Estimating Wooden Prefabricated Building Export Potential from the Province of Quebec to the Northeastern United States

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The import activity of wooden prefabricated buildings in the Northeastern US region was over CAD 41.8 million during 2019, according to the US Census Bureau. This amount was growing at a 12.5% annual rate on average since 2017. There is evidence of a continued shortfall in supply for the construction market to be overcome in the region. The objective of this study was to estimate the export potential of wooden prefabricated buildings from the Province of Quebec to the Northeastern US region for the next decade in relation to the export activity and production capacity of the industry. The value of annual production of wooden prefabricated buildings in Quebec was up to CAD 578 million in 2019, according to iCRIQ. Export activities from Quebec are mainly directed to the Northeastern US, and were of CAD 18.8 million in 2019, or 81% of Quebec's wooden prefabricated building exports. Results suggest that potential for wooden prefabricated building exports from the Province of Quebec to the US Northeastern region is important in terms of market share. The study also suggests that by drastically increasing the production capacity of the industry there is no chance that supply will overcome demand.

Keywords: Offsite construction; Timber construction; Production capacity; US construction market

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INTRODUCTION

Wooden Prefabricated Building Construction

Fabrication techniques in construction can be classified in several different manners. For example, classification can be done according to the location where buildings, or its parts, are mainly assembled (Smith and Quale 2017). Onsite construction is the term coined for those structures that are mostly developed at the same site where they will remain after the construction process is over. Offsite construction is the term coined to those structures, or its parts, partially of fully developed at a different site where the structure will remain after the construction process finishes (Rodríguez 2020). Offsite construction is also known as prefabricated, industrialized construction, modular, manufactured construction, pre-assembly, systems buildings, and modern methods of construction (Smith and Quale 2017). The term prefabricated construction will be used throughout this document to include the practices of modular construction, offsite construction, industrialized construction, and modern methods of construction (MMC).

Prefabricated construction can be classified per the temporary usage of buildings according to two terms. The first term is relocatable prefabricated construction, defined as a partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites (International Building Code 2018). The second term is permanent prefabricated construction, defined as an innovative, sustainable construction delivery method utilizing offsite, lean manufacturing techniques to prefabricate single or multi-story whole building solutions in deliverable volumetric module sections (Modular Building Institute 2019).

A factor that would lead to increased usage of prefabricated building construction in the upcoming years is the rural to urban migration sociologic phenomenon (Tacoli *et al*. 2015). Since 2010, the rural to urban migration sociologic phenomenon was already started worldwide, and a growing middle-class demand for affordable construction rose to a maximum unseen in history. Worldwide, multi-family projects attracted prefabrication companies to develop new solutions (Rodríguez 2020). Development of new software supporting prefabricated construction has been undertaken, and so have experimental projects. Examples of this are the 57-story Ark Hotel in Changsha, China, and the 500-bed hospital built in Calicut, USA. Prefabricated construction systems have started a race to dethrone onsite construction in the tall building construction segment (Rodríguez 2020).

Advantages of using prefabricated building construction methods can be achieved in added value variables in several fields (Hairstans 2016). Most important added value variables considered by Hairstans are the following: (1) construction quality, due to the consistency in the process of prefabrication itself; (2) customer satisfaction, due to improved quality assurance in reduced snagging and defects; (3) technical precision, due to the possibility to achieve higher levels of thermal, structural, and acoustic performance thanks to controlled fabrication processes in the factory; (4) reduced erection time, due to scheduling activities to take place concurrently rather than sequentially; and (5) waste reduction, due to a tighter control of materials, the usage of CAD/CAM and automation processes.

Disadvantages of using prefabricated building construction methods can also be found (Julien *et al*. 2015). Most latent disadvantages according to Julien *et al*. are: (1) initial investments are high for automatized production lines, and there is a need for high demand volumes to justify the investment; (2) distance between the factory and the construction site, as the project cost and project delivery time can be sensitive to transport cost and transport delivery time; (3) means of transport, because every means of transport has different transport constraints, such as module dimension, weight, rigidity, and waterproofing, among other; (4) construction industry that does not lead to innovation, regarding to innovation expenditure ratio; and (5) traditional delivery method (Design–bid–build), as prefabrication tends to be more efficient when there is a high level of planning and coordination between the client, designers, and fabricants.

The main building materials used in the North American prefabricated construction market are wood and steel, with a lower usage of concrete and aluminum as well (Julien *et al.* 2015). Timber-based elements have been developed for different structure dimensions and structural loads. In Canada, sawn wood is mostly used in platform frame systems for buildings going from one story to five or six stories, in roofing structures for the housing sector, or short span buildings and in modular systems such as panels, sectional modules and box units. Engineered wood materials are mostly used when either higher structure dimensions or structural loads are present, such as building diaphragms, long span buildings, and mid- and high-rise buildings (Julien *et al.* 2015).

Prefabricated methods for timber buildings are referred to by Ross (2010) as building kits and finished modules. While building kits are defined as prefabricated elements or sections that are then delivered and assembled on-site, finished modules are distinguished as an entire building delivered and assembled on-site. Building kits subtypes are based on both open structural panels and closed structural panels. Finished modules subtypes are either manufactured houses built over transportation chassis (EOS) or modular construction. The pros of building kits are an easier handling during construction, lower transportation costs, and easy to setup factories. Regarding finished modules, their pros are shorter on-site time due to mounting and finishing, building quality, and the delivery of higher value items from factory (Ross 2010).

