the **long IDM product development cycle** (particularly for games) means that developers may not capitalize on the trend(s) that inspired the development of a particular product.

1. Introduction

1.1 Mandate

Interactive Ontario (IO) engaged Nordicity to undertake a study to better understand the companies that make up the Ontario interactive digital media (IDM) industry – and the impact those companies have in Ontario. This research builds on IO's work done as part of the "Mapping Ontario's Digital Economy" (MODE) project, which was an attempt to create a robust directory of IDM companies working in Ontario.

At the same time, the study was conceived in a context where the most recent data available for the interactive digital media industry in Ontario is from 2011. This data was published in the Canadian Interactive Industry Profile (CIIP), a national study with a much smaller Ontario sample. This report marks the first in-depth study devoted solely to Ontario's IDM industry. As such, this report helps to fill a crucial knowledge gap felt by industry, policymakers, and the wider public.

1.2 Methodology

Information presented in this report is drawn from two principal sources: an online survey and a series of stakeholder interviews. Data from the survey was then used to estimate the economic impact of Ontario's IDM industry.

1.2.1 Survey data

The data presented in this study is drawn principally from the Measuring Success Survey, an online survey of Ontario-based interactive digital media (IDM) companies conducted by Nordicity between August and September 2016.

The primary purpose of the survey was to obtain activity and financial data about the companies that comprise the IDM industry in Ontario. At the same time, however, the survey also captured company positions on key barriers and challenges facing the IDM industry – as well as information on the wider, non-economic impacts that IDM industries can have.

The survey collected responses from 103 IDM companies in Ontario, or 12% of the 877 Ontario-based IDM companies for which contact information was available. Given the dearth of available data on the IDM industry in Ontario, it is not possible to estimate what portion of industry revenue, expenses, and/or employment is represented in the survey sample. [1]

In order to extrapolate from the survey to the wider IDM industry in Ontario, Nordicity relied on an inventory of IDM companies provided by Interactive Ontario. This list was validated through desk research to ensure both the continuing existence and current size of firms (in terms of employment). Companies were excluded from the list if they were found to be either no longer active or publicly owned (e.g., academic institutions).[2]

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[1] Note that the types of information collected by this survey (e.g., company activities and financial results) do not conform to a normal distribution – and data was gathered from those companies that voluntarily responded to the survey. As such, the collected data can be called a "convenience sample", as opposed to a "probability sample," meaning that most statistical tools typically used to ascertain the reliability of the data cannot be used. It is for this reason that margins of error cannot be calculated.

[2] Although academic institutions are integral parts of Ontario's IDM ecosystem, they do not have the commercial characteristics that make up the subject of much of this study.

In the process of grossing up the survey sample, Nordicity assumed that any survey data relating to employment and financial performance (e.g., average salaries, revenue, employment growth, seniority of workforce, etc.) are representative of the wider population of Ontario-based IDM firms among companies of similar size. As such, findings relating to employment and financial performance have been adjusted to reflect the actual distribution of small, medium, and large companies within the wider population of Ontario-based IDM companies. Where data describes characteristics that do not have a clear correlation with company size (e.g., the platforms for which companies develop, audiences, female employees in the workforce, level of educational attainment, etc.), no distinction was made between the survey sample and universe. At the same time, outliers (identified at the outset of the gross-up process) were omitted from averages upon which the gross up was based and then re-added to the grossed-up estimates at the end of the process.

1.2.2 Social impact interviews

To complement the survey, Nordicity undertook a series of interviews with stakeholders located in jurisdictions where the IDM industry may have had a significant social and/or economic impact. These communities were selected by IO, and include: the Junction Triangle (Toronto), London, and Ottawa. These jurisdictions were selected to reflect locations of various sizes in which significant IDM activity occurs.

For each jurisdiction, Nordicity conducted four interviews with a mix of local IDM companies, business, government stakeholders and/or community representatives. The objective of these interviews was to better understand how an IDM industry can shape the development of a community. Accordingly, the interviews touched on issues including (but not limited to), employee spending, transit access, community volunteering, and city brand marketing.

1.2.3 Economic impact analysis

The methods used to estimate the IDM industry's economic impact are rooted in Nordicity's standard economic modelling tools. These tools, in turn, draw upon data from the Measuring Success Survey, secondary sources (including Nordicity's previous work in the IDM, games and film industries), and Statistics Canada's Input-Output (I-O) tables, to derive estimates of **direct**, **indirect** and **induced** impacts of the IDM industry on the Ontario economy. These impacts are expressed in terms of employment (i.e., full-time equivalents [FTEs]), labour income (i.e., wages, salaries and benefits) and gross domestic product (GDP).

- The **direct impact** refers to the employment, labour income and GDP generated within the IDM industry itself, and is largely in the form of wages and salaries paid to the industry's workers. It also includes operating surplus (i.e., operating profits [return to shareholders] and sole proprietors' income) earned by companies and the value of depreciation of capital assets. To estimate the direct economic impact we compiled data from the online survey on industry activity (i.e., operating revenue and expenditures, total wages and salaries, average salaries) and a representative breakdown of cost structures for the IDM industry. These data were used to estimate labour income and employment. To estimate direct GDP, the ratio of operating surplus to labour income in Canada's software publishing industry (15.17%) was obtained from Statistics Canada 's I-O and used to estimate the amount of operating surplus to add to the estimate of labour income in order to derive an estimate of GDP.
- The **indirect impact** refers to the increase in employment, labour income and GDP in the industries that supply inputs to the IDM industry (e.g., utilities, real estate, telecommunications services). The conversion of data for industry activity into estimates of the indirect economic impact required an I-O model of the Ontario economy. Nordicity used Statistics Canada's I-O tables to construct a model that could be used to estimate the indirect economic impact. This model took into account the pattern of re-spending by the video

game industry's supplier industries, and the degree to which these supplier industries' purchases leaked from the Ontario economy in the form of imported inputs. This I-O model was used to derive estimates of indirect employment, labour income, and GDP.

- The **induced impact** refers to the increase in employment, labour income, and GDP that can be attributed to the re-spending of income by Ontarian households that earned income at both the direct and indirect stages of the economic impact. Because Statistics Canada I-O tables only permit one to estimate the indirect impacts of an industry, sector or economic shock, Nordicity developed and applied a custom induced impact economic multiplier to derive estimates for this analysis. This multiplier was based on Nordicity's estimates of the marginal propensity to consume (MPC) and marginal propensity to import (MPM) for Ontario. The derivation of the MPC and MPM were based on data for household spending and international trade available from Statistics Canada.

This report also presents the fiscal impact of the IDM industry in Ontario – or the tax income stimulated by the IDM industry to municipal, provincial and federal governments. To estimate those figures, Nordicity relied on additional data from Statistics Canada, including tax data in CANSIM Table 385-0001 and GDP/wage data from CANSIM Table 384-0001. Nordicity's tax estimates reflect the ratios observed between GDP/wages (as applicable) and the amounts of each type of tax at the provincial and national level. As such, this methodology employs statistical averages across the wider economy to estimate the fiscal impact of aggregated industry data.

1.3 About this Report

This report is organized into a series of sections that present thematically organized information about the IDM industry in Ontario.

These sections are as follows:

- **Section 2: Profile of IDM Companies in Ontario** provides an overview of IDM companies in Ontario, including age, business structure, ownership and intellectual property ownership.
- **Section 3: Company Output: IDM Products and Services Made in Ontario** looks at the types of experiences that IDM companies develop, the platforms on which these experiences are presented, and the target audiences for these products.
- **Section 4: Working in Ontario's IDM Industry** profiles the IDM workforce, highlighting the distribution of employees across firms of various sizes, the seniority of the workforce, salaries, mode of work, educational attainment, age, and gender.
- **Section 5: The Finances of Ontario's IDM Industry** offers an assessment of industry size, its sources of revenue, expenditures, and the implied profit margin, based on these data.
- **Section 6: Impacts of the IDM Industry in Ontario** presents economic impact assessments for the companies that comprise the IDM industry and a separate assessment for their IDM-related activities,[3] followed by a discussion of other impacts that these companies have on the local economy and community.

[3] For the purposes of this report, the term "IDM activity" is used to describe the spending, revenue generation and employment related to IDM products and services. It was left to the individual respondents to estimate the portion of their overall annual revenue and expenditures that could be described as an "IDM activity."

- **Section 7: Barriers and Challenges** addresses the challenges that IDM companies in Ontario anticipate in the near future.
- **Section 8: Conclusions and Key Findings** presents a summary of key points from the previous sections.

Methodological Note: Data Comparability | IDM vs. Video Games

The scope of this study overlaps to some degree with other research conducted on companies creating IDM products in Ontario. For example, *Canada's Video Games Industry in 2015* published by the Electronic Software Association of Canada (ESAC) contains a section on games companies based in Ontario. While those games companies are included in the analysis presented in this study (as games are *part* of the IDM industry), the scope of this study is somewhat broader than ESAC's study. Indeed, it includes a variety of companies from non-game app developers, to elearning companies, to diversified media companies that engage in IDM activities as part of their business – companies not included in ESAC's report.

