A photograph of a university campus featuring a wide, paved walkway lined with large, mature trees. Several students are walking along the path, and a building is visible in the background. The image is framed by decorative blue and white diagonal lines at the top and bottom.

May 2017

2015/16
Economic Impact Analysis of the
University of Saskatchewan

Final Report

Prepared for—

**Institutional Planning and
Assessment
University of Saskatchewan**

105 Administration Place
Saskatoon, SK S7N 5A2

Prepared by—

**Alan C. O'Connor
Daniel Lapidus**

RTI International
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Executive Summary

The University of Saskatchewan is an engine of sustainable growth in Saskatchewan. It educates informed citizens for Saskatchewan's knowledge economy, attracts research and business to the province, engages with community partners across Canada and abroad, and furthers cultural diversity and values that deepen Saskatchewan's strong sense of place.

With nearly 24,000 students and 6,300 faculty and staff,¹ the university is the 5th largest population centre in the province when classes are in session. This vibrant community engages in learning, research, and the arts to build human capital, foster understanding, and develop new technologies and ways of working.

In 2015, the U of S awarded degrees to 4,336 people. In all, 86% of undergraduates and 66% of graduate students are expected to remain in Saskatchewan after graduation to work and live. This stands in stark contrast to just 15 years ago when less than two-thirds of undergraduates found employment opportunities at home.

Saskatchewan's economy is becoming more knowledge intensive, with 44% of the available jobs in the province requiring the skills and knowledge that a university education provides. But only 25% of Saskatchewan's workforce has a university education, underscoring the critical importance of the province's university system. As a research-intensive university, U of S graduates benefit from outstanding faculty, applied research and service experiences, and curricula that make them more productive and valuable to employers.

Given its size and breadth of operations, the U of S has a significant impact on the economy. It contributed \$1.3 billion in gross domestic product (GDP)—the broadest measure of all goods and services produced

by an economy—for Saskatchewan in 2015/16, or about 1.6% of the provincial total. This includes not only the university's direct impact, but also indirect and induced impacts as university employees spend their salaries and Saskatchewan businesses hire employees and consume goods and services in order to supply the university. Most U15 universities' economic impact is less than 0.5% of provincial GDP.

About 16,400 jobs across the province are tied to the U of S (2.9% of the provincial total). This means that for every 1 job at the university, roughly 1.6 jobs are provided elsewhere across the province.

The strength of the university's faculty and research infrastructure makes the university highly competitive in the global research landscape. The U of S is the only university with two Canada First Research Excellence Fund awards: \$77.8 million over 7 years for the Global Water Futures: Solutions to Water Threats in an Era of Global Change and \$37.2 million over 7 years for Designing Crops for Global Food Security.

In addition to teaching and furthering fundamental knowledge, the university converts its knowledge and research outputs into socioeconomic value beyond the GDP and employment impact data presented above. Many cooperatives, communities, and industries rely on the objective insights and consultations that U of S faculty provide as a public service. This is in fulfillment of the university's core mission and in keeping with its values. The university has nearly 900 community partnerships in such diverse fields as health, agriculture, environmental science, and energy both in Canada and around the globe.

In some cases, specific technologies developed at the university are licensed to companies for the development

¹ The total number of full-time equivalents is 5,290.

Figure 1. Economic Impact Highlights

\$1.3 Billion

IMPACT ON THE SASKATCHEWAN ECONOMY

\$216 Million

IN ANNUAL RESEARCH FUNDING

16,000 jobs

SUPPORTED ACROSS SASKATCHEWAN

50%

THE SHARE OF THE U OF S OPERATING GRANT THAT IS RETURNED TO GOVERNMENT THROUGH TAXATION ON ECONOMIC ACTIVITY CATALYZED BY THE UNIVERSITY

STUDENTS**>23,000** STUDENTS FROM >100 COUNTRIES**>2,200** ABORIGINAL STUDENTS**>2,500** INTERNATIONAL STUDENTS**>3,100** GRADUATE STUDENTS**ALUMNI****>62,000**

U OF S ALUMNI IN SASKATCHEWAN

45%

OF UNIVERSITY GRADUATES IN SASKATCHEWAN ARE U OF S ALUMNI

of new products and services, and the university ranks first nationally in licensing income relative to the size of its research expenditures. Most of the seed varieties used in Saskatchewan, several vaccines, and many other technologies owe their existence to U of S research.

The university serves as an avenue and force for social equity for indigenous people, with numerous centres and programs designed to overcome socioeconomic barriers and foster understanding. It anchors a vibrant arts community by serving as both a source of supply and demand for arts and culture. Arts and culture are essential to livable, desirable, and innovative communities, and the role of the U of S in nurturing the cultural vitality of the province is important.

Financial operating results for the fiscal year that ended April 30, 2016, show that the government of Saskatchewan contributed \$437.8 million to the U of S, principally through the annual operating grant. This amounted to a total of 47% of university revenue of \$925 million for 2015/16, which means that for every \$1 of provincial support, the U of S brings in more than \$1 of support from other sources. What is more, for every \$1 appropriated for the U of S by the government, 50 cents is returned to the public coffers indirectly through taxation on the economic activity catalyzed.

1

Introduction

For more than 100 years, the University of Saskatchewan has been expanding opportunities for its people through teaching and learning, supporting rural communities through research and service, and advancing industries key to economic growth.

As Saskatchewan's population and economy evolves, so does the U of S. As local industries have become more knowledge intensive, the U of S has adapted its programming to serve the needs of those industries. For example, as agriculture has become more mechanized and technology-driven, the U of S has built up its educational and research programs to advance that sector. Similarly, the degrees that U of S provides in health care, education, public administration, and business closely match the needs in these industries.

The U of S has managed to stay locally relevant while expanding opportunities nationally and internationally. The U of S has always been based on a culture of "partnerships" and this has allowed it to stay on the pulse of stakeholder demands and needs. In the era of globalization, the U of S uses this partnership model to stay abreast of global trends, expand business opportunities, pursue cutting edge research, and be socially responsible.

The U of S represents more than 1.6% of provincial GDP, but this number greatly under represents the full economic benefits of the University as it does not take into account the role that its research and service has played in key areas such as agricultural productivity and health care provision. Nor does it recognize the investment that the U of S has made in arts and culture and building a more inclusive community.

Taken together, the U of S has seen the fruits of its successes as it has grown in size and stature, leading to ever higher graduate retention rates, expanding the economy, and making Saskatchewan a more alluring place to live.



This socioeconomic impact analysis was prepared by RTI, an independent non-profit research institute. Our analysis for the U of S

- describes the U of S's role in community partnerships around the world;
- reviews the university's role in meeting the province's workforce needs;
- presents the earnings premium that university

graduates earn, including how degrees are a force for equity for indigenous students;

- quantifies the economic impact of the university on the economy for 2015/16;
- summarizes notable accomplishments from the university's research portfolio; and
- highlights the university's role in regional arts and culture.

Figure 2. Overview of the University of Saskatchewan

SIGNATURE AREAS OF RESEARCH

Aboriginal Peoples: Engagement and Scholarship

Agriculture: Food and Bioproducts for a Sustainable Future

Energy and Mineral Resources: Technology and Public Policy for a Sustainable Environment

One Health: Solutions at the Animal-Human-Environment Interface

Synchrotron Sciences: Innovation in Health, Environment and Advanced Technologies

Water Security: Stewardship of the World's Freshwater Resources

UNIQUE CENTRES

Canadian Light Source—Canada's only facility for synchrotron light research

Global Institute for Water Security—supporting sustainable use of the world's water resources and protection against natural hazards such as flood and drought

Vaccine and Infectious Disease Organization and International Vaccine Centre—one of the largest vaccine research and teaching facilities in North America

U of S Health Sciences—creating a new standard for interprofessional health education, research and practice

Global Institute for Food Security—developing Saskatchewan-led solutions to feed a growing world population

Sylvia Fedoruk Canadian Centre for Nuclear Innovation—supporting global leadership in nuclear research, development and training



OVER 23,000 STUDENTS FROM MORE THAN 100 COUNTRIES

A LOW 16:1 STUDENT TO FACULTY RATIO

ANNUAL REVENUE OF MORE THAN \$900 MILLION

15 HUSKIES ATHLETICS TEAMS AND OVER 120 CHAMPIONSHIPS

OVER 120 GRADUATE DEGREE PROGRAMS

NEARLY 200 UNDERGRADUATE PROGRAM OPTIONS

13 COLLEGES, 3 INTERDISCIPLINARY GRADUATE SCHOOLS AND 6 AFFILIATED OR FEDERATED COLLEGES

MORE THAN 2,500 STUDENTS WHO SELF-IDENTIFY ABORIGINAL ANCESTRY

\$44.4 MILLION IN ANNUAL SCHOLARSHIPS AND BURSARIES

2

Community Partnerships

The University of Saskatchewan is an engaged partner, participating in nearly 900 collaborations in Saskatchewan, Canada, and around the world (Figure 1). These partnerships are with a mix of private, public, and non-profit institutions in such diverse fields as health, agriculture, the environment, and energy. The university supports partners' missions while also providing research, learning, and service opportunities for the U of S community.

Community engagement has been an integral part of the university's culture since its founding. In the university's earliest years, faculty and students took trains into rural areas of the province to learn from residents and share research insights and best practices in agriculture and nutrition. This tradition of cooperation and knowledge exchange can be seen today in such initiatives as the Global Institute for Food Security.

Three examples provide a window into long-standing, local partnerships that illustrate why the university values their regional role, and how the university affects change through community engagement. They are partnerships with the City of Saskatoon, the Meewasin Valley Authority and Wanuskewin Heritage Park.