US Construction Market

The US construction investment in 2019 was over CAD 1.7 trillion, according to the US Census Bureau (2019a). The whole market has been growing at an 8% average annual rate since 2011. This growth speed was mostly driven by the residential market that steadily grew 12% yearly, on average, since 2011. The non-residential market is also growing consistently since 2012 but at a lower 5% rate per year. Back in 2012, the market share was 32 and 68% for residential and non-residential market, respectively. In 2019, the market share was 40 and 60% for residential and non-residential market respectively, and the trend is to keep this momentum.

According to the Fails Management Institute (FMI), 2018 was a strong and dynamic year for the North American market. In the US, average spending growth was expected to finish at 5% for the second consecutive year (FMI, 2019). FMI believes that growth will continue to rise in the future, mostly in the Northeastern, Southeastern, and Southwestern regions.

The US Residential market was 98% driven by the private investment in the last decade. Public residential investment averaged a yearly investment of 9 CAD billion in the last decade, reaching its top in 2010 at 13 CAD billion, around 4.25% of the total residential investment in that year. Since then, the public residential investment started to decrease and, in the last 5 years it represented 1.38% yearly, on average.

For the housing market sector, Harvard's Joint Center for Housing Studies stated that in 2019 there was a continued shortfall in supply. Demand has grown at a 10% rate since the bottom was reached in 2011 and struggles to be covered by the current production (Joint Center for Housing Studies of Harvard University 2019). To illustrate it, since 2011 household growth has kept the same pace as completions and placements of new units, a figure that has not been seen since 1982.

The housing shortfall brings higher prices as demand rises. This affects affordability, measured by the home price-to-income ratio, particularly in lower income households in high-income markets (Joint Center for Housing Studies of Harvard University 2020). The highest home price-to-income ratios were found in the west coast and part of Florida State, and the lowest ratios were found in the Northeastern States, mostly in rural counties. These trends were despite the fact that the United States Federal Funds Rate is being kept stable at 0 to 0.025% since the middle of March 2020 and seems to be maintained flat.

The rental markets were also growing despite slackening demand in 2019. Overall rents grew at a 3.6% rate, twice the pace of overall inflation. Rental demand has been outpacing supply since 2016, leading to overall market rents rise and low-cost unit availability to drop substantially. By now, there is a lack of low-rent stock in general in the

US, accentuated in big cities (Joint Center for Housing Studies of Harvard University, 2019). Prefabricated construction offers a quick and reliable solution to solve this low-cost housing gap (Smith and Quale 2017).

In the same study, the Joint Center for Housing Studies (2019) projected that the next decade household demand will be driven by the generational fluctuations rather than population growth itself. While baby boomers (born 1946-1964) will lead to an astounding 11.1 million age 65 and over household increase, millennials (born 1985-2004) will demand 2.9 million more 35 to 44-year-old households. Generation X (born 1965-1984) will not be able to replace baby boomers' housing stock, leaving 1.9 million 45 to 64-year-old households. As a result, a net 12.1 household increase can be seen in the US.

US Northeastern Region Market

The United States imports of wooden prefabricated building in 2019 was over CAD 141 million, and in the Northeastern region it was CAD 41.8 million, according to the US Census Bureau (2019b), representing 29.6% of the total US wooden prefabricated building imports in that year. This amount has been growing at a 12.5% annual rate since 2017 in the Northeastern region.

US Northeast population was 56,111,079 people in 2018 (+38,403 compared to 2017) (US Census Bureau, 2019a). The Mid-Atlantic States counted a total of 41,257,789 (-11,920) people, were New York state leads the count with 19,542,209 (-48,510) people, followed by Pennsylvania with 12,807,060 (+16,613) people and New Jersey with 8,908,520 (+19,977) people. Most of the population in New England is based in Massachusetts with 6,902,149 (+38,903) people, followed by Connecticut with 3,572,665 (-1.215) people, New Hampshire with 1,356,458 (+6,691) people, Maine with 1,338,404 (+3,341) people, Rhode Island with 1,057,315 (+829) people and Vermont with 626,299 (-1,774) people (Table 1).

Table 1. US Northeast Population by State. Data source: US Census Bureau (2019a)

State	Population	Last eight years average growth
Connecticut	3 572 665	808
Maine	1 338 404	1 347
Massachusetts	6 902 149	41 965
New Hampshire	1 356 458	4 960
New Jersey	8 908 520	13 612
New York	19 542 209	17 766
Pennsylvania	12 807 060	11 988
Rhode Island	1 057 315	422
Vermont	626 299	52
Total	56 111 079	91 304

Harvard's Joint Center for Housing Studies (2020) determined that three main generations will drive the housing demand in the next three decades in the United States. These are (1) the baby boomers, the generation X, and the millennial generation. The positive fluctuation will be made as each generation requires a different kind of housing solution regarding their age segment. In the Northeastern States, a similar behavior can be seen in terms of generational fluctuations, with an estimated addition of 3,165,178 households. The baby boomer's generation will add 3,366,766 households in the region, whereas the millennial generation will add 1,343,256 households. The generation X will

follow the national trend by reducing 1,544,845 households. Only a projection of the actual population in ten years was considered, applying the average death rate to each age segment. The generational switch between baby boomers, generation X, millennials will produce a shift in the ownership of housing, creating opportunities for new housing construction.