Due to these differences in scope, readers are advised *not* to compare the results of the two studies.

Glossary of Terms

n-values: The number of respondents to a survey question, which is often used in the data analysis related to that question.

FTE: Full-time equivalent is a measure of employment that can mean, for example, that three part-time employees each working a third of a year make up 1 FTE.

IDM Revenue/Expenses: The portion of a company's overall revenue or expenses derived from or devoted to IDM product and/or services. The inclusion of this measurement recognizes that IDM work may constitute only some of what a given respondent company creates.

Direct GDP: The economic activity generated directly by the IDM industry.

Indirect GDP: The increased economic activity generated by business sectors broadly associated with the IDM industry in Canada—i.e., sectors that are supplying goods and services to companies in the industry.

Induced GDP: The increase in economic activity attributable to re-spending of labour income within an economy by workers at the direct and indirect levels. In other words, people employed at the direct and indirect level take home salaries and re-inject that income into the economy through their day-to-day spending.

Direct employment: Those people employed by an IDM company.

Spin-off employment: Employment resulting from economic activity generated by business sectors broadly associated with the IDM industry in Canada and the economic activity attributable to re-spending of labour income within an economy by workers at the direct and indirect levels. In other words, employment related to the indirect and induced economic impact of the IDM industry.

Direct labour income: Salaries and benefits paid to employees of IDM companies (whether or not they work on IDM products and/or services).

2. Profile of IDM Companies in Ontario

2.1 Defining an IDM Company

> **Definition: Interactive Digital Media**
>
> Digital content and environments that provide users with a *rich interactive experience* – either with content itself or with other users; and services that directly (and exclusively) enable these products/services.

There is no universally accepted definition of the Interactive Digital Media (IDM) industry – and those definitions that do exist can be interpreted in a variety of ways. Indeed, organizations and jurisdictions tend to adapt the term to suit their respective remits. For example, an organization representing content creators might exclude some app developers but include animation and visual effects firms. On the other hand, an organization representing a jurisdiction with a strong technology sector may include electronics manufacturing in its definition of the industry. Organizations with broader mandates can also limit their definition to those companies that created certain types of content (e.g., not advertising).

Not only does the definition of IDM differ between organizations using the term, but it also changes (rapidly) over time. As new technologies emerge they are added to the definition. For instance, previous iterations of IDM would not have included mention of virtual, augmented or mixed reality. At the same time, as technologies become more commonplace they are dropped from the definition. For example, it may once have required specialized expertise to create a website – and so dedicated web design firms may have been included as IDM companies. Now that basic websites can be created by the layperson, some such companies are now excluded from the many IDM definitions.

This disparity in definition illustrates the adaptive nature of the IDM industry – a nature that poses both challenges and opportunities. On one hand, differing definitions mean that data created to describe the IDM industry are seldom easily comparable – either between jurisdictions or over time. As such, industry rankings and growth trajectories are challenging to create. On the other hand, however, the adaptive nature of the industry means that as new industries move into the creation of "rich interactive experiences" they become part of the industry. As such, the IDM industry is ensconced at the leading edge of content experiences – whatever that means at the time the term is used.

The impact of this changing definition can be quite significant. In this case, that more, large advertising firms in Ontario are engaging in IDM activities has the effect of including a sizable number of new, large companies to the IDM roster. As a result, the shape – and impact – of the industry also changes to reflect those new additions.

For this study, the definition used (presented above) is a broad one, and so it warrants some clarification. The following table illustrates some of the types of companies included (and excluded) from the study:

Table 1 - IDM companies included and excluded

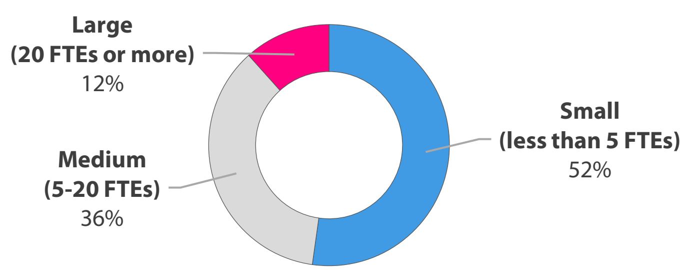
Companies included	Companies excluded
Games developers and publishers elearning software developers VR/AR/MR developers Mobile app developers Digital advertising firms Some web developers (that make rich interactive sites) Software developers servicing the above companies (e.g., with specialized software)	General software developers (e.g., productivity software) Animation and visual effects companies specializing in film and TV Linear audiovisual creators and distributors (e.g., TV producers) Some web developers (that do not make rich interactive sites)

Considering the above definition, it is important to recall that companies may engage in more than one line of business. For example, a company that makes linear audiovisual content (e.g., TV shows) may also create interactive products (e.g., games). To accommodate this situation, a company is considered to be an "IDM company" if they create *any* IDM products or services.

2.2 IDM Companies in Ontario

In total, there are **877 IDM companies based in Ontario**. As Figure 1 illustrates, almost nine out of every ten companies have fewer than 20 employees. Indeed, 52% are even smaller, with fewer than five employees.

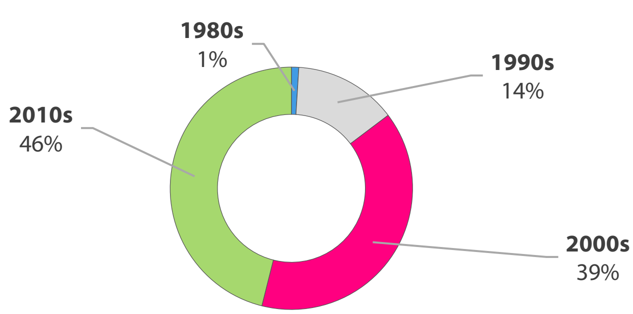
Figure 1: Distribution of IDM companies in Ontario, by size (% of companies)



Source: Interactive Ontario, Nordicity

Of those 877 companies, the vast majority were founded during the last 16 years. As the following figure (Figure 2) shows, 86% of IDM companies were founded since 2000 and nearly half (46%) were founded since 2010.

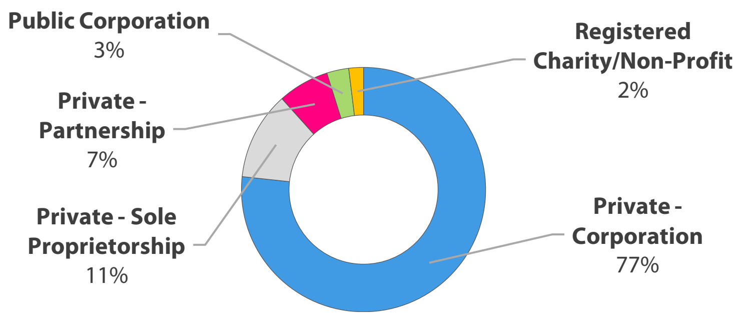
Figure 2 – Company year of founding by decade (% of companies)



Source: Measuring Success Survey 2016
n = 102

The overwhelming majority (95%) of IDM companies are privately owned, meaning that almost no IDM companies operating in Ontario are publicly-traded (3%). Consistent with that finding, the most common business structure among IDM companies is the private corporation, which describes over three quarters (77%) of the industry (as the following figure shows).

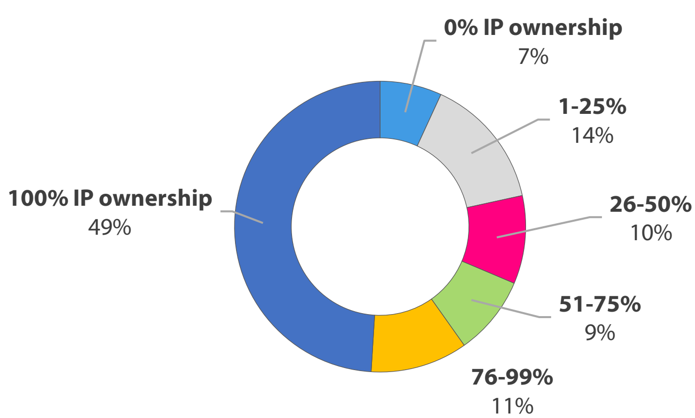
Figure 3 – Business structure of IDM companies (% of companies)



Source: Measuring Success Survey 2016
n = 103

At the same time as being private companies, the overwhelming majority of Ontario-based IDM companies are Canadian-owned (98%). Moreover, nearly half (49%) of Ontario-based IDM companies own all of their intellectual property (IP) related to the products (both IDM and otherwise that they create).