2.1 CITY OF SASKATOON

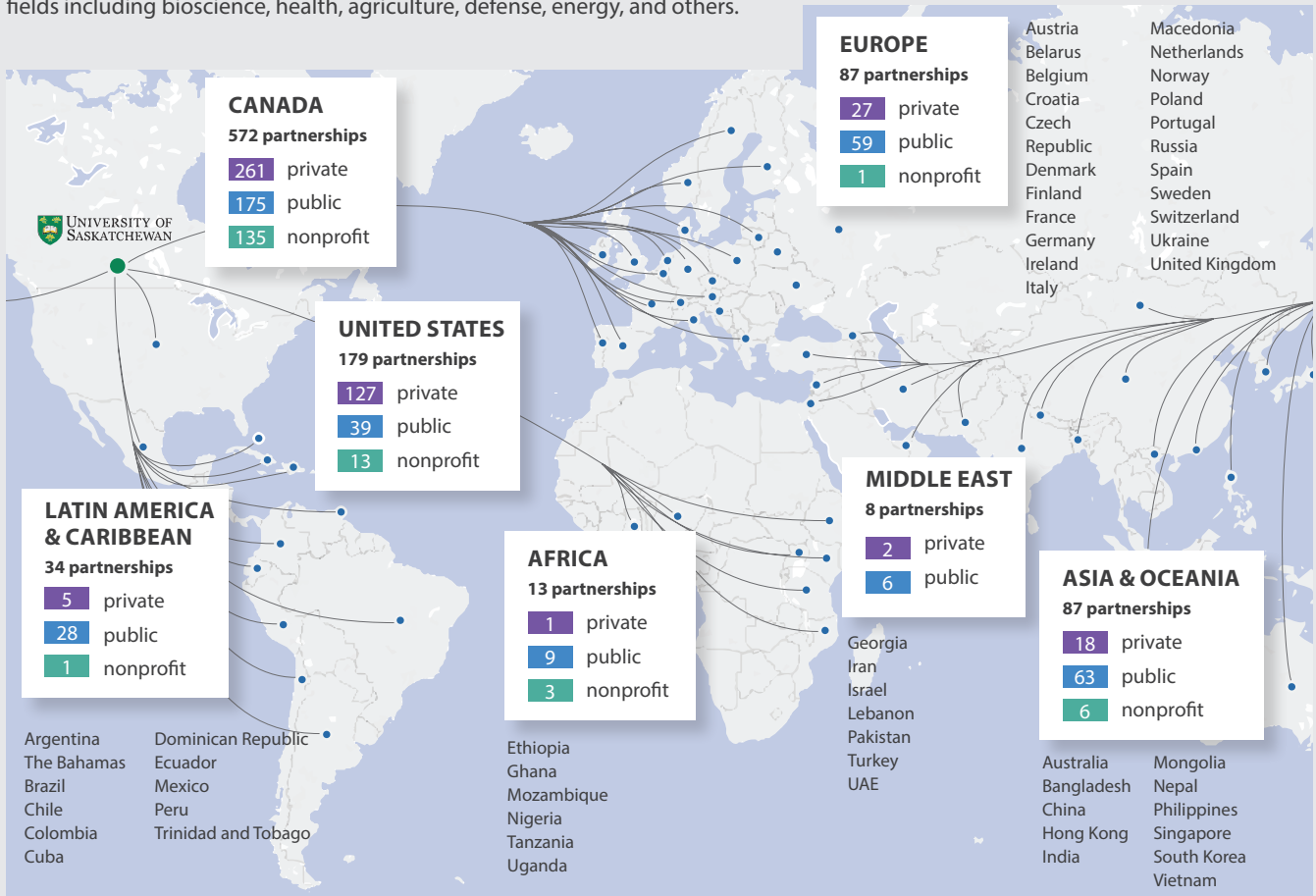
Former Saskatoon Mayor, Don Atchison, highlighted the transformation that Saskatoon experiences as a result of the student presence. He noted that the "U of S becomes the 5th largest city in Saskatchewan when class is in session—one can feel the difference in the city when the students are here [because the] energy level changes." This change, according to Atchison, is paired with the university contributions directly to the workforce and, most importantly, to the overall vitality of the city.²

² Interview with Don Atchison by Alan O'Connor and Sara Lawrence. May 4, 2015.



Figure 3. U of S Global Partnerships, 2015

The University participates in 879* global partnerships, including 409 outside of Canada. They include research collaborations, research funding, and licensing in fields including bioscience, health, agriculture, defense, energy, and others.



* The country and regional totals may include partners that cross multiple countries, therefore the totals will sum to more than 879.

The partnership between the university and city has become institutionalized through monthly discussions around joint city-university needs between the university president and the mayor for more than 20 years.

Close collaboration between the city and the university has led to impressive outcomes. For example, the City of Saskatoon contributed \$1.25 million to the creation of the CLS, which draws top scientists from around the world and continues to raise the scientific profile of the area. The

city also provided \$1.2 million toward student housing development on campus to help alleviate a shortage in affordable and rental properties in the city.

2.2 MEEWASIN VALLEY AUTHORITY

The Meewasin Valley Authority (MVA) was created in 1979 by the Province of Saskatchewan to conserve the cultural and natural resources of the South Saskatchewan

River Valley. The City of Saskatoon, the University of Saskatchewan, and the Government of Saskatchewan joined forces to ensure the longevity of this important local resource that represents 10,000 years of natural history and 6,000 years of cultural history.

The U of S uses its policy, research, geology, and field survey expertise as ongoing, critical inputs to the organization's planning. The School of Environment and Sustainability also involves students in regular research projects geared toward the immediate needs of the Authority.³ For example, this past year, one student completed an in-depth assessment of MVA's conservation areas to determine the best burning and grazing management practices. Her research has influenced the resource management decisions of MVA staff and other city representatives and is used as a teaching case for students.

The institution's commitment to the preservation and health of this land is summarized best by Lloyd Isaak's (CEO, Meewasin Valley Authority) reflection on the importance of the university's accessibility as MVA continues its ultimate mission "to ensure a healthy and vibrant river valley." From MVA's founding to today, the university's partnership helps ensure that this natural asset continues to bolster a strong local culture of use and conservation.

2.3 WANUSKEWIN HERITAGE PARK

Wanuskewin Heritage Park works to advance the understanding of the evolving cultures of the Northern Plains Indigenous peoples.⁵ Their mission is achieved

through ongoing archeological research, exhibits, and children and community programs that expose this site's historical importance and promote Wanuskewin as "a living reminder of the peoples' sacred relationship with the land."⁶ The Park prioritizes interpretive activities that allow visitors and community members to explore the meaning of Plains cultures and therefore "gain a better understanding of ourselves, Saskatchewan's Indigenous peoples, and our common heritage."⁷

The Park's partnership with the university is decades old. In 1982, archaeologist, Dr. Ernie Walker, and other researchers began archaeological digs and completed a detailed archaeological survey that identified 19 Pre-Contact sites. These discoveries enabled the designation of Wanuskewin as a Provincial Heritage Property and a National Historic Site by 1987.⁸

Today, Dr. Walker's students participate in archeological digs every May and June for a seven-week field course. Students excavate and then analyse their finds in the archaeology lab at the university. Under the microscope, for example, 4,600-year old charcoal from hearths reveal evidence about the vegetation present in the area and past climate patterns. Dr. Walker views these findings as a critical inputs for understanding human adaptation.⁹ While all artifacts are examined at the U of S, these items are then returned to the Wanuskewin cultural interpretive centre.¹⁰

The U of S is also a member of the Board of Directors along with appointees from municipal, provincial, and federal governments and First Nations communities.

³ Interview with Lloyd Isaak, CEO, Meewasin Valley Authority by Alan O'Connor and Sara Lawrence. May 4, 2015.

⁴ Interview with Vladimir Kricsfalusy, Associate Professor and Program Director, Master of Sustainable Environmental Management in the School of Environmental Sustainability by Sara VanLear. November 8, 2016.

⁵ Wanuskewin Heritage Park, Homepage, Accessed at: <https://wanuskewin.com>

⁶ Ibid.

⁷ Wanuskewin Heritage Park, Our Story, Accessed at: <https://wanuskewin.com>

⁸ Wanuskewin Heritage Park, Archeological, Accessed at: <https://wanuskewin.com>

⁹ Anna-Lilja Dawson, The Sheaf, University of Saskatchewan student paper, "Dig at Wanuskewin Long Lasting," August 3, 2013, accessed at: <http://thesheaf.com/2013/08/03/dig-at-wanuskewin-long-lasting/>.

¹⁰ Ibid.

3

Workforce Development

There is a large demand for highly skilled workers in many of Saskatchewan's key industries. About 25% of the Saskatchewan workforce has a university degree (Figure 4), but at least 44% of the province's jobs require the knowledge and skills that a university education provides.

Key industries like agriculture, health care, finance, and professional services depend on skills and knowledge that university graduates have acquired. Some industries, such as mining, may have a smaller proportion of their jobs filled by university graduates, but the needs they do have—such as for geologists, engineers, or environmental scientists—are no less significant.

45% of workers in Saskatchewan with a university degree are U of S alumni (Figure 5). Graduates from research-intensive universities like the U of S are particularly valuable to the workforce: they have learned from top-tier faculty who are active in their fields and abreast of current knowledge and trends. Top faculty are attracted to research-intensive institutions, where they have the resources and institutional support to advance their fields through research and service while educating the next generation of thought-leaders.

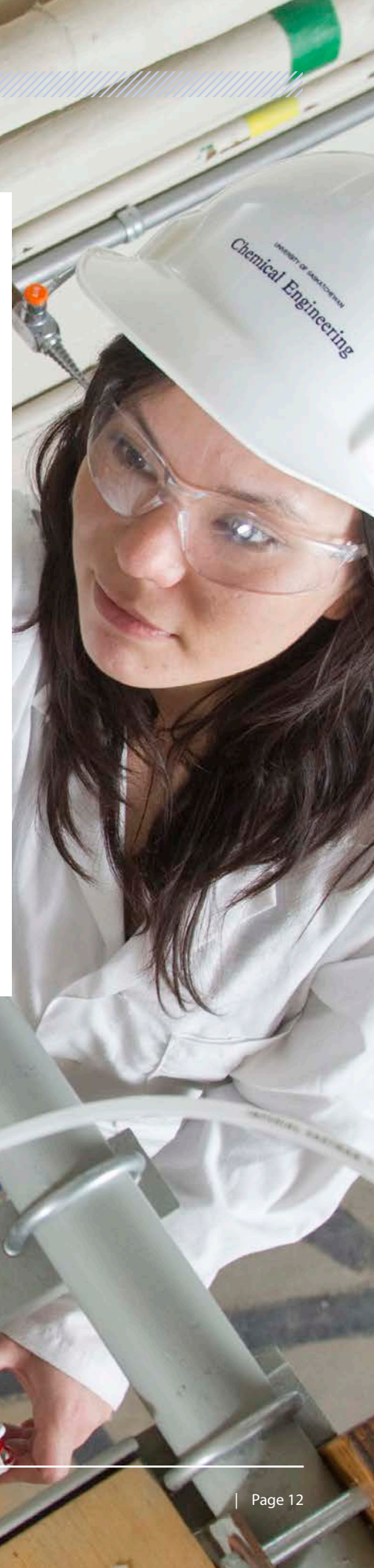
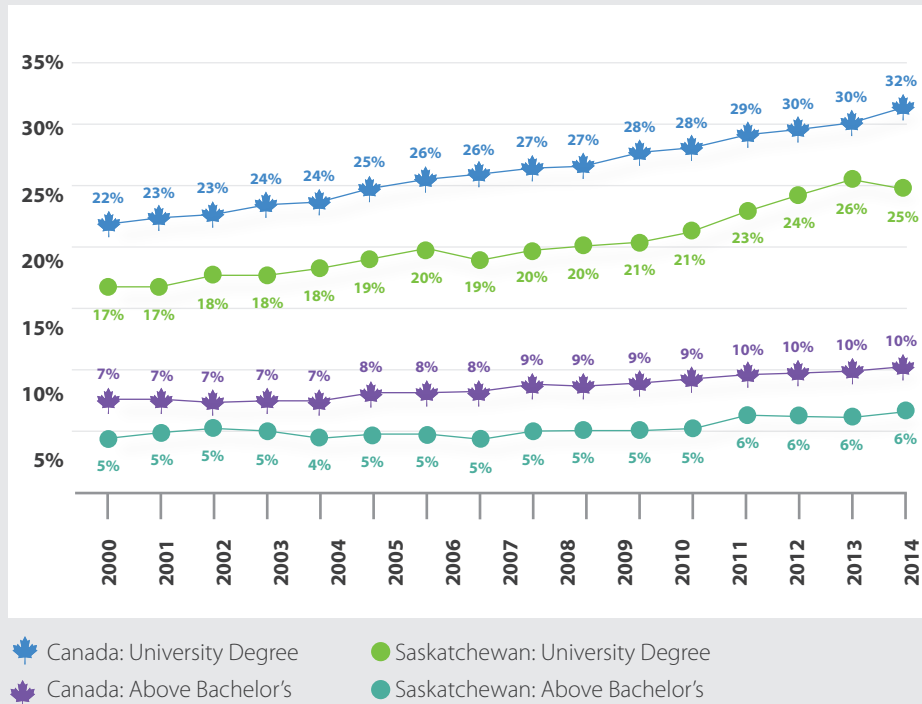
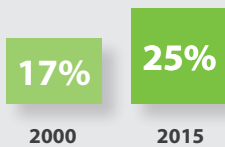