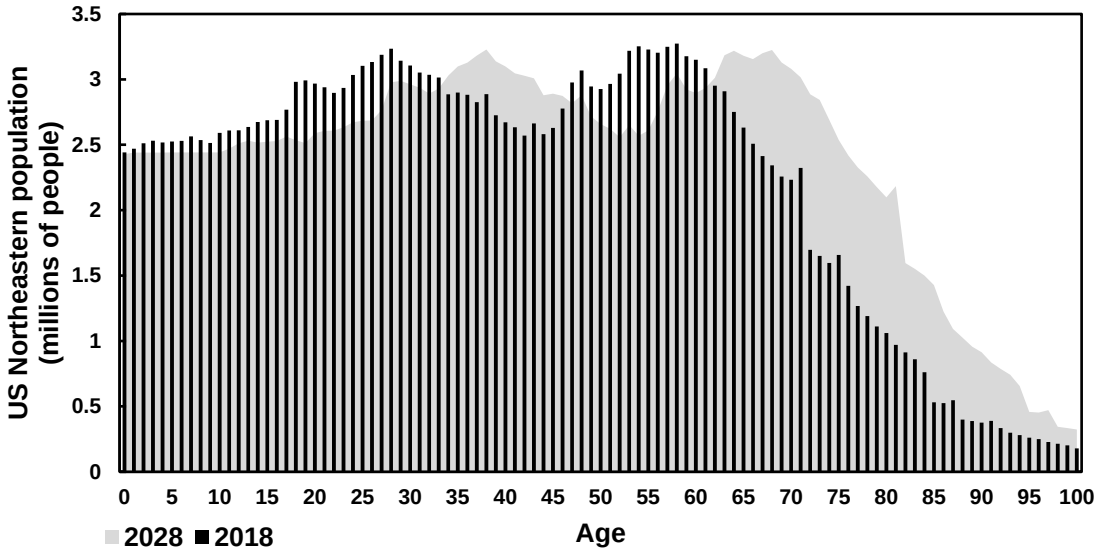


Fig. 1. US Northeastern population 2018 vs 2028 forecast (millions of people). Data source: US Census Bureau, 2019a.

Canadian Wooden Prefabricated Exports

In 2019, Canadian wooden prefabricated buildings exports rose to CAD 125 million, 36.2% of total prefabricated building exports from Canada in that year. Canadian exports of all materials rose to CAD 345 million in the same year. Between 2017 and 2019 there was a continued growth of wooden prefabricated buildings exports (Fig. 2).

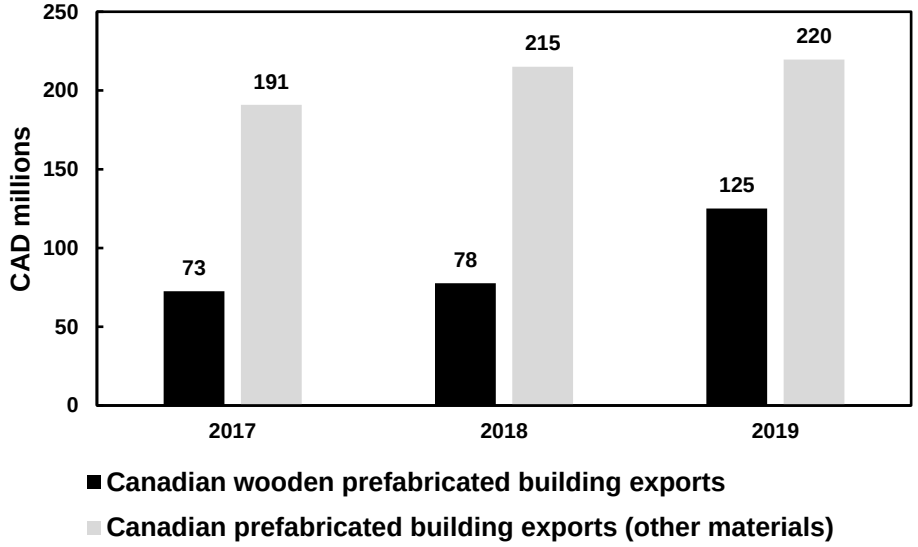


Fig. 2. Canadian prefabricated buildings exports by materiality between 2017 and 2019 (calculated using HS 940610 and HS 940600). Data source: ITC Trade Map 2021

The US is by far the most important destination for Canadian wooden prefabricated buildings; 95.2% of wooden prefabricated buildings exported from Canada went to the USA in 2019 (91.0% in 2018 and 86.3% in 2017). Regarding all prefabricated buildings exports from Canada, USA represented 76.8% in 2019, 73.0% in 2018 and 64.9% in 2017 (Fig. 3).

