30 by 30 data

October 2021
Overview

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4. National internationally trained newly licensed engineers
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30 by 30 overview
30 by 30 overview

• 30 by 30 is *one* tactic that seeks to increase the number of female-identifying newly licensed engineers to 30 per cent by the year 2030

• A **collective impact** initiative that seeks to increase the number of female-identifying newly licensed engineers to 30 per cent by the year 2030

• Measuring diversity and inclusion = accountability, impact vs. intent

• Nationally accepted metric, regulators collect annual data on newly licensed engineers
30 by 30 Champions

- **Champions**: All engineering regulators, 29 higher education institutions, engineering employers, and associations, including ACEC
- Working Groups: K-12, Post-secondary, Early Career, Employer
- Collaborative network, knowledge sharing, research
- Community of practice for engineers and students addressing equity, diversity, and inclusion in the profession
Why is data important?

• Engineers Canada and the regulators collect annual data and report on the representation of female-identifying engineers
• Tracking the numbers indicates the impact of our collective efforts and contributes to the evaluation of 30 by 30 initiatives across the country
• Following sections outline data provided by the 12 provincial and territorial engineering regulators
National newly licensed data
Future of the profession

• To understand the future of the profession and for the 30 by 30 goal, we track the number of newly licensed engineers each year. Newly licensed engineers includes individuals licensed as professional engineers for the first time that are Canadian Engineering Accreditation Board-trained, internationally trained, or have obtained their licence by some other route. It does not include interprovincial mobility applicants.
30 by 30 goal

• 30 by 30 measures the percentage of female-identifying newly licensed engineers

• This is an important metric for tracking the impact of programs that support gender equity in engineering, since it marks a career milestone for engineers in their early careers, post-graduation from an accredited program, or for internationally trained engineers entering the Canadian job market

• Following data from Engineers Canada’s National Membership Report for Jan. 1, 2020 – Dec. 31, 2020
National data on newly licensed engineers

- 7,936 newly licensed engineers in 2020
- Largest number (2,545 engineers) obtaining their license through l’Ordre des ingénieurs du Québec (OIQ)
- Seven-year average = 8,789


National newly licensed engineers forecast trend

- Using longer term historic trends to predict future activity
- Trend line indicates declining growth
- Year-to-year average growth rate 2014-2020 = -0.4%
National female-identifying newly licensed engineers forecast trend

- Trend line indicates **increasing** growth
- Year-to-year average growth rate 2014-2020 = 2.8 %
30 BY 30

Percentage of female-identifying newly licenced engineers:

<table>
<thead>
<tr>
<th>Date</th>
<th>30 by 30</th>
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<tbody>
<tr>
<td>2014</td>
<td>17.0%</td>
</tr>
<tr>
<td>2015</td>
<td>16.8%</td>
</tr>
<tr>
<td>2016</td>
<td>17.2%</td>
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<tr>
<td>2017</td>
<td>18.0%</td>
</tr>
<tr>
<td>2018</td>
<td>18.1%</td>
</tr>
<tr>
<td>2019</td>
<td>17.9%</td>
</tr>
<tr>
<td>2020</td>
<td>20.6%</td>
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Year-to-year average growth rate over 7 years = 2.8 %
2020 30 by 30 by province and territory

Percentage of female-identifying newly licensed engineers between Jan. 1 2020 to Dec. 31 2020
# National newly licensed engineers

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</thead>
<tbody>
<tr>
<td>Total Newly Licensed Engineers (male-identifying)</td>
<td>7,175</td>
<td>8,153</td>
<td>7,136</td>
<td>8,089</td>
<td>6,411</td>
<td>7,255</td>
<td>6,298</td>
</tr>
<tr>
<td>Total Newly Licensed Engineers (female-identifying)</td>
<td>1,470</td>
<td>1,652</td>
<td>1,482</td>
<td>1,773</td>
<td>1,414</td>
<td>1,577</td>
<td>1,635</td>
</tr>
<tr>
<td>Total Newly Licensed Engineers (gender unknown)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>8,645</td>
<td>9,805</td>
<td>8,618</td>
<td>9,862</td>
<td>7,825</td>
<td>8,833</td>
<td>7,936</td>
</tr>
</tbody>
</table>

**30 by 30***

| **30 by 30*** | **17.0%** | **16.8%** | **17.2%** | **18.0%** | **18.1%** | **17.9%** | **20.6%** |