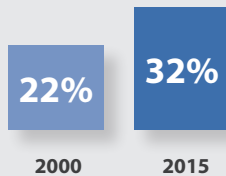
Figure 4. Percentage of People in the Labour Force Aged 25-64 with a University Degree or Higher



SASKATCHEWAN

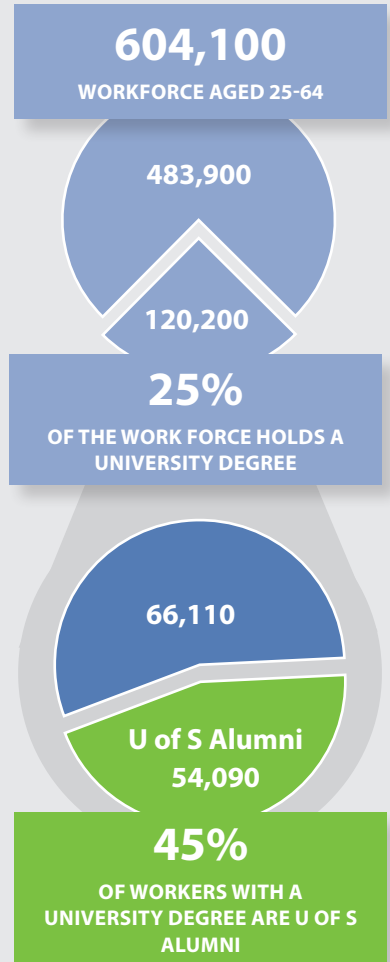


CANADA



Source: Statistics Canada. Table 282-0004

Figure 5. U of S Contribution to Saskatchewan's Labour Force (2015)



3.1 SASKATCHEWAN'S NEED FOR UNIVERSITY-EDUCATED WORKERS

Figure 6 shows the number of people in Saskatchewan working in occupations that do and do not need a university education¹¹ for each industry.¹² The figure shows that

as many as 44% of the 529,100 jobs in Saskatchewan in 2011—the most recent year for which information is available—were in skill levels that require a university degree. Many of those jobs are filled with people who do not have university degrees, such as workers with many years of experience, but as people retire or otherwise leave the workforce, university graduates will likely fill these positions.

¹¹ Statistics Canada has divided the National Occupational Classification (NOC) into skill levels based on the typical educational requirements for each occupation. NOC skill level A includes (1) management positions and (2) professional occupations, which usually require university education. NOC skill level B includes occupations that typically require (1) university education or (2) apprenticeship training. NOC skill level C occupations usually require secondary school or occupation-specific training. On-the-job training is usually provided for NOC skill level D occupations. The occupations that typically require a university degree include all NOC skill level A occupations and some NOC skill level B occupations. Statistics on the number of people employed in each occupation by industry are reported in the 2011 census tables.

¹² Industries delineated by North American Industry Classification System (NAICS).

Industries that depend heavily on university education include:

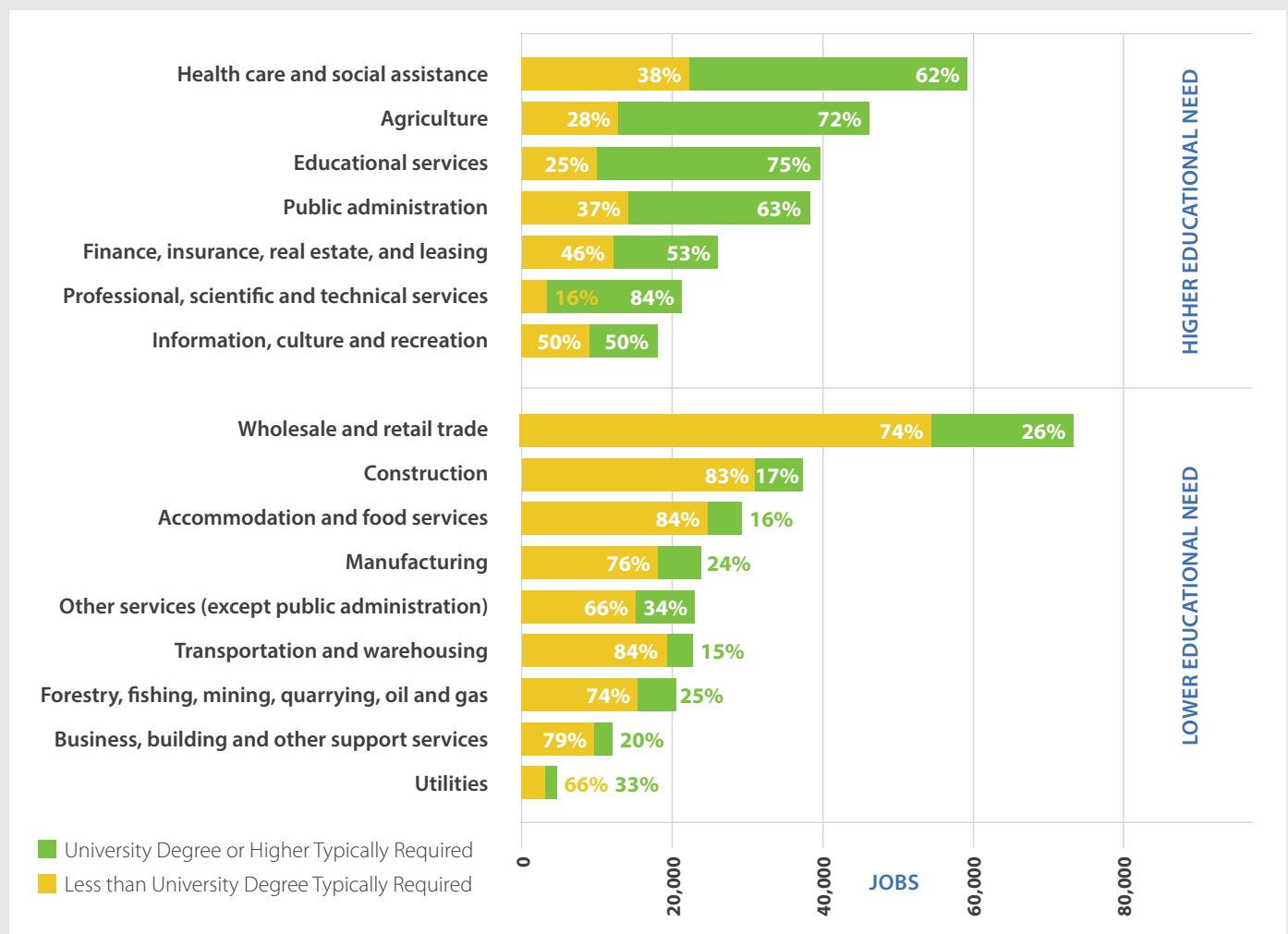
- health care and social assistance;
- agriculture;
- educational services;
- public administration;
- finance, insurance, real estate, and leasing;
- professional, scientific, and technical services; and
- information, culture, and recreation.

The high educational need in agriculture is indicative of the trend towards knowledge intensity in that industry. For example, knowledge of soil or animal science, biology, and business administration is important for running a successful farm.

3.2 GROWTH IN THE NUMBER U OF S GRADUATES

Growth in the number of degrees, diplomas, and certificates awarded by the U of S has been strong over the past

Figure 6. Industry Demand for University Graduates in Saskatchewan



Note: Educational requirements are based on the National Occupational Classification—NOC. Occupations that typically require a university degree include all NOC skill level A occupations and some NOC skill level B occupations. Industries are delineated by the North American Industry Classification System—NAICS.

15 years. The total number of graduate and undergraduate degrees awarded increased 24% from 3,313 in 2000 to 4,102 in 2015 (Figure 7). Growth in the number of graduate degrees awarded has been especially high as the university has increased its research intensity. The number of graduate degrees awarded increased 83% from 2000 to 2015.

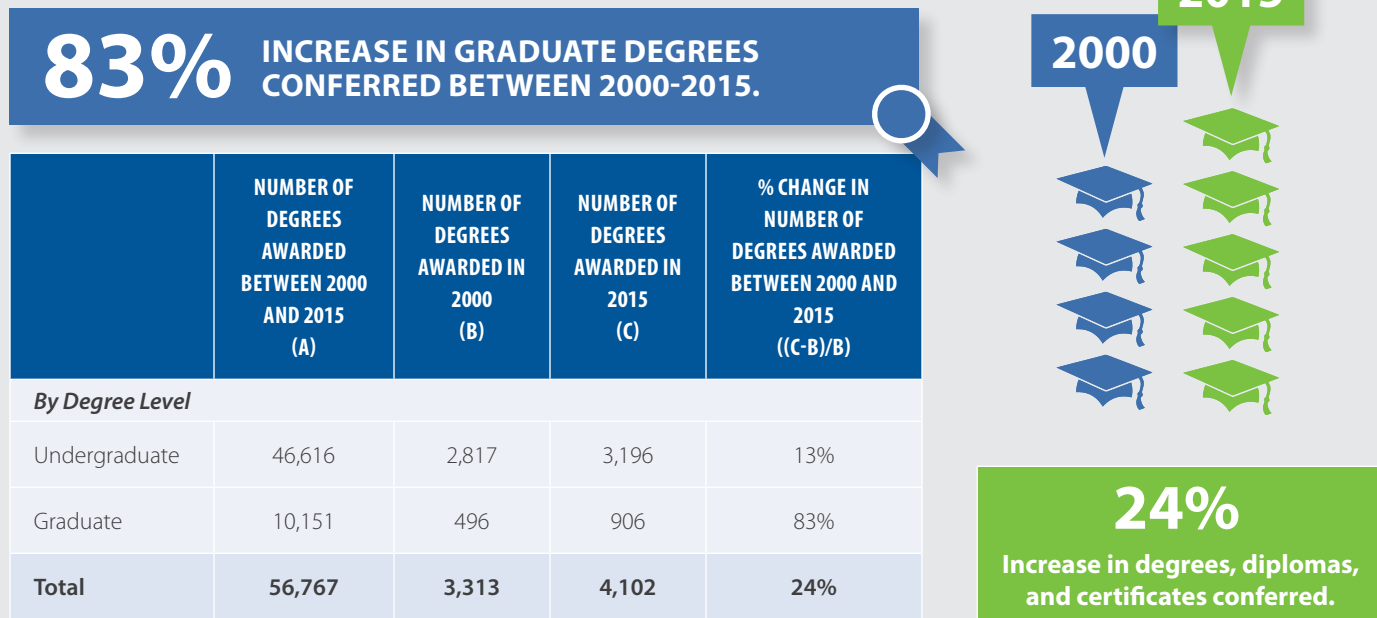
Overall, the U of S is providing an appropriate breadth of programs to its students in alignment with local industry demand. The U of S is graduating students with degrees and skills that align well with the university-educated workforce needs of Saskatchewan's key industries.¹³ The left side of Figure 7 shows the distribution of jobs with higher-education needs in Saskatchewan by industry. The

right side shows the percentage of degrees that the U of S has granted in each field from 2000 to 2015.¹⁴

Figure 8 shows that there is a strong correspondence between the proportion of high-education-need jobs in Saskatchewan and U of S degrees for health care and social assistance, education, public administration, and business.