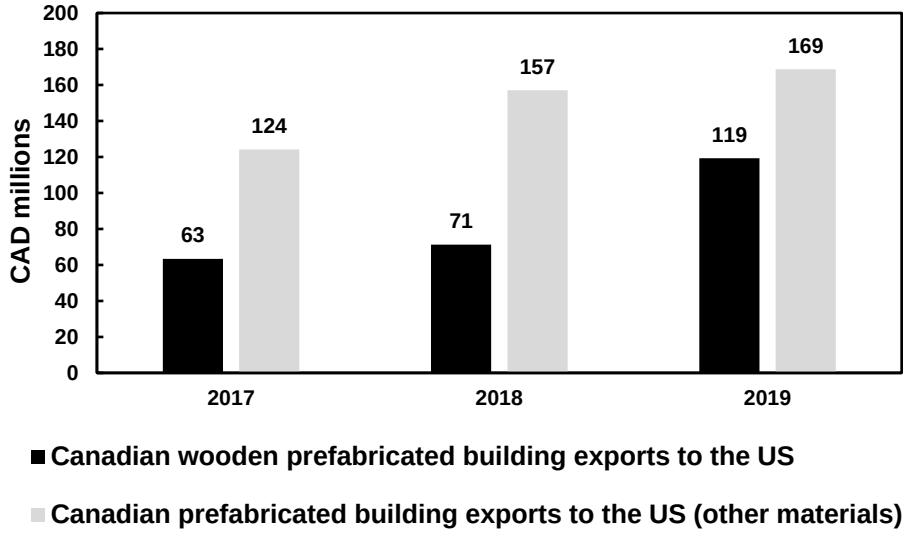


Fig. 3. Canadian (wooden and other materials) prefabricated buildings exports by destination between 2017 and 2019 (calculated using HS 940610 and HS 940600). Source: ITC Trade Map 2021

Despite the US being the largest destination for Canadian exports and Canada being the biggest source of American imports of wooden prefabricated buildings, this situation does not apply for every state. China, Mexico, and Vietnam are important providers for California, Texas, and Kansas, respectively. In terms of the Northeastern region, Germany and the UK have developed projects in the states of New York and Connecticut respectively, representing less than CAD 0.7 million each (Fig. 4).



Fig. 4. United States wooden prefabricated building imports per exporting Country in 2019 (HS 940610). Data source: Statistics Canada.

Other destinations for Canadian wooden prefabricated buildings in 2019 included Japan (CAD 1.4 million), Germany (CAD 1.0 million), and Antigua and Barbuda (CAD 856,698). Numbers tend to change drastically for countries different than the US, Japan, and Germany. This could be explained as punctual projects happening abroad, lacking business continuity (Fig. 5).



Fig. 5. Canadian wooden prefabricated buildings exports by country in 2019 in CAD (excluding the US, HS 940610). Data source: ITC Trade Map 2021.

Provincial Export Analysis

Quebec wooden prefabricated building exports accounted for 31.9% of Canadian exports in 2017, 31.2% in 2018 and 18.6% in 2019. Whilst Quebec kept similar export numbers in the last three years, other provinces followed different export patterns. Alberta accounted for 3.4% of Canadian exports in 2017, 6.3% in 2018 and 37.6% in 2019. Surrounding provinces as Ontario and New Brunswick have increased their global exports in the past three years as well (Fig. 6).

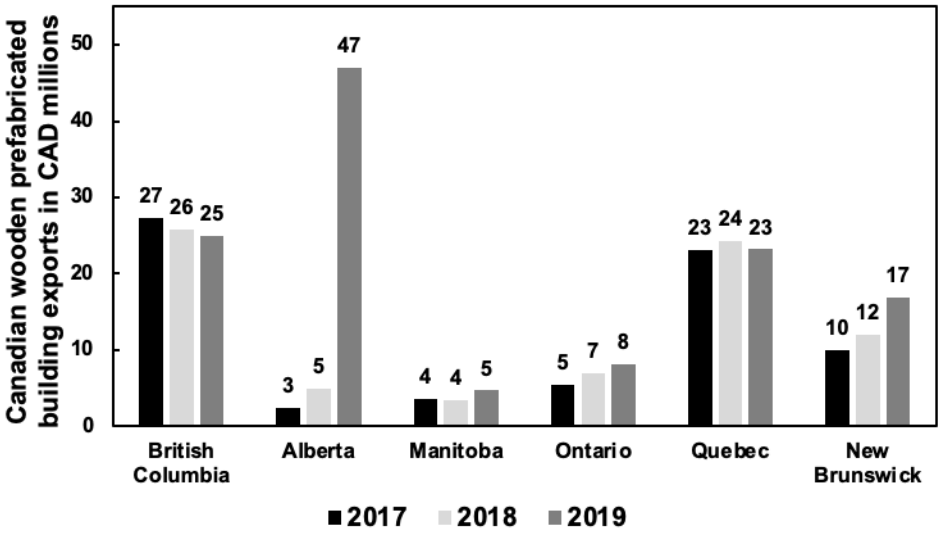


Fig. 6. Canadian wooden prefabricated buildings exports by province (HS 940610). Data source: Statistics Canada

Even though surrounding Provinces have increased their numbers in the last three years, their destination markets were not the same as Quebec. Ontario's principal

destinations in 2019 were New York (CAD 1.5 million) and California (CAD 1.5 million), Quebec's destinations were Massachusetts (CAD 15.6 million) and North Carolina (CAD 1.3 million), and New Brunswick's destinations were Maine (CAD 15.9 million) and Colorado (CAD 0.5 million). Alberta's destinations were New Mexico (CAD 16.3 million), Montana (CAD 14.6 million), Texas (CAD 12.8 million), and California (CAD 1.6 million) (Fig. 7).