*Percentage of newly licensed engineers who self-identify as female*
National newly licensed engineers 2014-2020

- Engineers Canada breaks down newly licensed engineers into three categories: Canadian Engineering Accreditation Board (CEAB)-trained, internationally trained, and engineers obtaining by other route.
- **CEAB-trained** make up the majority of newly licensed engineers each year (average 69.2 per cent over seven years). Female-identifying CEAB-trained newly licensed engineers account for 71.4 per cent of total female-identifying newly licensed engineers.
- **Internationally trained** make up on average 29.4 per cent of total newly licensed engineers. Female-identifying internationally trained newly licensed engineers account for 27.3 per cent of total female-identifying newly licensed engineers.
Canadian Engineering Accreditation Board (CEAB)-trained newly licensed engineers
National Canadian Engineering Accreditation Board (CEAB)-trained newly licensed engineers

• In 2020, CEAB graduates accounted for 5,764, or 72.6 per cent, of the total newly licensed engineers in Canada, which is an increase from 71 per cent in 2019.

• Engineers Canada also reports on the number of CEAB students and graduates in the Enrolment and Degrees Awarded Report: Canadian engineers for tomorrow 2020 report

• For a further analysis of the CEAB graduation numbers and licensure rates, see the 2021 National Membership Report section ‘From engineering student to professional engineer’

• Following slides provide data from Engineers Canada’s National Membership Report for Jan. 1, 2020 – Dec. 31, 2020
National Canadian Engineering Accreditation Board (CEAB)-trained newly licensed engineers

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<tbody>
<tr>
<td>CEAB Trained (male-identifying)</td>
<td>4,977</td>
<td>5,473</td>
<td>4,932</td>
<td>5,047</td>
<td>4,521</td>
<td>5,124</td>
<td>4,554</td>
</tr>
<tr>
<td>CEAB Trained (female-identifying)</td>
<td>1,068</td>
<td>1,163</td>
<td>1,050</td>
<td>1,150</td>
<td>1,033</td>
<td>1,165</td>
<td>1,207</td>
</tr>
<tr>
<td>Total</td>
<td>6,045</td>
<td>6,636</td>
<td>5,982</td>
<td>6,197</td>
<td>5,554</td>
<td>6,290</td>
<td>5,764</td>
</tr>
<tr>
<td>30 by 30*</td>
<td>17.7%</td>
<td>17.5%</td>
<td>17.6%</td>
<td>18.6%</td>
<td>18.6%</td>
<td>18.5%</td>
<td>20.9%</td>
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</tbody>
</table>

*Percentage of newly licensed engineers who self-identify as female
National Canadian Engineering Accreditation Board (CEAB)-trained newly licensed engineers

- Trend line indicates declining growth
- Year-to-year average growth rate 2014-2020 = -0.3%
National CEAB-trained newly licensed engineers, sex representation
# National CEAB-trained female-identifying newly licensed engineers

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<tbody>
<tr>
<td>Total CEAB female-identifying</td>
<td>1068</td>
<td>1163</td>
<td>1050</td>
<td>1150</td>
<td>1033</td>
<td>1165</td>
<td>1207</td>
</tr>
<tr>
<td>% CEAB female-identifying</td>
<td>17.7%</td>
<td>17.5%</td>
<td>17.6%</td>
<td>18.6%</td>
<td>18.6%</td>
<td>18.5%</td>
<td>20.9%</td>
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<tr>
<td>Growth rate</td>
<td>N/A</td>
<td>-0.8%</td>
<td>0.2%</td>
<td>5.7%</td>
<td>0.2%</td>
<td>-0.4%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Average growth rate</td>
<td>3.0%</td>
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- Growth rate calculation: (current year – previous year)/previous year
- Average growth rate from 2015-2020. Sum of 6 years growth rate / 6 years = 3.0%
National CEAB-trained female-identifying newly licensed engineers

- Percentage female-identifying representation increasing
- Year-to-year average growth rate 2014-2020 = 3 %
National internationally trained newly licensed engineers
National internationally trained newly licensed engineers

- Engineers Canada’s National Membership Reports capture the number of internationally trained engineers who are licensed by provincial and territorial regulators each year.

- Further to this point, a Natural Sciences and Engineering Research Council of Canada (NSERC) 2010 report noted that the “future skilled labour force growth in Canada will be heavily dependent on immigration.” The report goes on to explain that “the number of skilled immigrant women coming to Canada with degrees in the NSE [natural sciences and engineering] peaked in 2001 and has fallen considerably in recent years,” and that the number of internationally trained men outnumber that of women, creating an even greater gender gap in this area.