The link between degree and occupation is less straightforward in other fields. The skills acquired in many degree programs are applicable to multiple fields. For example, STEM (science, technology, engineering, and math) fields such as biology or genetics are particularly useful for agriculture. This likely accounts for the fact that agricul-

Figure 7. Degrees, Diplomas, and Certificates Conferred to U of S Graduates, 2000–2015



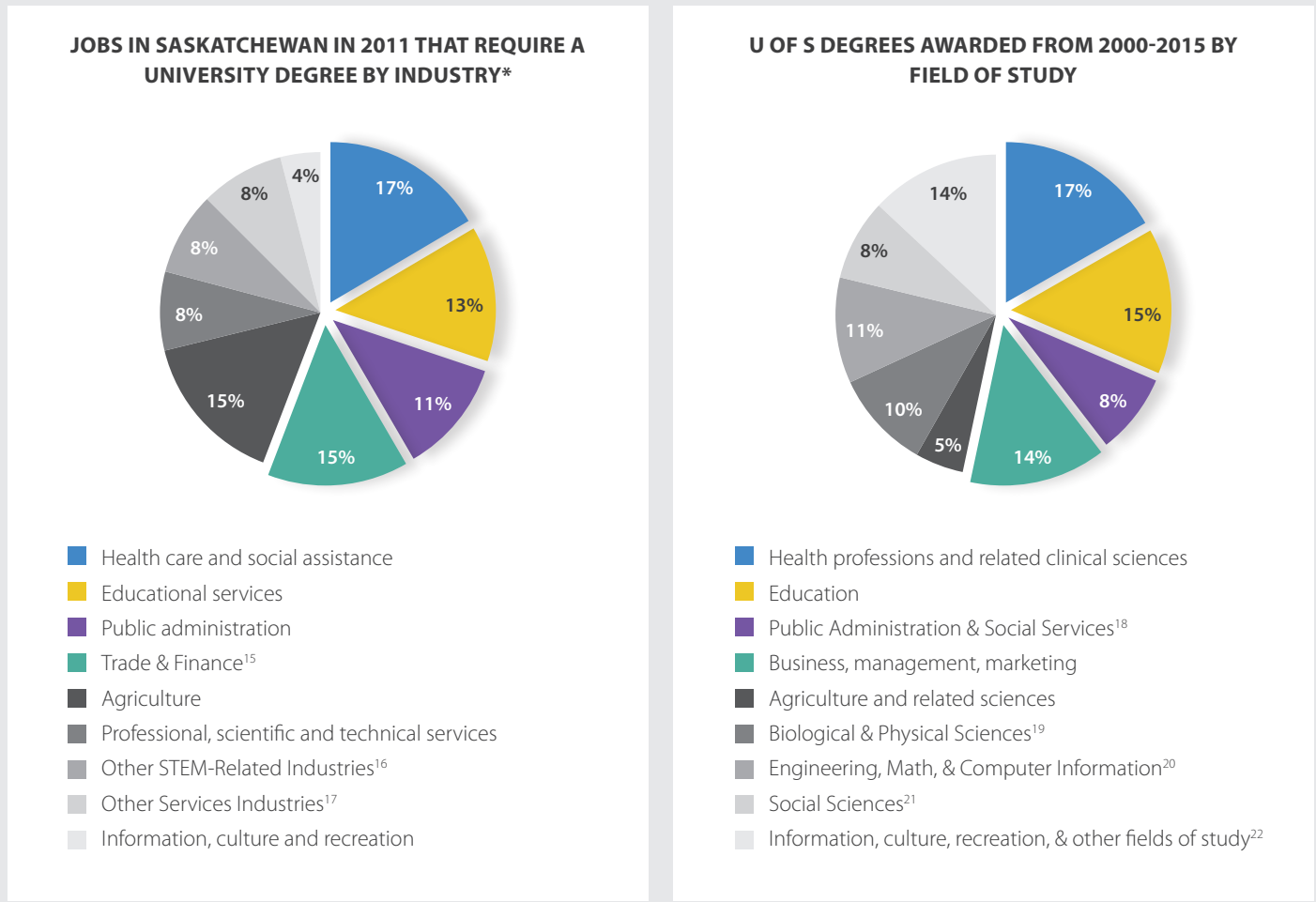
¹³ Note that the U of S is not the only institution providing university education in Saskatchewan. As noted, 45% of those with a university degree in Saskatchewan are U of S graduates. Still, each institution should aim to prepare its students for the types of jobs that are available. Therefore, it is reasonable to compare the proportion of high-education occupations available in Saskatchewan to the types of degrees coming out of the U of S.

¹⁴ Comparisons between industry employment and degree fields should be treated with caution because university students graduate with skills that are transferable across industries. In addition, we are only able to compare the proportion of high-education jobs in each industry in 2011 because no data are available on both occupational skill levels and industry classifications from other years.

ture makes up a larger proportion of jobs than of U of S degrees, while STEM fields make up a larger proportion of U of S degrees than of jobs. Similarly, high-education jobs

in several industries may reduce the job gap for arts and humanities graduates because university skills are easily transferable within these occupations.

Figure 8. Percent of High-Education Occupations in Each Industry in Saskatchewan and Percent of U of S Degrees in Each Field



¹⁵ Includes Wholesale and Retail Trade; and Finance, insurance, real estate, rental and leasing.

¹⁶ Includes Construction; Manufacturing; Forestry, fishing, mining, quarrying, oil and gas; and Utilities.

¹⁷ Includes Other services (except public administration); Accommodation and food services; Transportation and warehousing; and Business, building and other support services.

¹⁸ Includes Psychology; Public administration and social service professions; Area, ethnic, cultural and gender studies; and Legal professions and studies.

¹⁹ Includes Biological and biomedical sciences; Physical sciences; and Natural resources and conservation.

²⁰ Includes Engineering; Architecture and related services; Computer and information sciences and support services; and Mathematics and statistics.

²¹ Includes Social sciences; and Family and consumer sciences/human sciences.

²² Includes English language and literature/letters; French language and literature/letters; Indigenous and foreign languages, literatures and linguistics; Philosophy and religious studies; History; Visual and performing arts; Parks, recreation, leisure and fitness studies; and Other fields of study.

* Source: Statistics Canada - 2011 National Household Survey. Catalogue Number 99-012-X2011060.

3.3 RETENTION OF U OF S GRADUATES IN SASKATCHEWAN

Retention of U of S graduates in Saskatchewan following graduation has increased substantially between 2000 to 2015 across all degree levels and fields of study (Figure 9). About 75% of the degrees awarded by the U of S throughout that time were awarded to people who ultimately remained in Saskatchewan. However, this figure belies the fact that retention has increased over time. The retention rate has increased from 66% in 2000 to 81% in 2015 as university graduates enjoy better economic opportunities in the province.

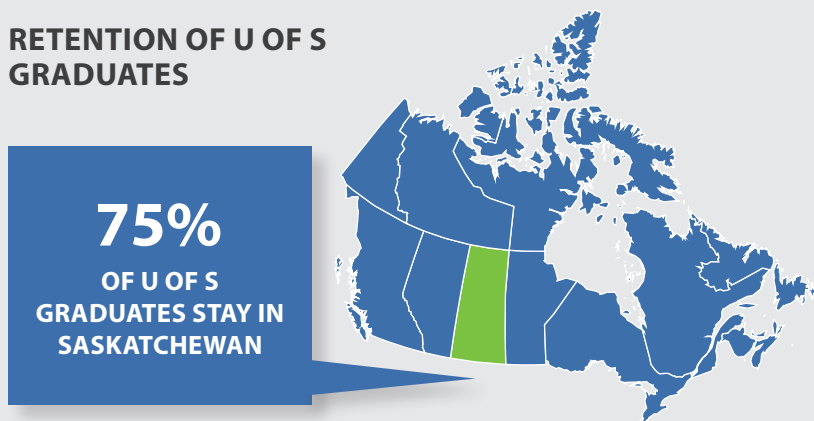
3.4 GROWTH IN DEGREES AWARDED TO ABORIGINAL STUDENTS

Many students' Aboriginal status was unknown or unreported until the I Declare initiative was launched in 2012/13 to record all students' status. Data from earlier years is unreliable, but the data from that academic year forward provide a picture of increased educational attainment for Aboriginal students. The annual number of degrees awarded to Aboriginal students by the U of S has increased by 56% from 321 degrees in 2012 to 500 degrees in 2015 (Figure 10).

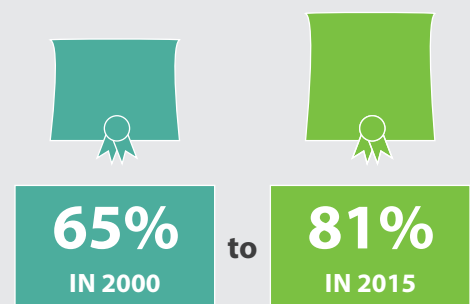
Figure 9. Number and Percentage of Degrees Awarded to Graduates Living in Saskatchewan, 2000–2015

| | DEGREES AWARDED TO GRADUATES LIVING IN SK 2000-2015 | | DEGREES AWARDED TO GRADUATES LIVING IN SK 2000 | | DEGREES AWARDED TO GRADUATES LIVING IN SK 2015 | |
|------------------------|---|--------------------|--|--------------------|--|--------------------|
| | Number of Degrees | % of Total Degrees | Number of Degrees | % of Total Degrees | Number of Degrees | % of Total Degrees |
| <i>By degree level</i> | | | | | | |
| Undergraduate | 36,247 | 78% | 1,853 | 66% | 2,745 | 86% |
| Graduate | 6,370 | 63% | 296 | 60% | 596 | 66% |
| Total | 42,617 | 75% | 2,149 | 65% | 3,341 | 81% |

RETENTION OF U OF S GRADUATES



RETENTION RATES INCREASED FROM



In total, the U of S has awarded more than 1,200 undergraduate degrees to Aboriginal students. In all 89% of these alumni are living in Saskatchewan today. In addition, it has awarded more than 250 master’s degrees, professional degrees, or doctorates to Aboriginal students, 78% of whom remain in the province.

The U of S plays an important role in attracting international talent to Saskatchewan. Students from across the globe come to Canada to pursue their education, and about 61% of them choose to remain and make Saskatchewan their home after graduation (Figure 10). The U of S awarded 5,236 degrees to international students from 2000 through 2015, which is about 9.7% of all U of S graduates throughout that time.