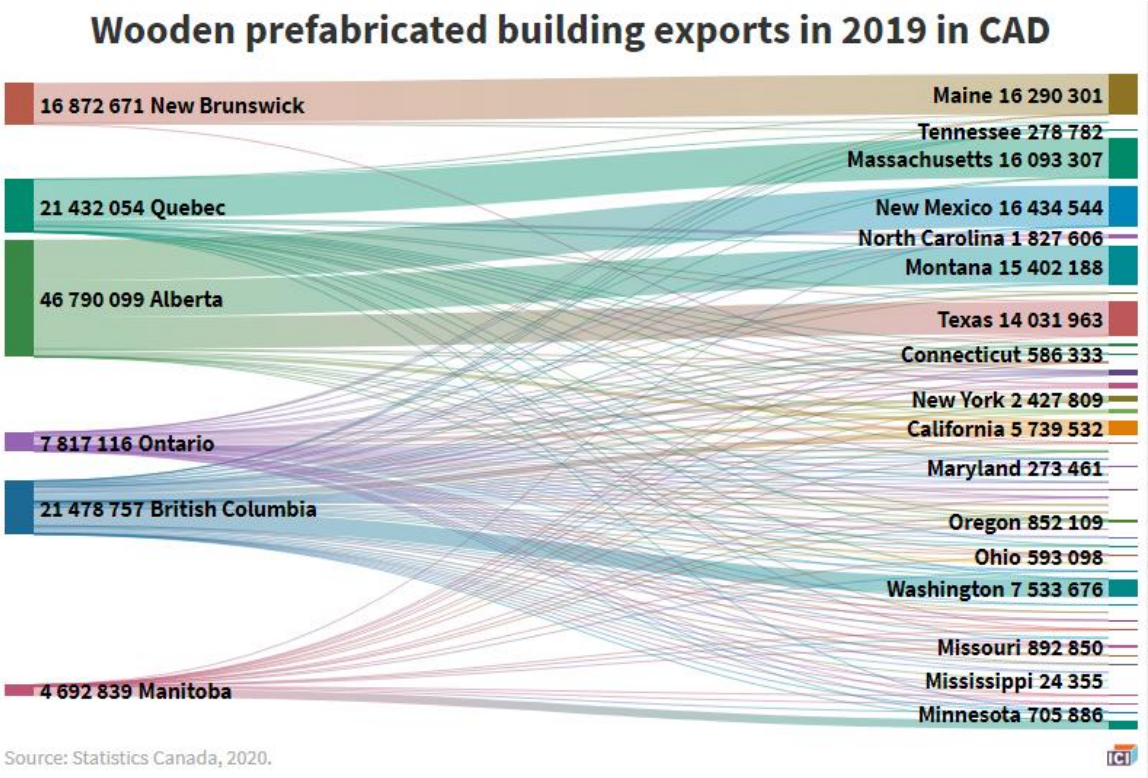


Fig. 7. Canadian provinces exports to the US States in CAD, excluding provinces/territories with low volumes (HS 940610). Data source: Statistics Canada (2021a)

Canada recently launched Federal and Provincial programs to foster productivity and exports. These programs propose a favorable environment for Quebec trade activity to Northeastern US. In the past, prefabricated timber construction has been developed and promoted in Canada *via* different public and private programs. Initiatives such as Natural Resources Canada (NRCan) and WoodWorks! are examples of these efforts, by leading the sector and offering opportunities to develop, improve, and promote construction techniques, systems, and products developed in Canada. For example, NRCan offers funding totaling more than CAD 200 million to develop timber construction and timber-based construction products. WoodWorks! offers free and paid information through their e-learning center, wood project directory, building construction software and publication directory, among other tools they provide.

As a result of the latter efforts, the US imported CAD 119 million in wooden prefabricated buildings in 2019 to mitigate the local supply shortage. The Northeastern region followed the same strategy and imported a total of CAD 42 million in 2019 and CAD 19 million from Quebec. Northeastern imports are growing at a 5% average annual rate since 2017.

Research Objective

Previous studies have been focused on wooden products for construction, or prefabricated building export due to data availability mainly. Few researchers have proposed frameworks to estimate export potential for wooden prefabricated buildings. Actual proposals have been based in wood product trade activity volumes and not considering trade activity history.

The objective of this study was to estimate the export potential of wooden prefabricated buildings from Quebec to the Northeastern US in the next decade in relation to the actual trade activity and production capacity of the industry. This approach will help suggest on how production capacity shall adapt to future trade flows in different scenarios, analyze and comprehend the actual trade activity from Quebec, focused on the Northeastern US.

EXPERIMENTAL

This study identified the actual export activity from Quebec to the Northeastern US by analyzing the international trade of wooden prefabricated building between both regions. Specifically, the targeted markets for this project are the territories located in the Quebec province for Canada, and the New England and Mid-Atlantic States in the United States, also known as the Northeast. These markets were chosen following the results and conclusions of a transportation cost analysis presented by FPInnovations back in 2015 (Julien *et al*. 2015). They analyzed three different shipping methods: truck, train, and ship transportation and stated that a 1,000 kilometers radius is the maximum for low-cost transportation. This prioritization was confirmed by the industry representatives at the Vision 2030 symposium in 2020, a Quebec industrial initiative launched to promote the prefabricated construction exportation activity (Vision 2030, 2020).

Materials

The data used in this article was obtained from databases from the iCRIQ, ITC Trade Map, Statistics Canada, and the US Census Bureau. All the currencies were presented in Canadian Dollars (CAD) according to the exchange rates published by the Bank of Canada. The data sources used in this project were:

- Canadian wooden prefabricated buildings exports to the United States between 2017 and 2019, available at ITC Trade Map.
- Canadian wooden prefabricated buildings exports by Country between 2017 and 2019, available at ITC Trade Map.
- Canadian wooden prefabricated buildings exports by Province between 2017 and 2019, available at Statistics Canada.
- Quebec's wooden prefabricated buildings exports by Country between 2017 and 2019, available at Statistics Canada.
- Quebec's wooden prefabricated buildings exports to the United States by State between 2017 and 2019, available at Statistics Canada.