Figure 4 – Intellectual property (IP) ownership of IDM companies (% of companies)



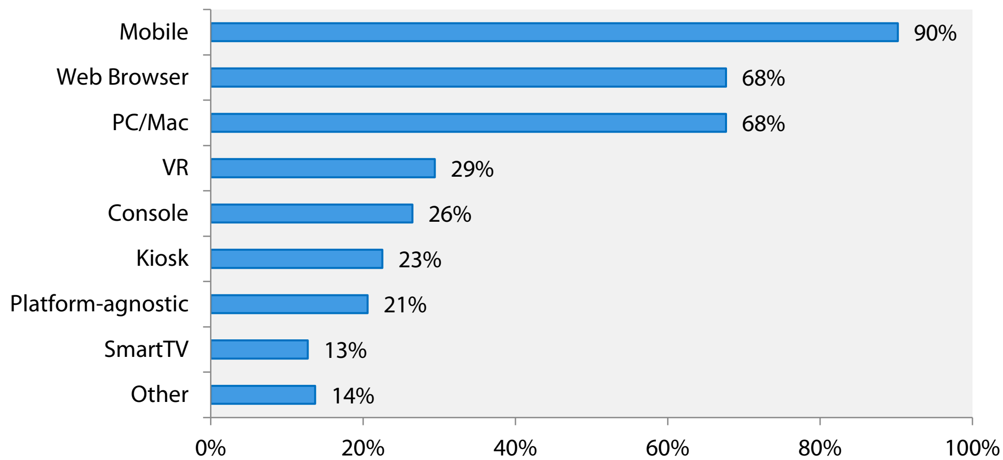
Source: Measuring Success Survey 2016
n = 102

As Figure 4 shows, an additional 20% of companies own from 50% to 100% of their IP. In other words, almost seven out of ten IDM companies in Ontario own more than half of the IP that they create. Combining this finding with those presented above, one can conclude that IDM companies in Ontario comprise a truly domestic industry – one that owns both their companies and IP.

3. Company Output: IDM Products and Services Made in Ontario

Most Ontario-based IDM companies are in the business of creating experiences for mobile devices, PC/Mac and web browser. As the following figure (Figure 5) shows, 90% of companies develop for mobile devices.

Figure 5 – Percentage of companies developing for IDM platforms (multiple answers possible)

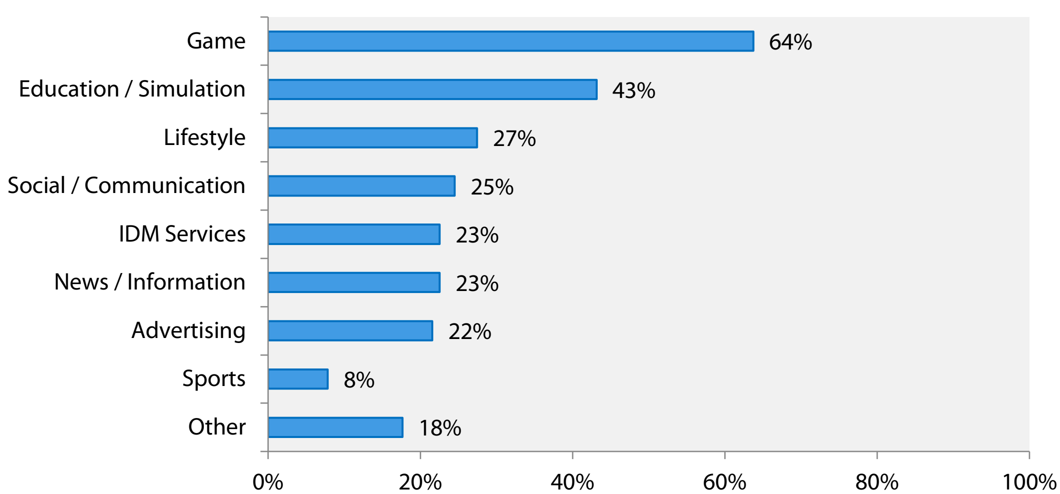


Source: Measuring Success Survey 2016
n = 102

Interestingly, 95% of the companies that develop for mobile do so in addition to developing for at least one additional platform. In other words, only 5% of mobile developers work exclusively on that platform.

Games represent a significant portion of the experiences developed by the IDM industry. As Figure 6 illustrates, games (64%) and education/simulation (43%) are the most prevalent types of experience that Ontario-based companies create.

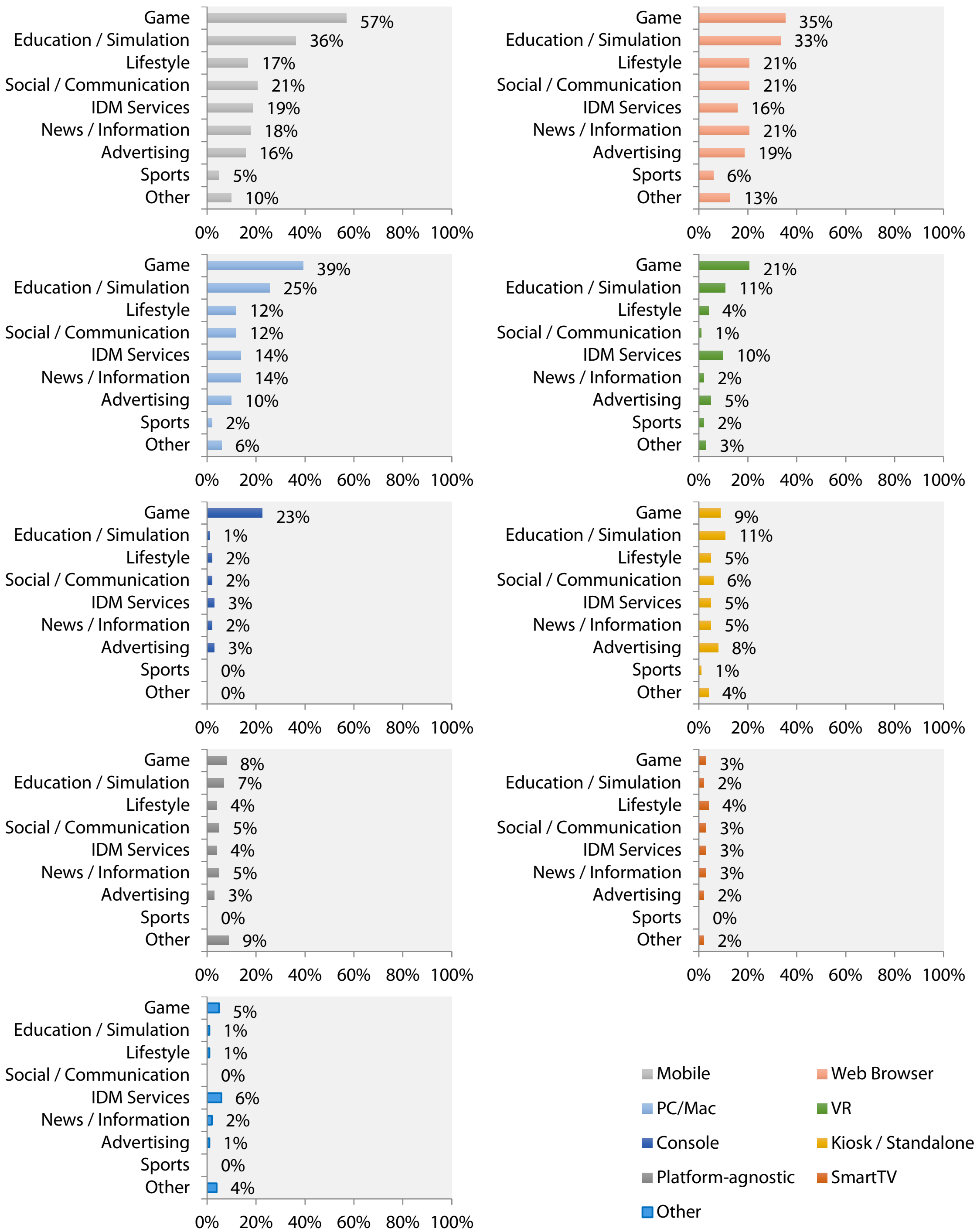
Figure 6 – Types of experiences developed by IDM companies (multiple answers possible)



Source: Measuring Success Survey 2016
n = 102

Figure 7 cross-tabulates the findings depicted in Figure 5 and Figure 6, breaking out the type of experience by platform. Of the platforms identified, games were most prevalent on mobile, PC/Mac, console and VR platforms.

Figure 7 – Types of experiences by IDM platform (% of companies, multiple answers possible)

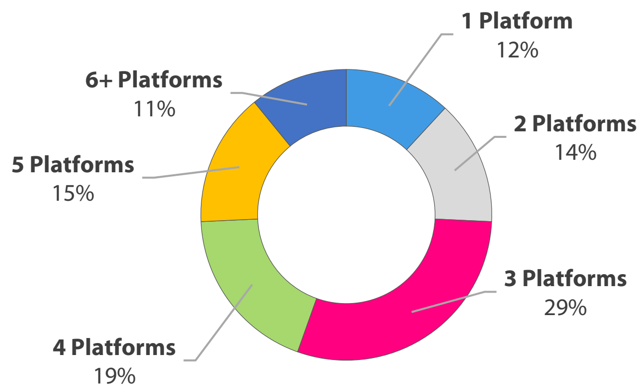


Source: Measuring Success Survey 2016

n = 102

Although the preceding charts clearly illustrate the specific experiences and platforms in which IDM companies work, it is important to note that those companies tend to develop for a variety of platforms. As Figure 8 illustrates, almost three quarters (74%) of Ontario IDM companies develop experiences for three or more platforms.