3.5 GROWTH IN DEGREES AWARDED TO INTERNATIONAL STUDENTS

Figure 10. Degrees, Diplomas and Certificates Conferred to Aboriginal U of S Graduates, 2012–2015

| | NUMBER OF DEGREES AWARDED TO ABORIGINAL GRADUATES | | | % CHANGE IN NUMBER OF DEGREES AWARDED BETWEEN 2012 AND 2015 | DEGREES AWARDED IN 2012-2015 TO ABORIGINAL GRADUATES LIVING IN SK | |
|------------------------|---|------------|------------|---|---|--------------------|
| | 2012-2015 | 2012 | 2015 | | Number of Degrees | % of Total Degrees |
| <i>By degree level</i> | | | | | | |
| Undergraduate Program | 1,378 | 276 | 404 | 46% | 1,231 | 89% |
| Graduate Program | 251 | 41 | 89 | 117% | 196 | 78% |
| Total | 1,629 | 317 | 493 | 56% | 1,427 | 88% |

56% INCREASE IN ABORIGINAL STUDENTS FROM 2012-2015

Figure 11. Degrees Conferred to International U of S Graduates, 2000-2015





4

Earnings Premium of Uof S Degrees

University graduates earn more per year than workers without university degrees because of their more advanced skillsets and knowledge. The difference in earnings is referred to as the earnings premium. On average, the typical U of S graduate earns about \$19,500 more per year because of his or her education (Figure 12). The most significant impact on earnings is the acquisition of an undergraduate degree, especially for women.

Women experience a much larger earnings premium than men, although they still earn less than men on average.^{23,24} The earnings gap between men and women with a U of S degree is about 21% smaller than it is among people without a university degree.

Similarly, Aboriginal graduates receive a larger earnings premium than non-Aboriginal graduates. Although an earnings gap still exists between Aboriginal and non-Aboriginal people with university degrees, the gap is about 17% smaller than it is among people without a university degree.

Studies have found that the difference in earnings between Aboriginal and non-Aboriginal people largely decreases at higher levels of education.²⁵ And there is ample research linking a student's sense of belonging to academic success, especially among students from historically underrepresented groups in the university system.²⁶

²³ The earnings premium estimates are based on the earnings differentials between workers with different levels of educational attainment in Saskatchewan according to 2011 NHS data obtained from Statistics Canada (2011 NHS Catalogue number 99-010-X2011039). See Appendix B for more detail on how the earnings premium was calculated.

²⁴ Some of the difference in average earnings between men and women may be due to differences in occupational choice because we do not control for degree choice when calculating the earnings premium.

²⁵ See Howe, Eric. 2011. *Bridging the Aboriginal Education Gap in Saskatchewan*. Saskatoon, SK: Gabriel Dumont Institute.

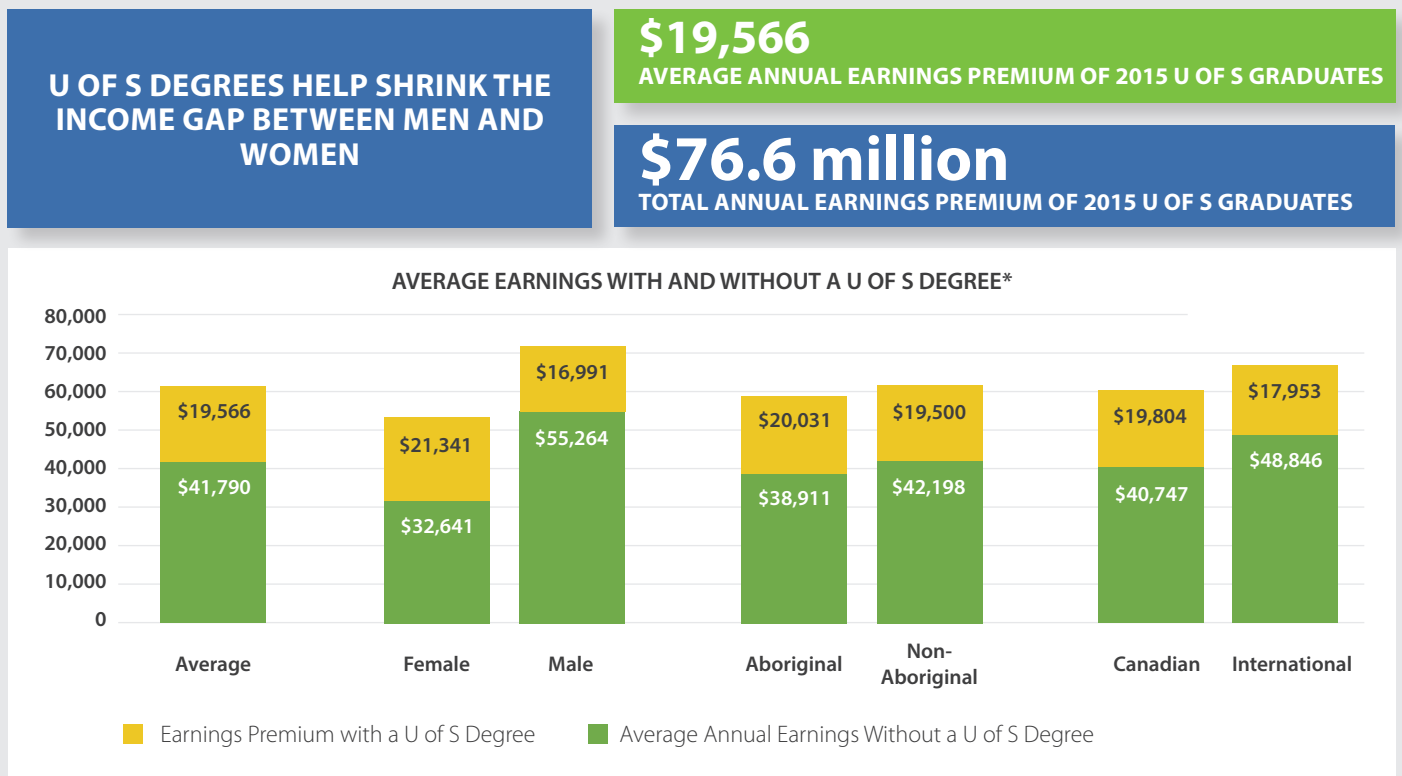
²⁶ See Strayhorn, Terrell L. 2012. *College Students' Sense of Belonging: A Key to Educational Success for All Students*. New York, NY: Routledge.

The Gordon Oakes Red Bear Student Centre opened in February 2016. The centre was built to be “a safe welcoming place” as part of the university’s commitment to supporting the success of Aboriginal students. “The centre is grounded in the teachings of respect, responsibility, relationship, collaboration, co-operation, humility, reciprocity and sharing.” The Aboriginal Students’ Centre is committed to supporting the academic and personal success of First Nations, Métis and Inuit students. The centre organizes regular cultural events relevant to Aboriginal students, including weekly gatherings for soup and Bannock with cultural teachings offered by community elders.

“We cannot deem our role in the fostering of a civil society a success unless we become demonstrably and with commitment the best place we can possibly be for the Aboriginal people of this province and this country. None of the rest of it matters—at this point in our nation’s history—if we do not achieve this.”

– Peter Stoicheff, U of S president and vice-chancellor

Figure 12. Earnings Premium** for 2015 U of S Graduates



* For the overall Saskatchewan workforce between ages 25-64

** The earnings premium is the additional money earned by those with an advanced degree compared to those without that degree.



5

Economic Impact of Uof S Operations

The University of Saskatchewan contributed \$1.3 billion in gross domestic product (GDP)—the broadest measure of the value of all goods and services produced in an economy—for Saskatchewan in 2015/16. This includes not only the direct impact of the university's teaching and research activities, but also the induced impacts as university employees spend their salaries and indirect impacts as Saskatchewan businesses hire employees and consume goods and services in order to supply the university.

To put this number in context, Saskatchewan's GDP is \$82 billion, meaning that around 1.6% of the entire provincial economy is linked in some way to the university. Typical university economic impact estimates are less than 0.5% of GDP.

From a public-sector perspective, the U of S expands the Saskatchewan economy because each year it attracts millions of dollars of new investment, research funding, and student spending to the province while serving as a force for the retention of talent and money. The presence of the university helps buttress and diversify the economy, spur social and technological innovation, and provide economic opportunity for residents and businesses.

The U of S supports 16,398 jobs across Saskatchewan (2.9% of provincial employment), both at the university and with local businesses. This means that for every 1 job at the university, another 1.6 jobs are supported elsewhere in the province.

5.1 UNIVERSITY EXPENDITURES

The total amount of spending triggered by the U of S is amounts to more than \$900 million, including

- university expenses (e.g., salaries, goods, services) for pursuing its teaching, research, and service mission,
- new university capital expenditures,
- student living expenditures, and
- visitor expenditures.

University expenses are the largest and most important category of spending related to the U of S. Major expenses in this category include employee salaries and benefits for 6,276 people,²⁷ supplies and equipment, scholarships, bursaries and prizes, and utility expenses. Capital expenditures include investments in new building on campus including residences, laboratories, classrooms, and student spaces. Expenses amounted to \$966 million in 2015/16.

More than 23,000 students attended U of S in 2015/16, and

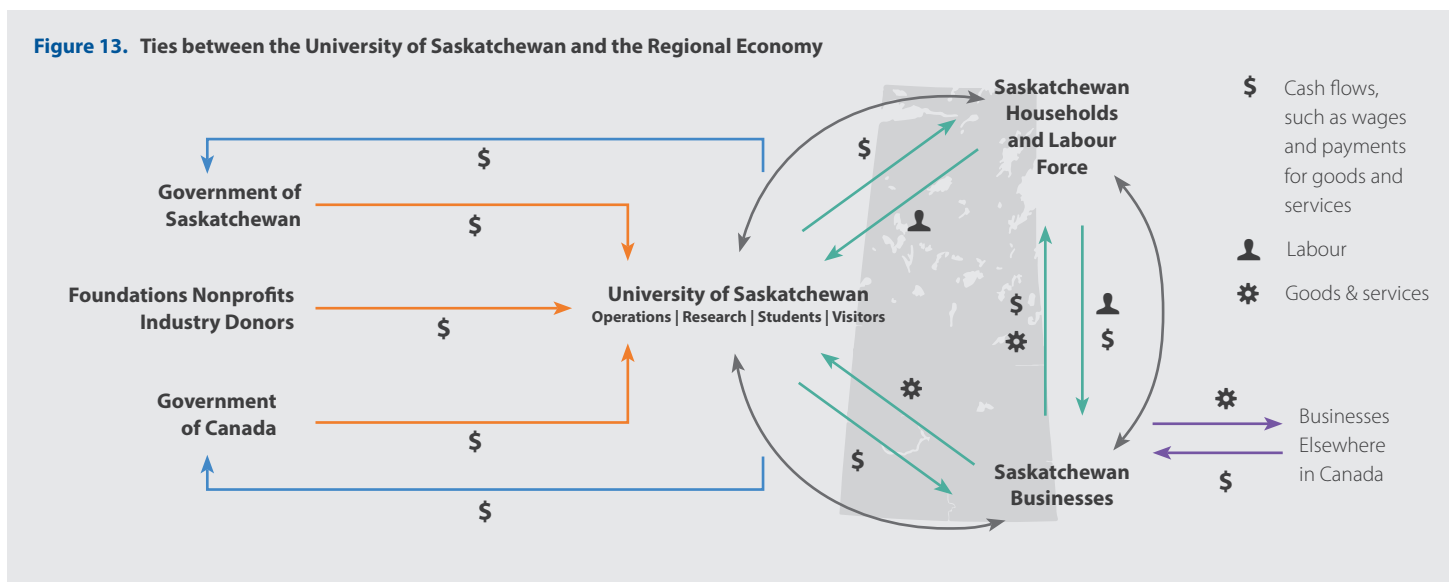
their living expenses are the second largest category of spending. This category includes spending on such items as room and board, local transportation, computers, books, supplies, and entertainment. Student spending amount to \$250 million.