Also, it estimated the actual production capacity of Quebec by gathering production information from the local industry. This extent was performed by analyzing the following variables:

- Quebec's wooden prefabricated companies gross profit in 2020, available at iCRIQ.
- Finally, it measured the US and the Northeastern US construction demand to identify demand patterns, trends and magnitude of the markets, including:
- Construction expenditure in the US, by Region in 2019, available at US Census Bureau.
- Construction expenditure in the US, by State between 2008 and 2018, available at US Census Bureau.
- USA imports by State per Country from 2017 to 2019, available at US Census Bureau.

Approach

This study presented a heuristic approach to estimate the export activity potential of wooden prefabricated buildings from the province of Quebec to the US Northeastern region. This heuristic approach considered the trade activity from the province Quebec to the US Northeastern region from 2017 to 2019. It also considered the production volume of wooden prefabricated buildings in the province of Quebec from 1992 to 2019. Finally, and due to the data available, it considered a linear forecast of demand growth of wooden prefabricated buildings in the US Northeastern region as a means to provide a plausible target for production and trade activity. A linear forecast in demand was made as the residential construction put in place in the US Northeast followed a linear growth in the last two decades. The values 5 and 10% annual growth were chosen as the residential construction put in place between 2008 and 2018 varied up to 10% between two consecutive years.

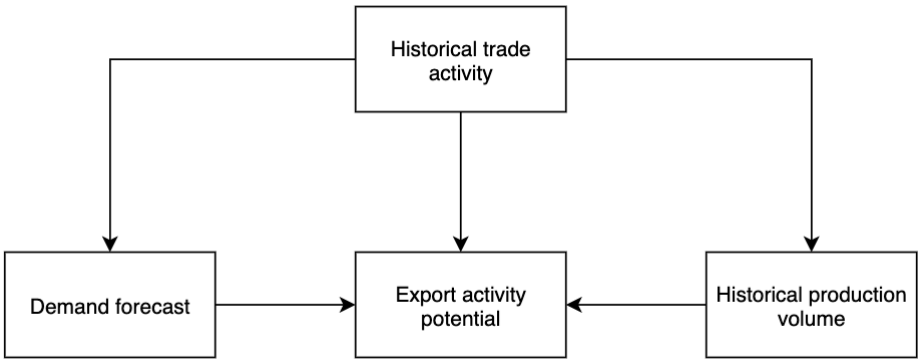


Fig. 8. Heuristic model of export activity potential for wooden prefabricated buildings from one region to another.

Assumptions of the Approach

This heuristic approach aims to assess the potential of future export activity from the province of Quebec to the US Northeastern region. There are three latent variables in this approach, namely influence of trade activity, demand levels, and production capacity.

For the demand forecast, the assumption that it follows a linear function can help understand the future trend for imports in the US Northeastern region. This assumption relies in the fact that the data available is limited to only three years of historical trade activity of wooden prefabricated buildings.

For the production volume forecast the assumption is based on production increases

based on the optimization of productivity. Evidence suggests productivity increases could be performed *via* managing labor availability, optimizing layout optimization, among other heuristics. As these heuristics depend on each factory location, design, budget and capacity, the approach only provides upper and lower limits.

RESULTS AND DISCUSSION

State of the Market

Trade activity

Quebec wooden prefabricated buildings exports reached CAD 23.21 million in 2019, CAD 24.24 million in 2018 and CAD 23.15 million in 2017. The biggest destination for Quebec is the US, with CAD 21.43 million in 2019 (92.34% of total exports), CAD 22.52 million in 2018 (92.90%) and CAD 22.08 million in 2017 (95.38%) (Fig. 9). Other destinations fluctuate from year to year. In 2019, the export activity was concentrated in only seven countries, 10 countries in 2018 and 11 countries in 2017.

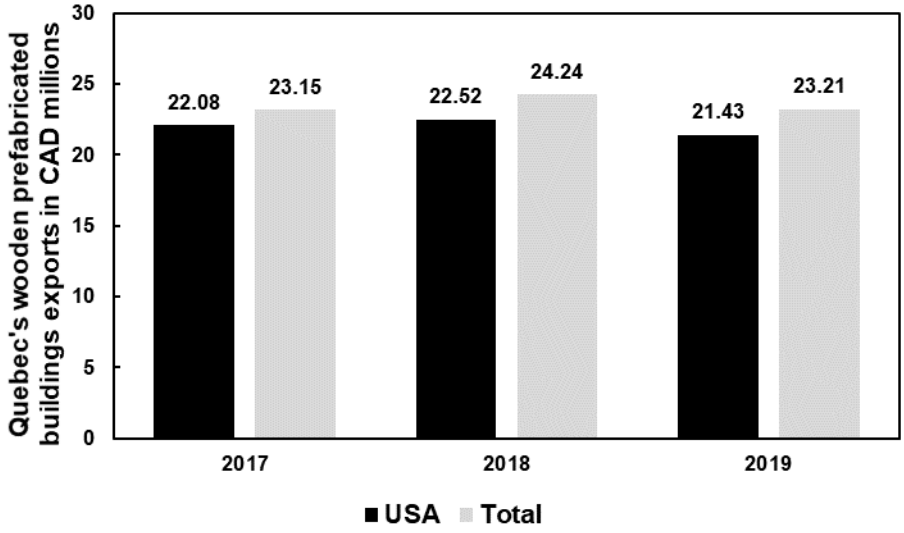


Fig. 9. Quebec's wooden prefabricated buildings export activity (HS 9406110). Data source: Statistics Canada

Quebec exports to the US are basically done towards Massachusetts, totaling CAD 16 million in 2019 (CAD 14 million in 2018 and CAD 18 million in 2017). Massachusetts represented 72.61% of total exports from Quebec to the world in 2019, 63.17% in 2018 and 81.17% in 2017 (Fig. 10).