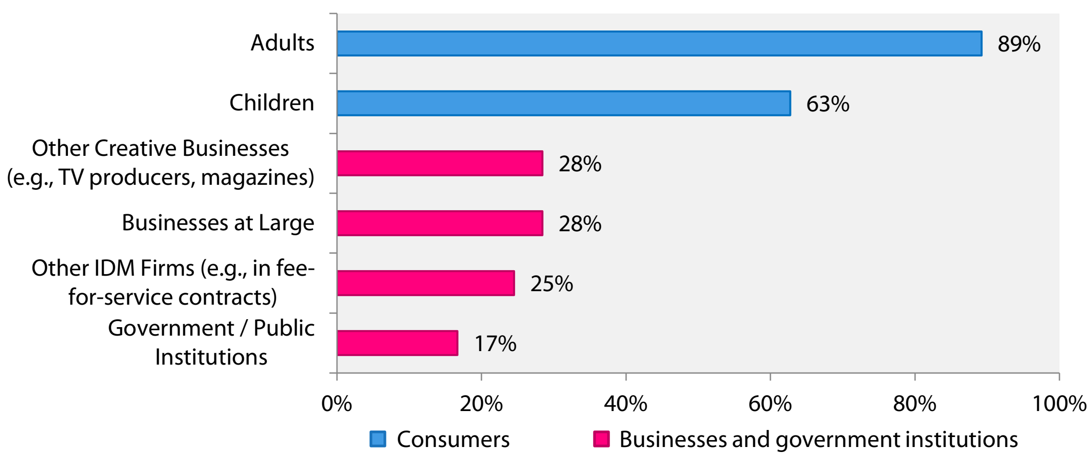
Figure 8 – Percentage of IDM companies developing for multiple IDM platforms



Source: Measuring Success Survey 2016
n = 102

The majority of IDM companies target the consumer adult and children audience segments. As Figure 9 illustrates, 89% of companies develop for adult audiences, followed by 63% that target children. On the other hand, a much smaller share of firms target business-to-business markets and/or government/public institutions.

Figure 9 – Percentage of IDM companies targeting various consumer and business audiences



Source: Measuring Success Survey 2016
n = 102

More precisely, 93% of firms target consumer audiences directly (including adults and/or children). Of those firms (that target any type of consumer directly), about half (49%) also target businesses and/or government/public institutions. On the other hand, only 7% of IDM companies target businesses and government/public institutions exclusively.

Local IDM Industry: Junction Triangle (Toronto)

Who's there?

Ubisoft Toronto

Community Interaction

Ubisoft's Toronto campus is one of the largest employers in the Junction Triangle portion of Toronto's West End. Its employees not only bring economic benefits to surrounding businesses but also interact with the community in a variety of ways. From employees helping in the community garden at the STOP Community Food Centre to sponsoring and mentoring a summer coding camp through its partner The Hand Eye Society, Ubisoft has deep impact on its surrounding community.

Local Impacts

- **Local Businesses:** As Ubisoft draws in several hundred employees to the area each day, they provide a consistent customer base for local business such as Café Neon and the Halo Brewery. To that end, some local businesses have indicated that the presence of those customers has encouraged them to establish their businesses in the Junction Triangle. In at least one instance, the steady business of Ubisoft employees has enabled local businesses' ability to expand to new locations (outside the Junction Triangle).
- **Neighbourhood Economy:** One effect of the development of local businesses in an area that previously lacked for cafés and restaurants is that local residents seem to be spending more in their community, rather than traveling to other communities. For example, on weekends (when most Ubisoft employees are at home) local coffee shops and restaurants observe that they do good business, primarily fueled by locals. Without the magnet of IDM workers those businesses would not be there in the first place (per the above point), meaning that there would be fewer options for locals to spend in their community.
- **Workforce Development:** Ubisoft employees work closely with (and even teach in) Toronto-based academic institutions, thereby helping to develop the next generation of IDM worker. At the same time, Ubisoft has shown interest in working with high school students to promote game design as a career choice.
- **Promoting Diversity:** Ubisoft contributes to diversity in the games industry with efforts like its sponsorship of the Girls Code Day with Ladies Learning Code, and the Hand Eye Society.
- **Local Industry Development:** Ubisoft regularly invites other, smaller IDM companies located in Toronto to its events, and has initiated the Ubisoft Indie Series (with National Bank), an annual competition for independent game development studios across Canada.
- **Providing Inspiration:** Ubisoft creates art installations for events like Nuit Blanche and TIFF with the aim of simply inspiring the people that view them – thereby adding to Torontonians' quality of life.

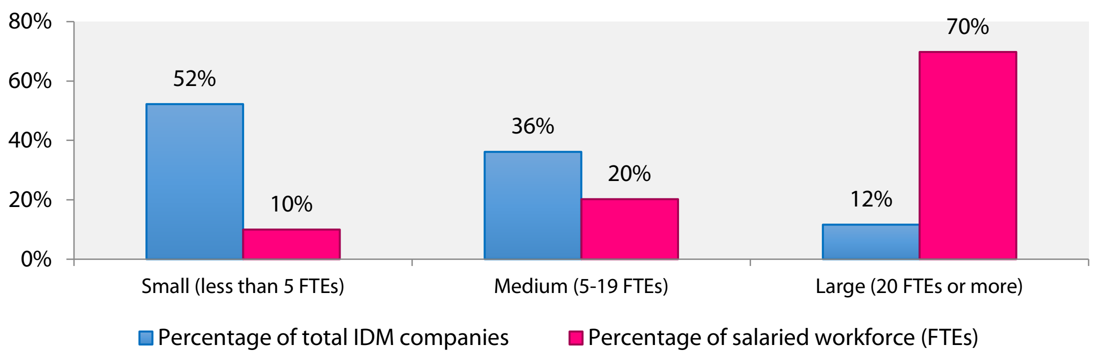
4. Working in Ontario's IDM Industry

4.1 Employment

In total, the Ontario IDM companies directly employ approximately 10,900 Full-time Equivalents (FTEs). Of these employees, Nordicity estimates that 8,670 FTEs are directly involved in these firms' IDM-related activities.

Of those 10,900 direct FTEs, the vast majority are employed by the largest firms (those that employ more than 20 people). As the following figure (Figure 10) shows, 70% of all employment in the IDM industry in Ontario is at the largest 12% of firms.

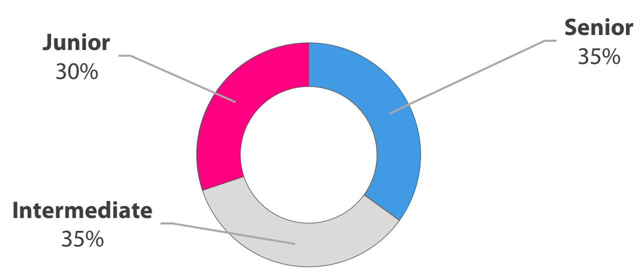
Figure 10 – Distribution of IDM companies and employment (FTEs), by company size



Source: Measuring Success Survey 2016
n = 93

In terms of workforce seniority, companies employed relatively equal proportions of senior, intermediate and junior employees. Figure 11 shows that 65% of Ontario's IDM workforce is either junior (30%) or intermediate (35%), with less than six years of work experience.

Figure 11 – Seniority of workforce in the IDM industry (% of total FTEs)[4]

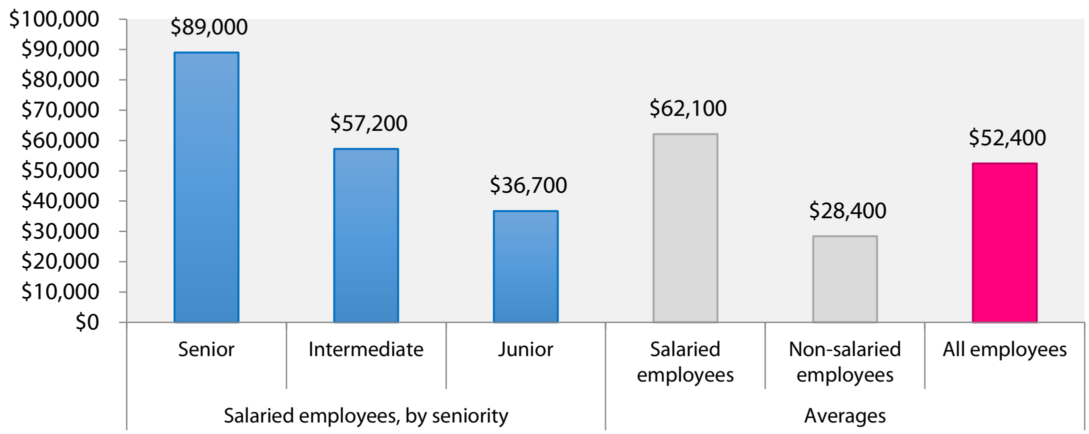


Source: Measuring Success Survey 2016
n = 86

[4] Seniority was defined in terms of years of work experience, with senior employees having more than six years of experience, intermediate employees having two to six, and junior employees having less than 2 years.