Visitor spending on items such as accommodation, retail purchases, and food and beverages was the third largest category. During 2012, 2.8 million visitors travelled to Saskatoon on overnight and same-day trips and generated about \$505.3 million in consumer spending in Saskatoon.²⁸ It is estimated that around one-quarter of visits to Saskatoon relate to the university in some way, or about \$132 million in 2015/16.

5.2 MEASURING REGIONAL ECONOMIC IMPACT

Economic impact is measured by analyzing all the different economic activities that are catalyzed by the university. Using statistical information about the relationship

Figure 13. Ties between the University of Saskatchewan and the Regional Economy



²⁷ Total headcount is 6,276 for 2015/16, before including casual employees who work small numbers of hours. Including casual employees increases the total to 7,932. The total number of full-time equivalents is 5,289.9.

²⁸ Tourism in Saskatoon: A Summary of Tourism in 2012 (May 2014).

²⁹ Not captured is the broader social, economic, and cultural impacts of university outputs, such as new knowledge, ideas, technologies, or artworks. Such an analysis is complex because of the great volume and variety of university outputs, most of which would require their own unique economic impact methodology. Thus, we focus on the impact of the university's operations.

between economic activity in one sector with another, the proportion of GDP, jobs, income, and other impact measures that are linked to the U of S can be measured.²⁹ Figure 13 graphically depicts many of the economic interrelationships that U of S has with many other institutions in the region.

This approach for analyzing the comprehensive spending patterns catalyzed by the U of S using is known as input-output analysis. This is a well-known and reliable methodology with a long history in economics.³⁰ We used the official interprovincial version of the Canadian Input-Output Model developed by Statistics Canada. Technical detail about how the analysis was performed can be found in the accompanying technical appendix.

5.3 TOTAL ECONOMIC IMPACT

The U of S' total impact on Saskatchewan's GDP is \$1.3 billion—about 1.6% of the entire provincial economy (Figure 14).³¹ This includes not only the direct and indirect spending described in Section 5.1, but also the induced effects as university employees spend their salaries and

Saskatchewan businesses hire employees and consume goods and services in order to supply the university.

By coincidence the GDP impact is similar to the spending, but this in large part because Saskatchewan has a strong interconnection with other provinces and source products and services from across the country. The university's impact on the Canadian economy overall is \$1.6 billion.

Our analysis shows more people are working in Saskatchewan because of the university; 16,398 jobs, or 2.9% of all jobs in the province, are directly or indirectly created or retained because of the university. The Saskatchewan Plan for Growth set a goal that 60,000 more people will be working in Saskatchewan by 2020. Over the next 4 years, by expanding its educational programs, attracting more students to Saskatchewan, and growing its research portfolio, the university can help Saskatchewan achieve this goal.

The total wages and salaries earned was \$698 million. After considering all wages and salaries in Saskatchewan, we found that U of S directly or indirectly contributes 2.5% to the total salary and wage base of the province.

Figure 14. Size of U of S Impact Relative to the Saskatchewan Economy, 2015/16

| ECONOMIC INDICATOR | U OF S VALUEA (MILLION) ^a | VALUE FOR SASKATCHEWAN (MILLION) | U OF S SHARE OF SASKATCHEWAN ECONOMY |
|------------------------------|--------------------------------------|----------------------------------|--------------------------------------|
| Gross domestic product (GDP) | \$1,304 | \$79,415 ^b | 1.6% |
| Wages and salaries | \$689 | \$27,881 ^c | 2.5% |
| Jobs | 16,398 | 573,700 ^d | 2.9% |

Sources: ^aRTI analysis based on Statistics Canada Interprovincial Input-Output (2010) model results. ^bStatistics Canada CANSIM Table 384-0038; ^cGovernment of Saskatchewan Bureau of Statistics, Ministry of Finance. Saskatchewan Provincial Economic Accounts, February 2016; ^dGovernment of Saskatchewan Bureau of Statistics, Economic Review 2015.

³⁰ Because input-output analysis analyzes actual spending patterns, our focus is on annual expenses and not on annual revenues. There are lags between when funds are received and when funds are spent. If the analysis used revenue to estimate university spending, it would overstate economic impacts.

³¹ Our analysis focuses on the impact on GDP not on gross output or revenue. Gross output includes substantial double counting.

5.4 FISCAL IMPACT ANALYSIS

The economic activity catalyzed by the U of S generates tax revenues for the province. For every \$1 appropriated for the U of S, 49 cents is returned to the public coffers.

Financial operating results for the fiscal year that ended April 30, 2016, show that the government of Saskatchewan contributed \$437.8 million to the U of S, principally through the annual operating grant.³² Provincial investment amounted to a total of 47% of university revenue for 2015/16 (\$925 million), meaning that for every \$1 of provincial support, the U of S brings in more than \$1 of support from other sources.

The U of S uses provincial support to meet its educational mission, to conduct priority research in the provincial interest, and to generate leverage that helps capture research funding from federal and non-federal sources.

The economic activity catalyzed by the university created provincial personal income tax revenue (\$150.0 million) and indirect tax revenue (\$68.6 million) that totaled \$218.6 million.

Comparing the \$437.8 million appropriated for the U of S to the \$218.6 million returned through provincial income and other taxes, the net impact to Saskatchewan public finances is \$219.2 million. Thus, about half of the province's costs for the university are returned to Saskatchewan's coffers (Figure 15). This is an economically significant offset from a public finance perspective.

Figure 15. Estimated Fiscal Impact for the Government of Saskatchewan, 2015/16

| EXPENDITURE CATEGORY | | | | |
|--|----------------------------|---|--------------------------------------|------------------|
| SOURCE | ANNUAL EXPENSES (THOUSAND) | STUDENT AND VISITOR EXPENSES (THOUSAND) | NEW CONSTRUCTION EXPENSES (THOUSAND) | TOTAL (THOUSAND) |
| <i>Total provincial funding including operating grant: \$437.8 million</i> | | | | |
| Personal income tax | \$132,047 | \$17,124 | \$847 | \$150,018 |
| Indirect taxes | \$40,975 | \$27,028 | \$583 | \$68,586 |
| Total | \$173,022 | \$44,152 | \$1,430 | \$218,604 |
| Impact of U of S on public finances, net of tax revenues: \$219.2 million | | | | |
| For every \$1 appropriated for the U of S, 50 cents is returned to the public coffers | | | | |

Source: RTI analysis based on Statistics Canada Interprovincial Input-Output (2010) model results.

³² Reported value of revenue received from grants and contracts: Government of Saskatchewan, 2015/16 University of Saskatchewan Annual Financial Report.

6

University Research

This section offers highlights of the university's research portfolio, including recent notable research awards within the U of S signature research areas that are important for the university and the vitality of the province, the country and the world.

6.1 RESEARCH REVENUE

Annual research funding has significantly increased in the last 10 years, from nearly \$130 million in 2006 to \$216 million in 2016 (Figure 16), the highest it has ever been.³³

Of the university's \$216 million in research revenue,

- \$115 million (53%) is funded by industry, foundations, and research collaborations with other institutions;
- \$62 million (30%) is funded by the federal government, principally the Natural Sciences and Engineering Research Council of Canada (NSERC), the Social Sciences and Humanities Research Council of Canada (SSHRC), and the Canadian Institutes of Health Research (CIHR); and
- \$39 million (18%) is funded by the provincial government to help the university realize its discovery mission and contribute to the growth and vitality of the province. Saskatchewan relies on the U of S to perform research of particular importance to the province.

³³ It is important to note that the university recognizes revenue for government contributions annually, after appropriations have been made, while grants not subject to appropriations are recognized in their entirety when the research agreement has been signed. This may result in some volatility in the recognition of research revenue year to year with respect to large, multi-year projects.

Some notable research awards for 2015/16 include:

- The U of S is the only Canadian university to be awarded two prestigious Canada First Research Excellence Fund (CFREF) grants, including a \$77.8 million award to lead the Global Water Futures research program, one of the largest research collaborations in the world and the largest grant ever awarded to the university.
- The Western Grains Research Foundation (WGRF) and the Crop Development Centre (CDC) renewed their long-standing partnership in wheat breeding. WGRF will invest \$5.2 million in CDC’s wheat breeding program over the next 5 years.
- The Canada Foundation for Innovation provided a \$55 million grant under the Major Science Initiatives Program for the Canadian Light Source.

Figure 16. Research at the U of S

The University of Saskatchewan is one of Canada’s leading research-intensive universities.



\$47 million

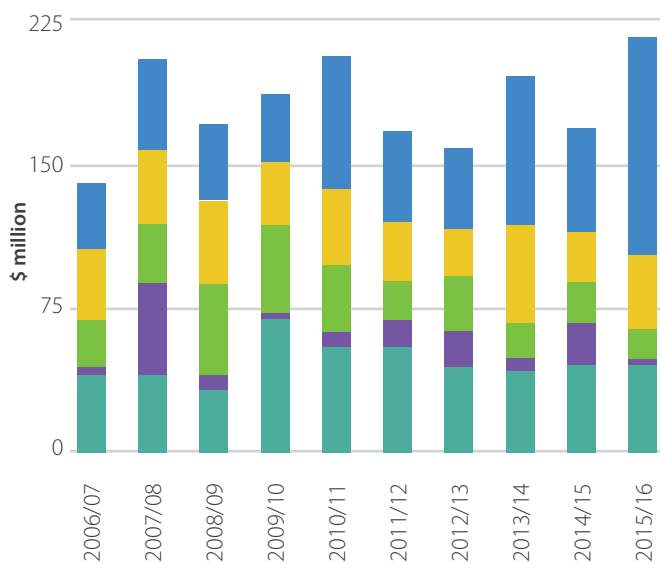
INCREASE IN REVENUE FROM 2015 TO 2016

\$77.8 million

AWARDED TO LEAD THE *GLOBAL WATER FUTURES* IN 2016, THE LARGEST GRANT EVER AWARDED TO THE U OF S

RESEARCH REVENUE BY FUNDING SOURCE (MILLION \$)

- Industry, Foundations, and Others
- Government of Saskatchewan
- Other Federal Government
- Canada Foundation for Innovation
- Tri-Council



Source: U of S Annual Reports.

The only Canadian university to be awarded **2** prestigious Canada First Research Excellence Fund grants

FACILITIES: Home to two of Canada’s top science facilities—the **Canadian Light Source** synchrotron and the **Vaccine and Infectious Disease Organization-International Vaccine Centre**

COMMERCIALIZATION: The U of S is a leader in commercializing and earning income on results of past research among universities in the U15. In 2014, the U of S had:

\$8,910,162 GROSS LICENSING INCOME
per \$100 million in research expenditure

TOP AMONG U15 UNIVERSITIES IN CUMULATIVE ACTIVE LICENSES per \$100 million of research expenditure

3RD AMONG U15 UNIVERSITIES IN US PATENTS ISSUED AND NEW LICENSES per \$100 million of research expenditure

6.2 NOTABLE RESEARCH AWARDS BY SIGNATURE RESEARCH AREA

The U of S has six signature research areas of outstanding achievement enabled by its research capacity, investments, history, and sense of place. These signature areas cut across the university, collecting faculty, facilities, and students from many colleges into shared initiatives.