### National internationally trained newly licensed engineers

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<tbody>
<tr>
<td>Internationally Trained (male-identifying)</td>
<td>2,447</td>
<td>2,680</td>
<td>2,204</td>
<td>2,330</td>
<td>1,831</td>
<td>1,914</td>
<td>1,710</td>
</tr>
<tr>
<td>Internationally Trained (female-identifying)</td>
<td>449</td>
<td>489</td>
<td>432</td>
<td>455</td>
<td>365</td>
<td>385</td>
<td>426</td>
</tr>
<tr>
<td>Total</td>
<td>2,896</td>
<td>3,169</td>
<td>2,636</td>
<td>2,785</td>
<td>2,196</td>
<td>2,299</td>
<td>2,136</td>
</tr>
</tbody>
</table>

| 30 by 30*              | 15.5% | 15.4% | 16.4% | 16.3% | 16.6% | 16.7% | 19.9% |

*Percentage of newly licensed engineers who self-identify as female.*
National internationally trained newly licensed engineers

- Percentage representation declining
- Year-to-year average growth rate 2014-2020 = -5 %
National internationally trained newly licensed engineers, sex representation

Internationally Trained 'Internationally trained male-identifying
female-identifying
National internationally trained female-identifying newly licensed engineers

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<td>% Internationally Trained female-identifying</td>
<td>15.5%</td>
<td>15.4%</td>
<td>16.4%</td>
<td>16.3%</td>
<td>16.6%</td>
<td>16.7%</td>
<td>19.9%</td>
</tr>
<tr>
<td>Growth rate</td>
<td>N/A</td>
<td>-0.5%</td>
<td>6.2%</td>
<td>-0.3%</td>
<td>1.7%</td>
<td>0.8%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Average growth rate</td>
<td>4.5%</td>
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</tbody>
</table>

- Average growth rate from 2015-2020. Sum of 6 years growth rate / 6 years = 4.5 %
National internationally trained female-identifying newly licensed engineers

- Percentage representation increasing
- Year-to-year average growth rate 2014-2020 = 4.5%
Engineers-in-training data
Engineers-in-training

- Engineers Canada’s National Membership Reports capture the number of Engineers-in-training * (EITs).
- The number of EITs decreased between 2019 and 2020, by 5,261 members. While the number of EITs decreased for all gender identities, the proportion of female-identifying EITs increased from 21.2 per cent to 21.6 per cent.

* EIT Totals include Members-in-Training, junior registrants, engineering interns, but does not include students
Post-secondary data
Post-secondary enrolment and degrees awarded

- Engineers Canada reports on trends in enrolment and degrees awarded in post-secondary engineering education in Canada in the Enrolment and Degrees Awarded Report.
- Canadian post-secondary institutions continue to report a strong growth in undergraduate degrees awarded, presenting 24.7 per cent more engineering degrees in 2019 than in 2015.
- The proportion of female-identifying students enrolled in undergraduate and postgraduate programs, as well as the proportion receiving undergraduate degrees, has reached an all-time high. In 2019, female-identifying students comprised 23.4 per cent of undergraduate students, 26.6 per cent of postgraduate students, and 22.1 per cent of undergraduate engineering degrees awarded.
- Following slides provide data from Canadian engineers for tomorrow 2020 report with data from 2015-2019.
Female-identifying undergraduate enrolment
Undergraduate degrees awarded to female-identifying students

• In 2019, 4,017 female-identifying students graduated with undergraduate engineering degrees.
• 1.4 per cent increase from 22.0 per cent in 2018 to 23.4 per cent in 2019.
• The total number of female-identifying students enrolled in undergraduate-level engineering programs has increased by 5.3 per cent since 2018 and 26.5 per cent since 2015.
Undergraduate degrees awarded to female-identifying students

Source: Canadian Engineers for Tomorrow, 2020
Undergraduate degrees awarded to female-identifying students

• The disciplines with the highest growth over the previous year were materials or metallurgical engineering (9.9 per cent increase) and geological engineering (7.3 per cent increase).

• The disciplines that experienced the highest growth from 2015 were those of materials or metallurgical engineering (16.3 per cent increase) and biosystems engineering (6.0 per cent increase).
Undergraduate degrees awarded

Source: Canadian Engineers for Tomorrow, 2020
Thank you!