The overall average salary for workers in IDM companies in Ontario is $52,400. As Figure 12 illustrates, senior workers command much higher salaries than the industry average. Moreover, salaried workers (full time and part time), as a whole, make considerably more than their non-salaried (temporary, contract, and freelance) counterparts.

Figure 12 – Average salary in the IDM workforce, by seniority and industry averages

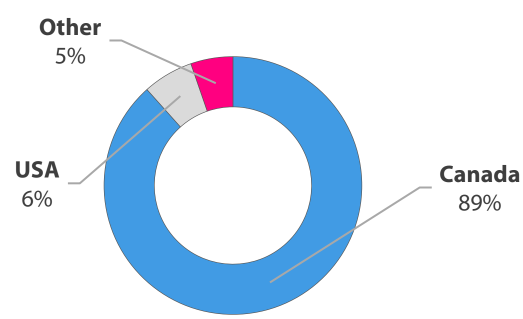


Source: Measuring Success Survey 2016
n = 94

4.2 Demographics

As illustrated in the following figure (Figure 13), 89% of the employees in Ontario's IDM workforce were hired from within Canada, with 6% of employees hired from the USA. Employees hired from all other regions comprised only 5% of Ontario's workforce.

Figure 13 – Origin of workforce in the IDM industry (% of total FTEs)



Source: Measuring Success Survey 2016
n = 92

Most of Ontario's IDM workforce consists of full time employees (71%) and contract/freelance workers (24%). The remaining 6% is comprised of part time employees (2%) and temporary workers (4%). Part time IDM workers in Ontario were found to average 17 hours per week.

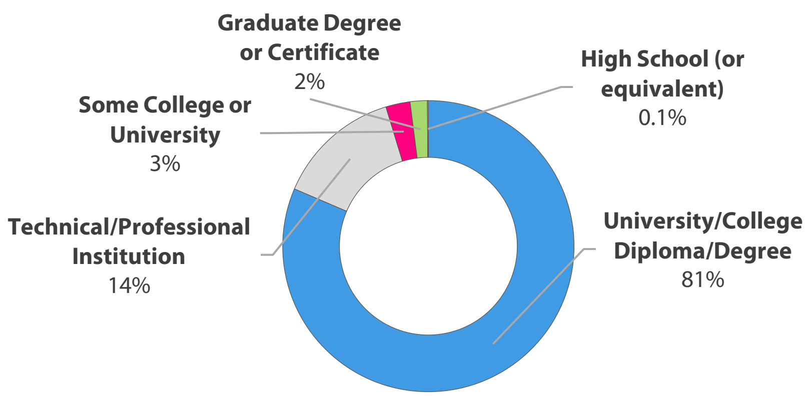
Figure 14 shows the distribution of salary and non-salary workers by company size. It is apparent that larger firms tend to employ a greater proportion of salaried workers than their smaller counterparts.

Figure 14 – Workforce composition by salary and non-salary workers, by company size (% of total FTEs)

Source: Measuring Success Survey 2016
n = 92

The IDM industry in Ontario employs a well-educated workforce. As Figure 15 illustrates, 97% of workers have completed post-secondary training at either a college or university.

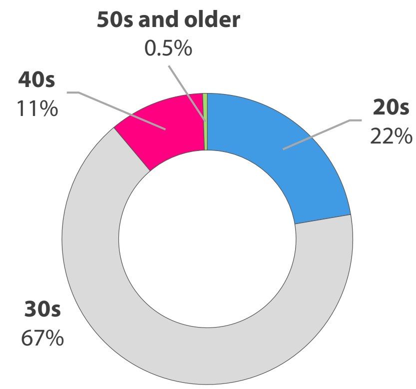
Figure 15 – Average educational attainment of the IDM workforce (% of FTEs)



Source: Measuring Success Survey 2016
n = 79

Ontario's IDM industry is largely composed of young adults with an average age of 32. Very few firms (11%) reported an average of over 40 years of age. As Figure 16 shows, 89% of companies have an average age under 40, with two out of three firms reporting an average employee age in their 30s.

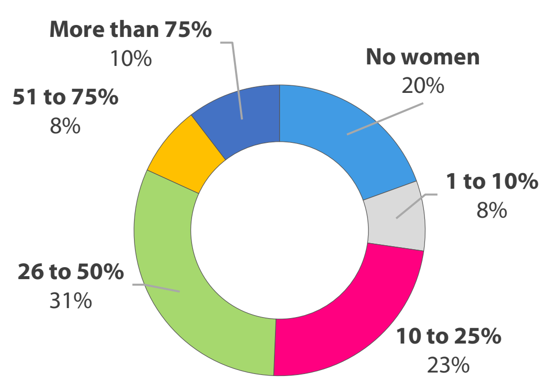
Figure 16 – Average age of the IDM workforce



Source: Measuring Success Survey 2016
n = 78

On average, a quarter (25%) of the employees at Ontario IDM companies are women. As Figure 17 shows, about half of the companies (51%) employ proportionately fewer than this average. In contrast to the predominantly male workforce in the Province, one in ten companies reported having a workforce composed of more than 75% female employees.

Figure 17 – Percentage of female employees in the IDM workforce (% of companies)

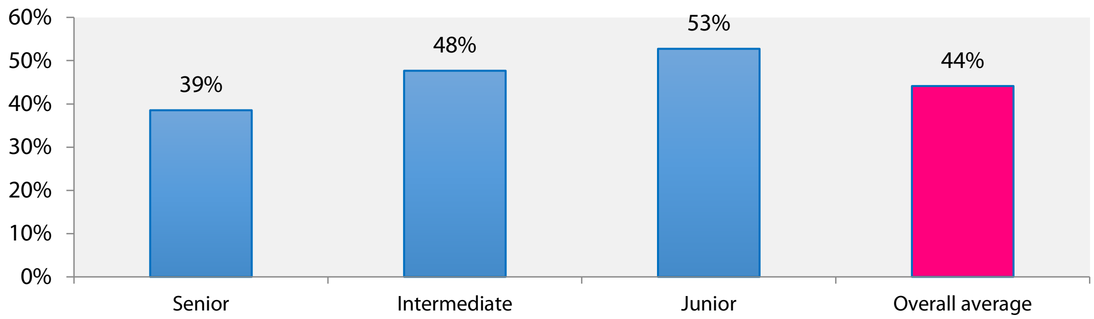


Source: Measuring Success Survey 2016
n = 77

4.3 Looking Ahead

IDM companies in Ontario are planning for significant growth over the next 12-24 months. Figure 18 shows that companies anticipate greater demand for junior and intermediate level new hires relative to the composition of the current salaried workforce. However, all levels of seniority are well-represented in companies' hiring plans.

Figure 18 – Expected percentage increase in salaried employees over the next 12-24 months, by seniority



Source: Measuring Success Survey 2016
n = 90

Overall, companies plan to expand their salaried workforce by 44% across all levels of seniority, which amounts to an increase of 4,810 FTEs industry-wide. As such, IDM companies expect to grow significantly over the next 1-2 years, illustrating their confidence in the products and services that they create.

Local IDM Industry: Ottawa

Who's there?

Magmic, Snowed In Studios, Bitheads

Community Interaction

IDM companies located in Ottawa are smaller in scale than those in Toronto or London – as the city does not have a major player (like Ubisoft in Toronto or Digital Extremes in London). This scale means that interactions with the community tend to be at the personal level – rather than being corporate decisions.

Knowledge spillover occurs within the interactive community in Ottawa, both between companies as they shift employees, and with academic institutions, as members of the local IDM industry participate on advisory boards and/or teach at local academic institutions.

Local Impacts

- **Brand enhancement:** the IDM industry has been used by the City of Ottawa as part of its efforts to revitalize the Ottawa brand – from a government town to a vibrant cultural community. eSports tournaments have been particularly effective in that regard.
- **Indie Collectives and Jams:** building on the small, indie nature of companies in Ottawa, companies work together and with youth.
- **Workforce Development:** the industry helps to keep new talent produced by local academic institutions up-to-date with the latest industry tools and trends.
- **Working with the City:** industry members in Ottawa work closely with the municipal economic development body (Invest Ottawa) to ensure that the City helps to support industry growth (e.g., by supporting festivals with in-kind contributions and connections).