Besides Massachusetts, there were other important export destinations in 2019. This included the rest of the US North-East region (CAD 3.3 million excluding Massachusetts) and North Carolina (CAD 1.3 million). In 2018 and 2017 the export activity was also concentrated in the North-Eastern region (CAD 5.3 million and CAD 3.2 million respectively). North Carolina exports started to be important in 2018 (CAD 1.8 million) (Fig 11).

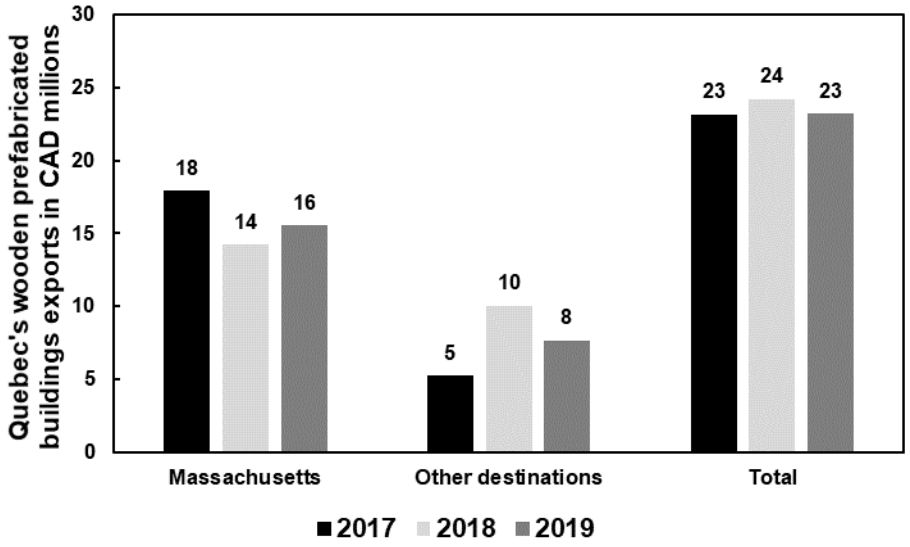


Fig. 10. Quebec's wooden prefabricated buildings exports (HS 940610). Data source: Statistics Canada

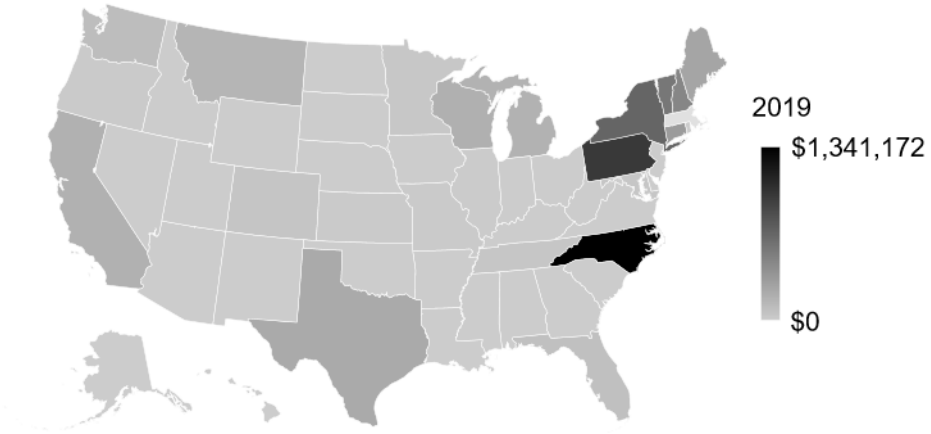


Fig. 11. Prefabricated buildings exports from Quebec to the US in 2019 excluding Massachusetts (HS 940610). Data source: Statistics Canada.

Quebec exports to other countries than the US are occasional businesses, and few of them keep a constant pace. However, the total exports to these destinations have been growing, passing from CAD 1.1 million in 2017 to CAD 1.7 million in 2018 and CAD 1.8 million in 2019. Even though Quebecers do have a regional focus in the US Northeast, their building solutions can be cost competitive in different kinds of markets across the globe.

Imports

Demand for wooden prefabricated buildings in the US Northeastern region coming from other countries was CAD 41.8 million in 2019 according to Statistics Canada. Demand forecast in the US Northeastern region is expected to grow at an average 4.4% per year, or an increase of CAD 2.3 million every year (FMI 2019). The export activity from Quebec to the US Northeastern region was CAD 18.8 million in 2019, covering 45% of the total US Northeastern region demand of wooden prefabricated buildings (Fig. 12).