6.2.1 Aboriginal Peoples: Engagement and Scholarship

By 2050, approximately half of Saskatchewan's population will be of Aboriginal ancestry. This signature area aims to help bridge ways of knowing, preparing a new generation of Aboriginal youth for the global knowledge economy, and by prioritizing research and dissemination on Aboriginal knowledge.

In 2016, anthropology professor Jim Waldram won the \$50,000 2016 Social Sciences and Humanities Research Council Insight Award for work that advanced understanding of traditional ways of healing both in Canada and abroad. Dr. Waldram has spent more than a decade travelling to Central America to live with the Q'eqchi' Maya people of Belize and study their traditional healing practices.

6.2.2 Agriculture: Food and Bioproducts for a Sustainable Future

This signature area aims to strengthen Saskatchewan's agricultural leadership with new science, technology and policies to help feed a hungry world adequately, safely and sustainably.

In 2015, CFREF awarded \$37.2 million over 7 years for the research program "Designing Crops for Global Food Security." The program led to the launch of the Plant Phenotyping and Imaging Research Centre (P²IRC) in 2016.

According to Maurice Moloney, the executive director of the university's Global Institute for Food Security, the new science developed in P²IRC will elevate Canada's position as a global powerhouse in agricultural research and lead

to commercial spin-offs involving field and aerial sensors, satellite imaging, robotics, and big data analytics.

He also noted that the centre is unique in that it combines plant genomics with crop phenotyping, high-performance computing, and digital imaging technology. The centre reaches across institutes, involving partnerships with four Canadian universities, three international institutes, and more than 15 private and public organizations. Over the program's 7 years, 60 graduate students and 35 post-doctoral fellows will train at P²IRC, and there are up to five new faculty positions planned.

6.2.3 Energy and Mineral Resources: Technology and Public Policy for a Sustainable Environment

To meet future demand while conserving ecosystems, this signature area aims to direct research towards clean energy solutions, sustainable resource development, and sound policy development.

The Sylvia Fedoruk Canadian Centre for Nuclear Innovation will invest \$2 million to support research at the Johnson Shoyama Graduate School of Public Policy (JSGS) at the University of Saskatchewan and the University of Regina. The resources will benefit funding in energy and technology policy and will support visiting scholars and graduate students at JSGS. The research will investigate the societal and public policy dimensions of various energy-production technologies, including international best practices for public consultation, strategic assessment, and decision support.

6.2.4 One Health: Solutions at the Animal-Human-Environment Interface

This area works to develop scientific, public health, and policy approaches that integrate human, animal, and ecosystem health.

The One Reproductive Health Group, housed in the Western College of Veterinary Medicine, brings together an interdisciplinary team to address the interconnections among animals, humans and the environment on

reproductive health issues. Researchers who belong to this group collaborate across different departments both within and outside of U of S and actively apply research techniques and results to the study of reproductive function in humans. They have trained more than 100 highly qualified personnel, published more than 300 publications, and obtained three patents and six copyrights over the last 20 years.

6.2.5 Synchrotron Sciences: Innovation in Health, Environment and Advanced Technologies

The U of S is home to Canada's only synchrotron, which harnesses powerful imaging and analytical techniques to solve challenges in health, environment, materials science, and other areas of global and economic importance.

More than 250 faculty and students at the U of S use the CLS in their research. It puts the U of S in a favorable position for important research investments. The CLS will play a major role in the new research program, Designing Crops for Global Food Security. Using synchrotron techniques, researchers will image living plants to determine the structural and biomolecular signatures, which is integral to plant breeders and geneticists working to develop healthier breeds of agricultural crops at home and abroad.

6.2.6 Water Security: Stewardship of the World's Freshwater Resources

The U of S is developing new interdisciplinary science, technology, and policy to address urgent issues such as climate change, pollution, and overuse that are putting severe strain on the quality and quantity of fresh water for drinking, sanitation, and food production.

In September 2016 the U of S won a \$77.8 million CFREF grant, Global Water Futures: Solutions to Water Threats in an Era of Global Change. The project's aim is to transform the way communities, governments, and industries in Canada and other cold regions of the world prepare for and manage increasing water-related threats.

This is the largest university-led water research program ever funded worldwide and the largest grant ever awarded to the U of S. This U of S-led research will involve more than 380 Canadian researchers at 18 universities, 19 federal and provincial agencies, seven indigenous communities and governments, 39 industrial collaborators, 15 non-governmental organizations, and 45 international research institutes.

6.3 COMMERCIALIZATION OF UNIVERSITY RESEARCH

Relative to its size, the U of S is one of the most productive universities in the U15, Canada's association of research-intensive universities. The Association of University Technology Managers publishes data about the commercialization of university research outputs. Its 2015 survey results showed that the U of S leads in grossing licensing income and cumulative active licenses per \$100 million of research expenditure.

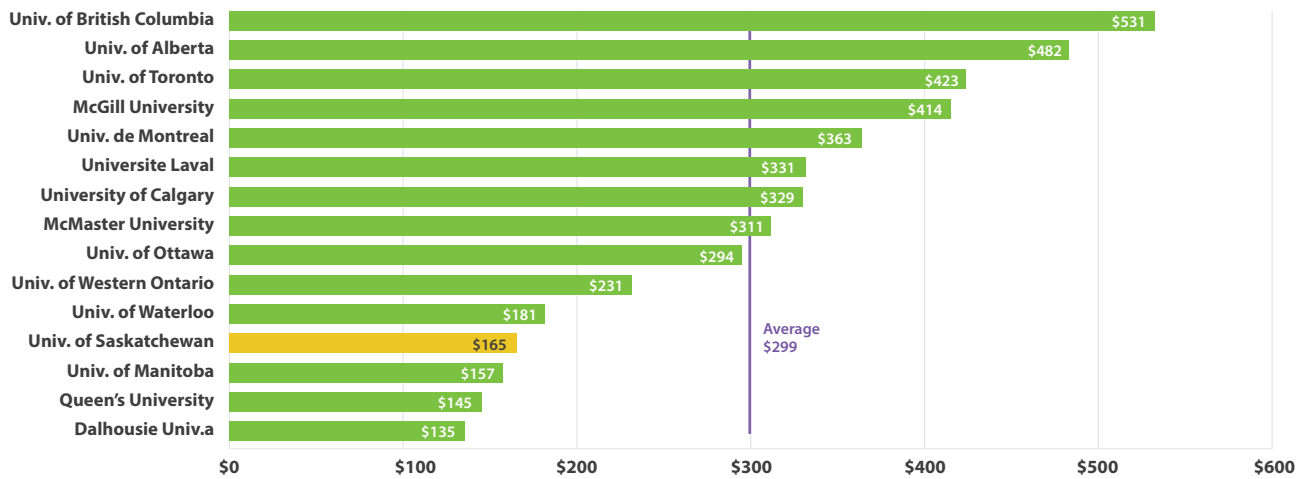
The university has had success in the College of Agriculture and Biosciences, the CDC, the College of Engineering, VIDO-InterVac, and the Western College of Veterinary Medicine. In particular, it stands out for licensing its vaccines and myriad seed and crop science technologies. The markets for these technologies are difficult for start-up companies, and the majority of university intellectual property is licensed to established companies in Saskatchewan and beyond.

Start-up companies from the U of S often locate at Innovation Place—the science park co-located with the university and home to an array of government agencies, private companies, start-ups, and co-working space.

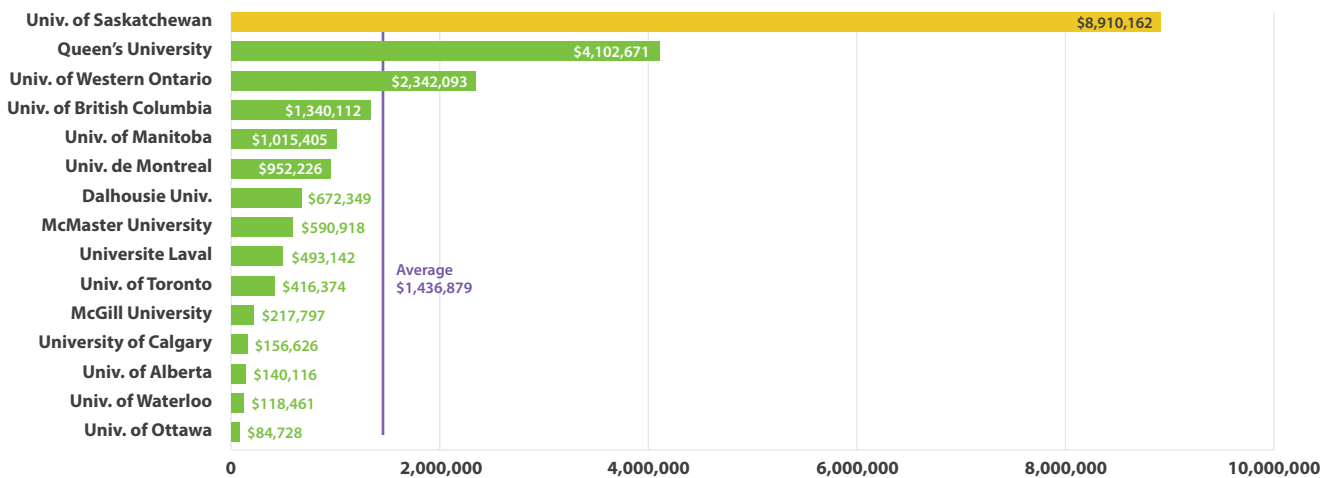
Figure 17 shows how the U of S has commercialized research in comparison to other Canadian Universities. In 2015, U of S was among the top five in gross licensing per research expenditures (#1), cumulative active licenses per research expenditures (#1), new licenses per research expenditures (#3), and US patents issued per research expenditures (#4).