5. The Finances of Ontario's IDM Industry

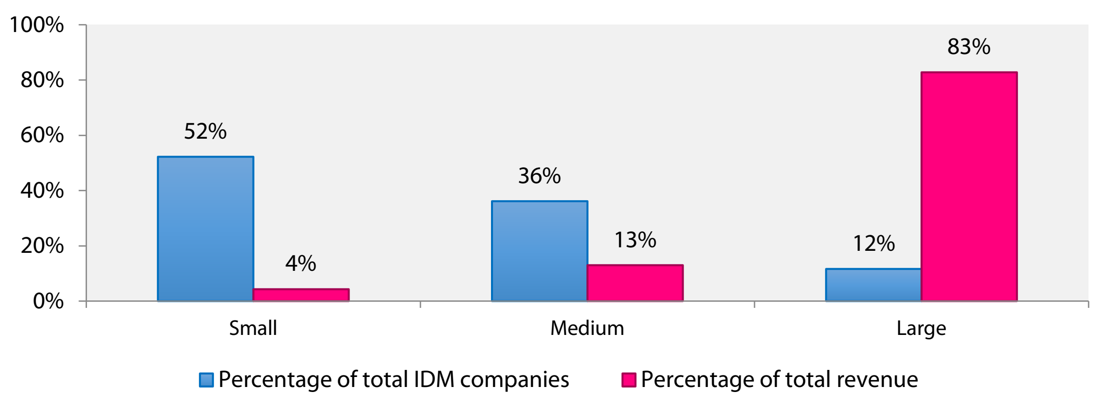
The Measuring Success Survey was designed to collect data from individual IDM companies. However, because many IDM firms operating in Ontario are business units of larger firms (e.g., Ubisoft Toronto) it can be challenging for them to report on revenue as separate business units. As a result, only a subset of survey respondents was able to provide revenue information and so be included in the analysis thereof.

Moreover, the broad definition of IDM companies includes firms that also develop other products, particularly linear media (e.g., Blue Ant Media, Corus Entertainment). As such, this study asked respondents to specify the amount of revenue derived from their IDM business as a percentage of total revenue. As a result, this analysis explicitly distinguishes between the body of companies that participate in the IDM industry and the specific IDM-related activities that the firms conduct. In distinguishing between companies of various sizes, the revenue characteristics described in this section properly reflect the contribution of smaller, independent firms as well as that of larger games publishers, linear media production companies, and advertising firms that comprise the Ontario IDM industry.

Ontario-based IDM companies generated $1.3 billion of revenue in 2015. Of this amount, $1.0 billion (84%) was derived from IDM-specific activities.

Paralleling the distribution of employees across firms of different sizes (see Figure 10), most of the revenue generated by IDM companies is concentrated among the largest players. As Figure 19 illustrates, the 12% percent of companies that employ 20 or more FTEs generate over three quarters (83%) of overall revenue in the industry.

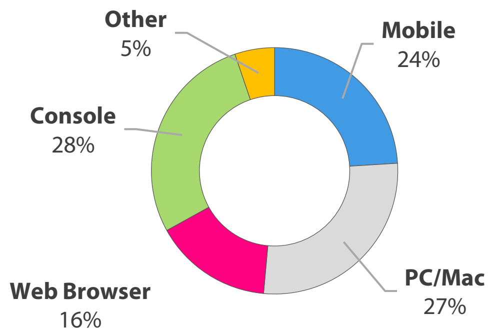
Figure 19 – IDM revenue distribution by company size



Source: Measuring Success Survey 2016
n = 71

As illustrated in Figure 20, the vast majority of revenue (95%) is generated by mobile, PC/Mac, web browser, and console platforms. Of these four dominant platforms, console and PC/Mac are the most significant, contributing 28% and 27% of the total amount respectively. By contrast, VR, SmartTV, kiosk/standalone/installation, platform-agnostic, and 'other' platforms contributed only 5% of the total amount.

Figure 20 – Percentage of IDM revenue generated by platform



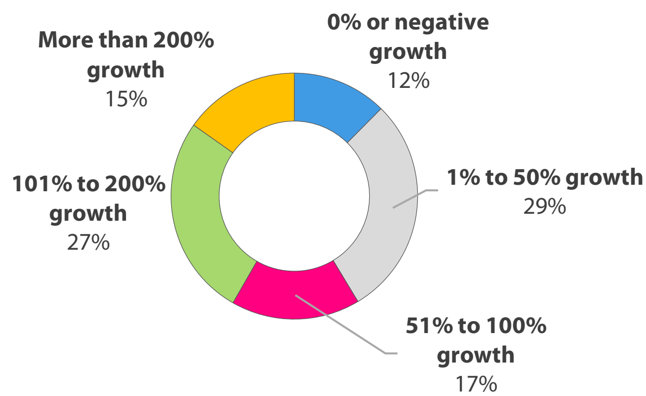
Source: Measuring Success Survey 2016
n = 84

In addition to revenue from product sales, the Province of Ontario supports the IDM sector through the Ontario Interactive Digital Media Tax Credit (OIDMTC). This tax credit applies to eligible Ontario labour and marketing expenditures at rates ranging from 35% to 40%, depending on whether companies develop and market their own products. Companies reported that 3.9% of their total revenues were attributable to tax credits (n = 70).

The IDM industry generates most of its revenue beyond Ontario's borders. Overall, Ontario IDM companies generated only 19.6% of their total revenue in Ontario (n = 70).

Ontario's IDM industry is optimistic about future sales growth. Figure 21 shows that over half of the Province's IDM companies expect revenue to grow more than 50% over the next 12 months. Indeed, only 12% of companies expected negative or no growth.

Figure 21 – Percentage of IDM companies expecting changes in revenue



Source: Measuring Success Survey 2016

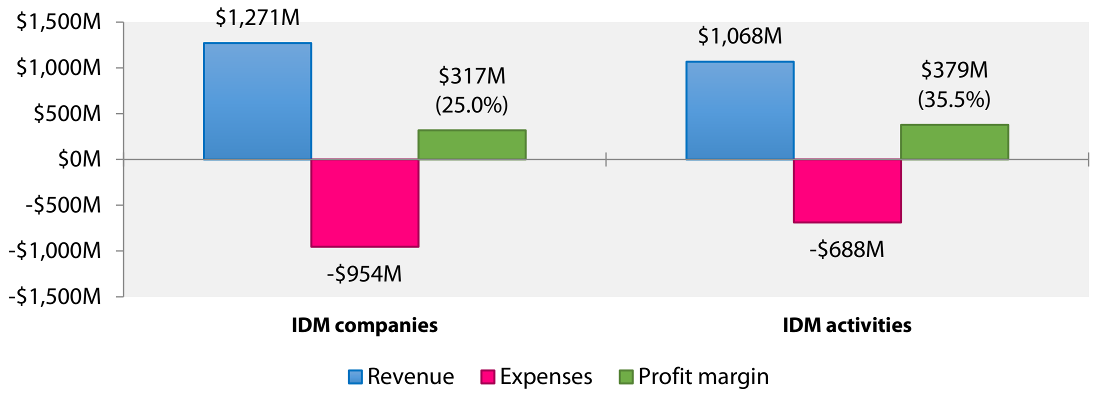
n = 80

Applying firms' growth estimates to their actual earnings (i.e. weighting firms' estimates by the amount of their actual revenues), companies expect to experience overall annual revenue growth of 61% across the entire Ontario IDM industry.

Ontario-based IDM companies reported spending $954 million in 2015. Of this amount, $688 million (72%) was derived from IDM-related activities.

As Figure 22 illustrates, the revenues and expenses reported by Ontario-based IDM companies imply an average profit margin of 25.0%, and 35.5% for IDM-related activities.

Figure 22 – Revenue, expenses and implied profit margin of the IDM industry in Ontario



Source: Measuring Success Survey 2016

The "Typical IDM Company" in Ontario

Given the wide variety of sizes of companies in Ontario's IDM industry, it is important to consider what a typical company looks like within each size category. Based on the survey data, the average Ontario-based IDM company of each size has the following attributes:

Size Category	Revenue ($)	Expenses ($)	Profit Margin	Employment
Small (less than 5 FTEs)	119,000	89,000	25.1%	2 FTEs
Medium (5-20 FTEs)	519,000	389,000	25.1%	9 FTEs
Large (20 FTEs or more)	9,019,000	6,922,000	23.3%	67 FTEs
Overall average	**1,449,000**	**1,088,000**	**25.0%**	**12 FTEs**

Moreover, the average firm generated 84% of its revenue from IDM-related activities.

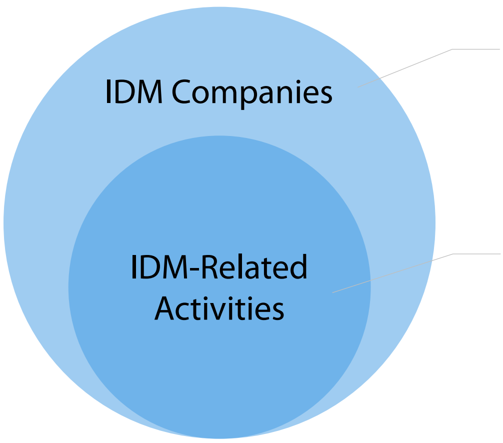
As a reminder, the above depiction of "typical IDM companies" excludes the largest outliers in the survey sample.

6. Impacts of the IDM Industry in Ontario

The following sections outline additional impacts that the IDM industry has on the Ontario economy, including short-term impacts on labour income and gross domestic product (GDP), and longer-term impacts.

As in section 5, this analysis distinguishes between impacts associated with all of the activities conducted by IDM companies in Ontario and the specific IDM-related activities conducted by those firms. The following figure shows the relationship among the activities described in this section. Accordingly, Section 6.1 assesses the entirety of these companies' activities while Section 6.2 deals with only IDM-related activities. Section 6.3 addresses some of the other impacts that the IDM industry has on the local economy and community.

Figure 23 – Schematic of impact of IDM companies vs. IDM-related activities



Section 6.1

- Impacts include all activities of IDM companies, as defined in this study
- **$1.4B in GDP**, supporting **16,900 FTEs**

Section 6.2

- Impacts include only IDM-related activities of these companies
- **$1.2B in GDP**, supporting **12,620 FTEs**

6.1 Economic Impact of IDM Companies

Table 1 summarizes the economic impacts arising from IDM companies in Ontario. Direct impacts relate to the salaries and wages that companies pay directly to employees and the profits that these firms generate for owners. Indirect impacts measure the impact of materials and supplies purchased from industries that supply inputs to the IDM industry. Finally, induced impacts measure the impact of the direct and indirect impacts as they lead to further downstream expenditures in the wider economy.

Table 2 - Economic impact of IDM companies in Ontario

	Direct impact	Indirect impact	Induced impact	Total impact
Employment (FTEs)	10,900	3,180	2,830	**16,900**
Labour income ($M)	571	150	133	**854**
Gross domestic product ($M)	888	260	278	**1,427**

Sources: Measuring Success Survey 2016, Statistics Canada

The majority of the economic benefit of IDM companies arises through the labour income (i.e., salaries and benefits) earned by industry employees as well as the labour income associated with indirect and induced impact employment. Nordicity estimates that 10,900 full time equivalent employees (FTEs) employed by IDM companies in Ontario earned a total of $571 million in direct labour income in 2015. Including the indirect and induced employment generated by the industry, IDM companies generated $854 million in total labour income for 16,900 Ontario FTEs in the same year.

GDP refers to the total value added generated by a company or industry in the development and production of a good or service. In the IDM industry, GDP can be estimated by summing the labour income of workers in Ontario, plus an allocation of the operating surplus (i.e., operating profits earned directly from the development of IDM products, as opposed to property of financial assets). Based on data provided by IDM companies in Ontario through the Measuring Success Survey 2016, Nordicity estimates that the IDM industry's direct contribution to GDP in Ontario in 2015 was $888 million. The industry also generated roughly $260 million in indirect-impact GDP and $278 million in induced-impact GDP. The total GDP generated by the IDM industry in Ontario in 2015, including direct, indirect and induced impacts, was $1,427 million.

Table 2 summarizes the fiscal impact of IDM companies in Ontario corresponding to the combined economic impacts outlined above. Nordicity estimates that the Ontario IDM industry generated approximately $193 million in Federal taxes and $227 million of Provincial taxes, which gives a grand total of $420 million in taxes.

Table 3 - Fiscal impact of IDM companies in Ontario

	Federal	Provincial	Total
Personal income taxes ($M)	120	77	**197**
Corporation income taxes ($M)	31	18	**50**
Consumption taxes ($M)	42	66	**109**
Local property taxes and other fees ($M)	0	65	**65**
Total ($M)	**193**	**227**	**420**

Sources: Measuring Success Survey 2016, Statistics Canada

6.2 Economic Impact of IDM-related Activities

Table 3 summarizes the economic impacts arising from companies' IDM-related activities in Ontario. As suggested above, an "IDM-related activity" is understood to be any expense related to the creation of IDM products and/or services. In filling out their respective questionnaires, respondents were asked to allocate a portion of their overall revenue and expenses to such IDM-related activity. Accordingly, these activities include spending on various administrative activities (e.g., accounting, human resources) that support the creation of IDM products and services.

As with the broader economic impact of the industry, IDM-related activities are largely driven by labour income (i.e., salaries and benefits) earned by industry employees, as well as the labour income associated with indirect and induced impact employment. Nordicity estimates that the 8,670 full time equivalent employees (FTEs) employed in IDM-related activities in Ontario earned a total of $454 million in direct labour income in 2015. Including the indirect and induced employment generated by the industry, IDM activities generated $640 million in total labour income for 12,620 Ontario FTEs in the same year.

Table 4 - Economic impact of IDM-related activities in Ontario

	Direct impact	Indirect impact	Induced impact	Total impact
Employment (FTEs)	8,670	1,840	2,120	**12,620**
Labour income ($M)	454	86	99	**640**
Gross domestic product ($M)	834	151	208	**1,193**

Sources: Measuring Success Survey 2016, Statistics Canada

Table 5 summarizes the fiscal impact of companies' IDM-related activities in Ontario corresponding to the combined economic impacts outlined above. Nordicity estimates that IDM activities generated approximately $113 million in Federal taxes and $138 million of Provincial taxes, which gives a grand total of $251 million in taxes.

Table 5 - Fiscal impact of IDM-related activities in Ontario

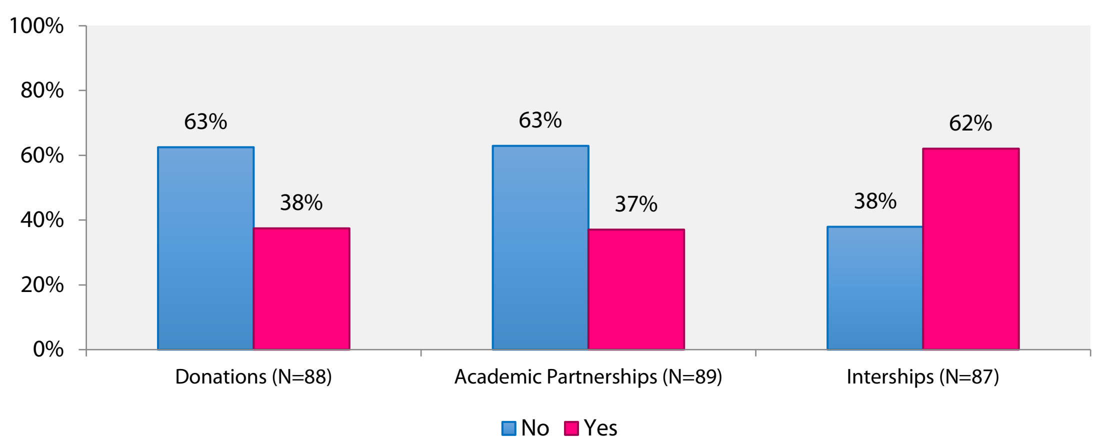
	Federal	Provincial	Total
Personal income taxes ($M)	67	43	**110**
Corporation income taxes ($M)	20	12	**31**
Consumption taxes ($M)	27	42	**69**
Local property taxes and other fees ($M)	0	41	**41**
Total ($M)	**113**	**138**	**251**

Sources: Measuring Success Survey 2016, Statistics Canada

6.3 Other Impacts

Beyond the directly measurable economic impacts, the IDM sector has a number of other positive impacts on the local economy and community, with observable impacts including charitable giving, academic partnerships, and workforce skills development (i.e. internship programs). Figure 24 shows that the IDM industry is philanthropically active, with 38% of firms engaging in charitable donations. In addition to the 37% that engaged in formal academic partnerships, many respondents' qualitative responses indicated enthusiasm for community engagement at schools as well as coding programs for socioeconomically disadvantaged youth. Perhaps most strikingly, 62% of respondents reported running internship programs. This finding is in line with interviewees' observation that many IDM companies maintain a working relationship with local academic institutions – either by teaching classes or by helping to shape curricula. Those interviewees also noted that IDM firms have a vested interest in ensuring that they help to improve the quality of new talent produced in their home jurisdiction, and having first pick of that talent.

Figure 24 – IDM company involvement in charitable donations, academic partnerships and internship programs



Source: Measuring Success Survey 2016

With respect to charitable involvement, respondents elaborated that they gave to organizations that were:

- Directly related to the IDM industry (e.g., Toronto Game Jam, Planet in Focus Film Festival, Ladies Learning Code, CoderDojo Toronto, Techsdale, volunteering directly for IDM-related initiatives in their communities and schools);
- Educational (e.g., co-op student programs, university scholarship programs, science fairs, youth science initiatives);
- Arts and culture focused (e.g., Theatre Ontario, Off Centre Music Salon, Taste Canada); and
- Popular charitable causes (e.g., Heart and Stroke Foundation, United Way, CAMH Foundation, Ovarian Cancer Society, Red Cross, SickKids Foundation, Habitat for Humanity, Shepherds of Good Hope, The Ottawa Mission, Sens Foundation).

In addition to these impacts, interviews revealed that IDM companies can have a significant impact on the image presented by a community or city. As “cool” companies, IDM firms attract younger entrepreneurs and can help a jurisdiction shift how it is perceived by IDM companies and workers. At the city-level, an IDM industry can contribute to a broader talent retention/attraction agenda – one that benefits a range of industries. At the community level, it can contribute to urban revitalization.