Figure 17. Commercialization of University Research

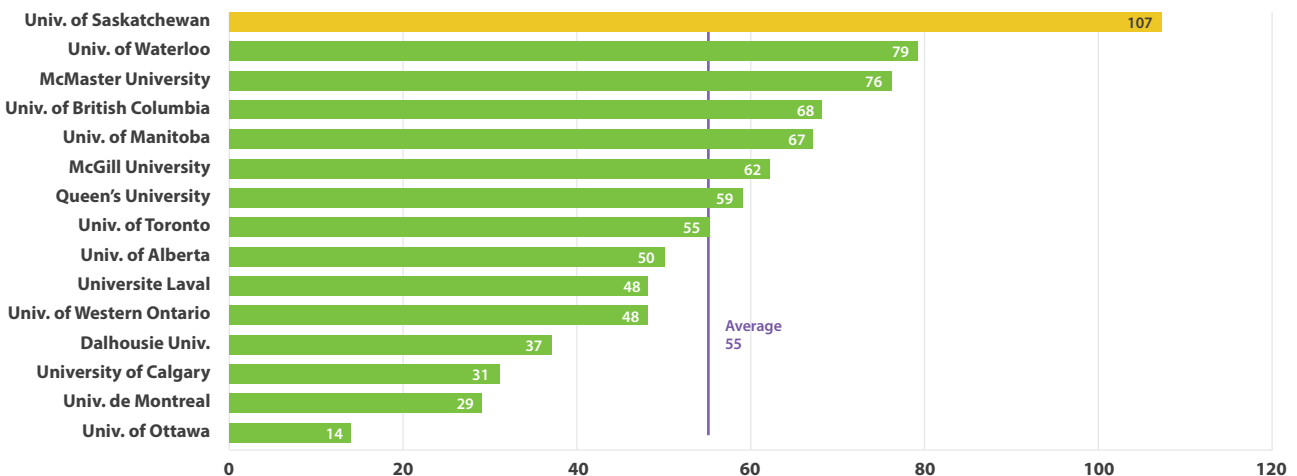
TOTAL RESEARCH EXPENDITURE 2015 (MILLIONS)



GROSS LICENSING INCOME PER 100 MILLION DOLLARS OF RESEARCH EXPENDITURE 2015



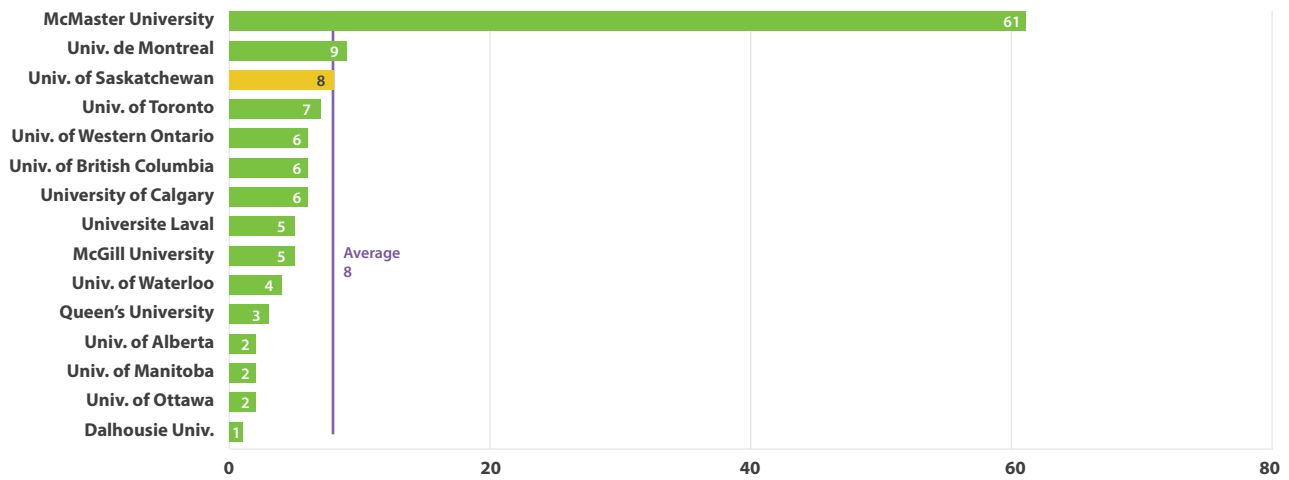
CUMULATIVE ACTIVE LICENSES PER 100 MILLION DOLLARS OF RESEARCH EXPENDITURE 2015



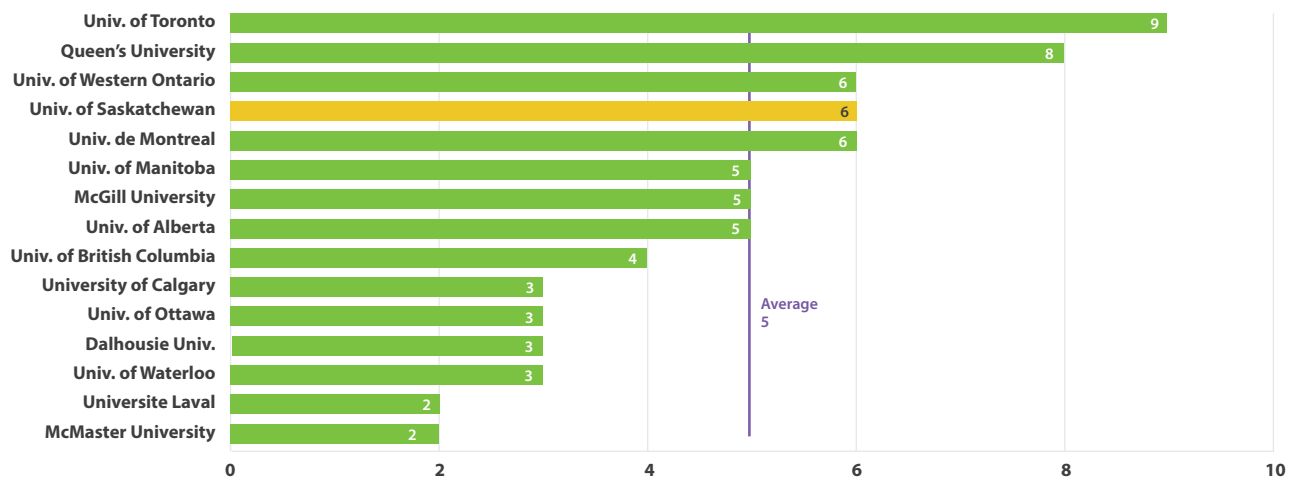
* Source: Association of University Technology Managers. AUTM Canadian Licensing Activity Survey: FY2013

Figure 17. Commercialization of University Research

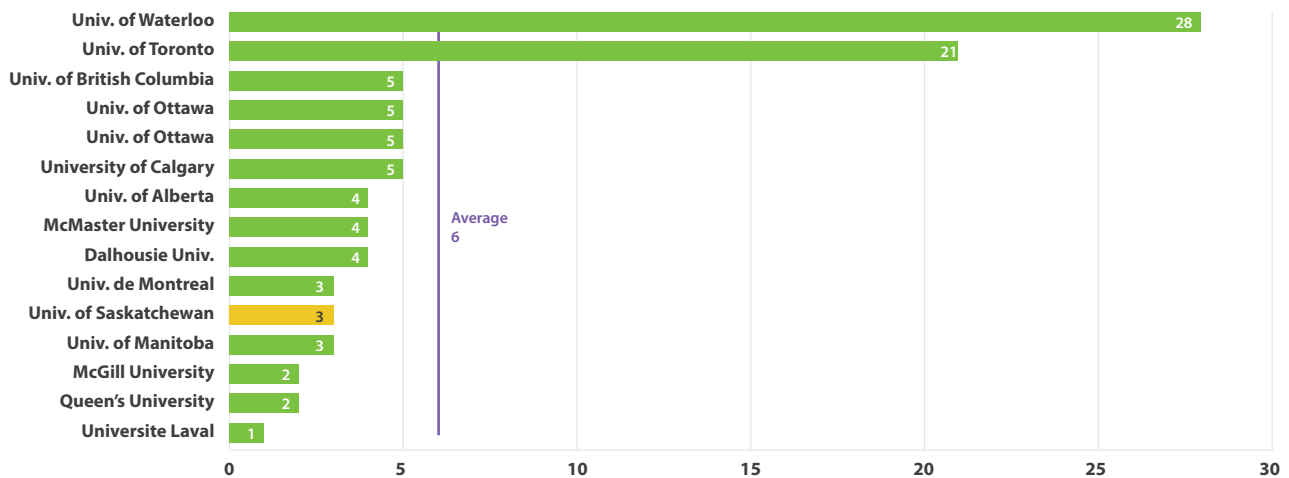
NEW LICENSES PER 100 MILLION DOLLARS OF RESEARCH EXPENDITURE 2015



US PATENTS ISSUED PER 100 MILLION DOLLARS OF RESEARCH EXPENDITURE 2015



5 YEAR CUMULATIVE START-UPS INITIATED PER 100 MILLION DOLLARS OF RESEARCH EXPENDITURE 2015



* Last year for which comparison data are available. Source: Association of University Technology Managers.



7

Saskatchewan Arts and Culture

Research into the relationship between a region's socioeconomic vitality and local arts and culture pinpoints several economic benefits. Ann Markusen, an expert in this area, notes specifically that "not only is the arts a diverse, innovative, and export-generating economic sector, but a thriving arts scene ... fosters a unique identity and workforce retention."³⁴

The U of S dedicates many resources to preserving Saskatchewan's heritage and encouraging new art. Certainly these efforts result in cultural and economic opportunities, notably employment and workforce retention and revenue within the economy. But beyond this resource-driven argument for the arts, the U of S recognizes the full range of positive impacts that result from the university's direct support of Saskatchewan's arts community.

The U of S's encouragement and investment spans a range of artistic expression within the institution and throughout the province. This artistic range is evident through the university's ongoing collaborations. For example, a new "Community in Residence" program enriches the U of S's classrooms with experts from Saskatoon's Broadway Theater. This hands-on experience involves collaborative research as well as new scholarly and artistic works. In addition, academic and administrative staff from the Edwards School of Business work with the Theatre to gain insights on the realities of non-profit business models and social enterprises.

Another recent initiative, the wîcêhtowin—Aboriginal Theatre Program, is led by the Department of Drama. This is a 2-year certificate program offered by the College of Arts and Science, which is delivered over six

³⁴ See Markusen, A., & Gadwa, A. (2010). *Creative Placemaking*. Washington, DC: National Endowment for the Arts.

Figure 18. Image: Melanie Authier, *L.A. Flex (detail)*, 2015, acrylic on canvas, 152 x 170 cm.



Contrarities & Counterpoints Exhibit, Hosted by the Kenderdine Art Gallery, May 12

consecutive semesters of study for Aboriginal students. This program is a comprehensive and experiential-based learning approach to train emerging First Nations and Métis theatre professionals in the areas of performance, theatre design and collective creation. Launched in the fall of 2015, the 30-credit program provides rigorous training in preparation for a career in theatre, television, film, and related entertainment industries. The program culminates in a world premiere of a new theatrical work, created, designed, and performed by the program participants.³⁵

Within the visual arts, the Kenderdine Art Gallery encourage both urban and rural residents of Saskatchewan to develop and share their artistic production. A bequest by Mary Beamish, daughter of the early artist and farmer Augustus Kenderdine, established the Gallery as a professional facility in 1991. The gallery organizes a range of exhibitions and is the home of the U of S's permanent art collection. As university-based institution, the Gallery partners with the U of S, the city

of Saskatoon, and other local organizations to use the collections and exhibitions as a teaching and learning resource both on and off campus.³⁶

The university's level of support for and investment in the arts reaches far beyond these examples. President Stoicheff summarized this critical relationship between the university and local artists in his 2015 inaugural address: "There isn't a music teacher in this province who has not benefitted in some way from our music department and music education program; not a visual artist who has not been associated in some way with our studio art program; not a theatre director or actor or playwright who has not in some way been influenced by our drama department, the first in the Commonwealth."

The U of S's commitment to Saskatchewan's strong artistic environment is consistent, and like art, evolves to encourage new forms of expression throughout the province.

³⁵ University of Saskatchewan, College of Arts and Sciences, Department of Drama, *wichéhtowin - Aboriginal Theatre Program*, accessed at: <http://artsandscience.usask.ca/drama/department/aboriginal-theatre-program.php>.

³⁶ UofS Art Galleries, Profile, accessed at: <http://www.art.usask.ca/profile.php>.



May 2017

2015/16

Economic Impact Analysis of the
University of Saskatchewan

Final Report