Local IDM Industry: London

Who's there?

Digital Extremes, Big Blue Bubble, Big Viking Games

Community Interaction

IDM companies in London interact with their community in a number of ways. They advise, work with, and teach at local higher educational institutions (e.g., University of Western Ontario and Fanshawe College). Companies also contribute to various charitable activities – often in line with their specific corporate cultures.

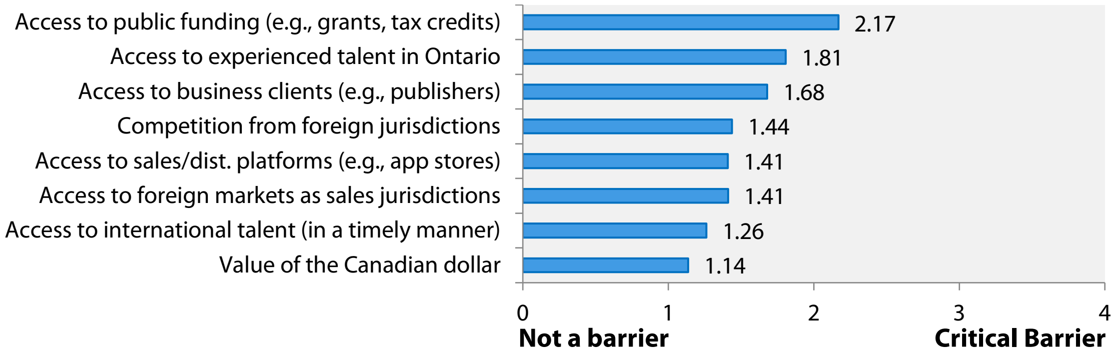
Local Impacts

- **Brand Association:** Perhaps the most important impact that IDM companies have had in London is on the perception of the city itself. Whereas London may have been known as a manufacturing centre, strong recognizable, "cool" IDM companies have helped to change that image. That change, in turn, has contributed to a number of other non-economic impacts.
- **Urban Development:** Likely due to the low cost of rent and the availability of space, IDM companies have begun to locate in London's downtown core. As a consequence of their decisions to do so, the downtown has begun to be revitalized. Buildings are being updated, shops and restaurants are opening, and foot traffic is increasing.
- **Youth Retention (after university):** In line with the two preceding impacts, that there are "cool" companies in London located near one another in a revitalizing precinct has also contributed to youth retention in the city.

7. Barriers and Challenges

Figure 25 ranks barriers to growth based on scores given by Ontario IDM companies.

Figure 25 – Barriers to growth for Ontario's IDM industry (0 to 4 scale)



Source: Measuring Success Survey 2016

As this figure illustrates, access to public funding (e.g., grants, tax credits) is the most important issue faced by IDM companies in Ontario. This challenges is followed by barriers related to access to experienced talent in Ontario, and access to business clients (e.g. publishers). Together, the two latter issues suggest that Ontario IDM companies can find it difficult to establish a sufficiently robust network to support their operations (i.e., employees) and sales (i.e., clients).

Elaborating on funding-related challenges, respondents noted that:

- Government funding programs and tax credits are very complex and compliance with reporting requirements can be very expensive;
- Many banks will not lend against the Ontario Interactive Digital Media Tax Credit, limiting how the credit can be used by smaller IDM companies;
- Complex IDM projects are not always eligible for funding programs;
- Recoupment requirements can substantially exceed the value of government funding contributed to a project;
- Indie and emerging developers have a difficult time accessing funding programs (i.e. revenue thresholds for funding program eligibility); and
- Not-for-profit organizations are not eligible for funding programs.

In addition to the options assessed above, respondents were asked if they faced any additional important barriers. Their responses included observations that:

- Frequent and rapid disruption in the industry impedes strategic planning;
- It can be both difficult and expensive to access emerging technologies;
- The long IDM product development cycle (particularly for games) means that developers may not capitalize on the trend(s) that inspired the development of a particular product;
- It is difficult to coordinate collaborative projects that involve both software developers and content creators; and
- There are prohibitively high costs of travel for marketing and promotion.

8. Conclusions and Key Findings

Who is the IDM industry in Ontario?

- **IDM companies** are defined as firms that:
  - Create digital content and environments that provide users with a rich interactive experience – either with content itself or with other users; or
  - Provide services that directly enable these products/services.
- **The IDM industry encapsulates a broad cross section of companies.** For example, these parameters most clearly describe firms that directly create digital content, such as video games and apps. This study also includes advertising and design firms whose work is compatible with the above definition, but excludes those companies that primarily design websites (for reasons explained below).
- **While IDM describes a wide range of commercial activities, use of the term also changes over time.** For instance, previous definitions of IDM would not have included mention of virtual, augmented or mixed reality. On the other hand, what might once have been considered a specialized IDM skill are now often excluded, such as dedicated web design.
- **The IDM industry in Ontario consists of 877 companies**, the vast majority of which (86%) were founded since 2000. Nearly half (46%) of these firms were founded since 2010.
- **The overwhelming majority (95%) of companies are privately owned** and three quarters are structured as private corporations.
- **Ontario IDM companies are 98% Canadian-owned**, and nearly half (49%) own all of their intellectual property.

What do they make?

- **Most Ontario-based IDM companies predominantly create experiences for mobile devices (90%), PC/Mac (68%) and web browser (68%).** Almost three quarters (74%) of companies develop experiences for three or more platforms
- Games (64%) and education/simulation (43%) are the most prevalent types of experience that Ontario-based companies create.
- **Adult consumers are the most significant audience for (89%) IDM companies**, followed by children consumers (63%).

How many people are employed (and how)?

- **IDM companies directly employ 10,900 FTEs**, and of these, 8,670 FTEs are directly employed in IDM-related activities at an **average salary of $52,400**.
- **70% of all employment in the IDM industry in Ontario is concentrated at the largest 12% of firms** (i.e., companies that employ 20 or more FTEs).
- **Larger firms employ more permanent, salaried workers** – while 58% of the employees at small companies are salaried employees, 79% of workers at the largest companies are on salary.
- Over two thirds of Ontario's IDM workforce (69%) has less than six years of work experience and **89% of the workforce was recruited from within Canada.**
- **Nearly all (97%) workers in the IDM industry have completed post-secondary education at either a college or university**.

- **The average age of IDM workers is 32,** and 89% of companies report an average age of under 40.
- IDM companies in Ontario are planning for significant growth over the next 12-24 months, with **44% overall employment growth anticipated (4,810 FTEs).**
- **The IDM workforce in Ontario is 25% female**, with about 49% of companies having more than the average number of female employees.

How much does the industry spend/make?

- **Ontario IDM companies generated $1.3 billion of revenue**, $1.0 billion of which was derived from sales of IDM products.
- **Ontario IDM companies reported expenditures of $954 million**, $688 million of which was related to IDM-specific activities.
- The revenues and expenses reported by Ontario-based IDM companies imply an **average profit margin of 25.0%**, and 35.5% for IDM-related activities.
- As with employment, **most of the revenue generated by IDM companies (83%) is concentrated among the largest 12% of firms.**
- **The vast majority of revenue (95%) is generated by mobile, PC/Mac, web browser, and console platforms**, and 80% of the industry's revenue was generated outside of Ontario.
- Ontario IDM companies estimate that they will experience **61% annual revenue growth in the next 12 months.** This figure is consistent with the industry's aggressive hiring plans.

What impacts does the industry have?

- The Ontario IDM industry generated a grand total of **$1.4 billion in GDP** in 2015. Of this amount, $1.2 billion in GDP was driven by IDM-related activities.
- Altogether, **the Ontario IDM industry supported the employment of 16,900 FTEs and labour income of $854 million**. Of these amounts, 12,620 FTEs were employed in IDM-related functions and $640 million was specific to IDM-related activities.
- **The Ontario IDM industry generated $420 million in taxes**, of which $251 million was related to IDM activities.
- The IDM industry in Ontario is very engaged with its community and local educational institutions. **Charitable donations were reported by 38% of IDM companies** with many volunteering their expertise to support science and coding related initiatives. Additionally, **37% of companies were involved in formal academic partnerships and 62% of firms ran internship programs**.

How can it continue to grow?

- **Access to public funding was the most significant challenge faced by IDM companies in Ontario**, with many citing cash flow issues related to the structure and eligibility criteria of grants and tax credits.
- The next most significant barriers cited by respondents were: **access to experienced talent in Ontario**; and **access to business clients (e.g. publishers)**. Together, these issues suggest that the business environment within the Province of Ontario creates challenges with respect to finding employees and clients.

- In addition to the challenge of operating in Ontario, companies noted that **frequent and rapid disruption in the industry** impedes strategic planning, it is **expensive to access emerging technologies**, and the **long IDM product development cycle** (particularly for games) means that developers may not capitalize on the trend(s) that inspired the development of a particular product.

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