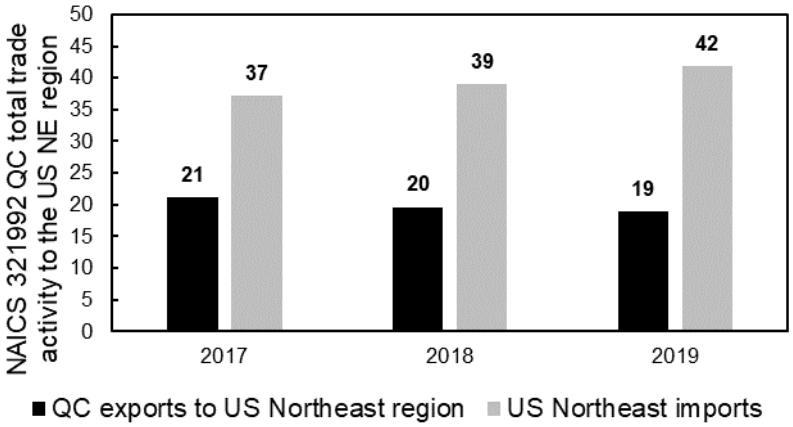


Fig. 12. US Northeastern imports of wooden prefabricated buildings between 2017 and 2019, from Quebec and total (NAICS 321992). Data source: Statistics Canada

Production

Production trends of wooden prefabricated buildings in Quebec are impossible to determine due to a lack of data regarding either sales volumes or productive capacity throughout the years. However, there is way to establish the actual lower and upper sales thresholds for prefabricated wood building manufacturing. This can be achieved by taking all the companies associated to NAICS code 321992 and gathering their sales figures registered in icriq.com, a directory of manufacturers, wholesalers, and industrial-related service companies in the Province of Quebec.

For 2019, the lower sales figure registered in a total of 59 registered companies under the NAICS code 321992 was of CAD 268 million, while the upper sales figure was of CAD 578 million (Table 2).

Table 2. Revenue for Companies in Quebec Province under NAICS 321992 code. Data source: ICRIQ (2021)

Type	Revenue (CAD)	Amount
A	Unknown	6
B	Less than 100 000	5
C	100 000 - 499 999	9
D	500 000 - 999 999	6
E	1 million - 2 999 999	14
F	3 million - 4 999 999	0
G	5 million - 9 999 999	10
H	10 million - 24 999 999	5
I	25 million - 49 999 999	2
J	50 million - 99 999 999	2
Total		59

Export Potential

By assuming the production capacity to be the sales figures for NAICS code 321992 in the Quebec Province, the wooden building export to regional capacity ratio is between 3.3 and 7.0%.

When considering different scenarios of export activity, either by following the actual trend in the Northeastern region or by assuming aggressive values compared to the actual trend, such as 5 or 10% growth yearly for the next 5 years (Fig. 13), the wooden building export to regional capacity ratio can go up to between 5.2 and 11.3% in five years.

It is interesting to remark that for every scenario tested, the forecasted demand on wooden prefabricated buildings is not overpassed.

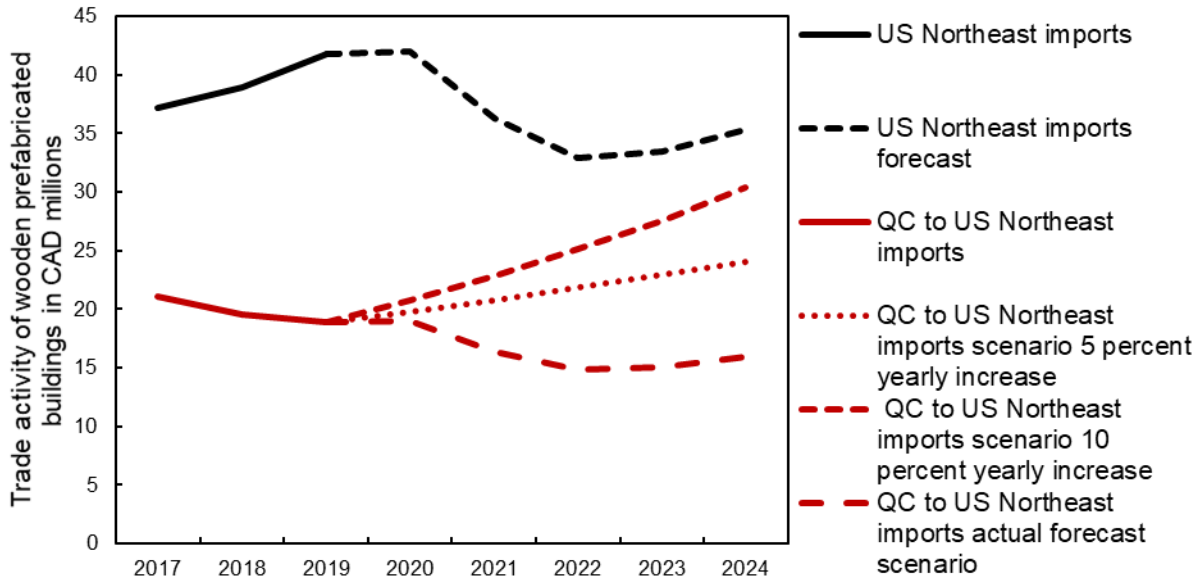


Fig. 13. Export potential of wooden prefabricated buildings from Quebec to the Northeastern US under three production scenarios. Data source: US Census Bureau 2019b and FMI 2021

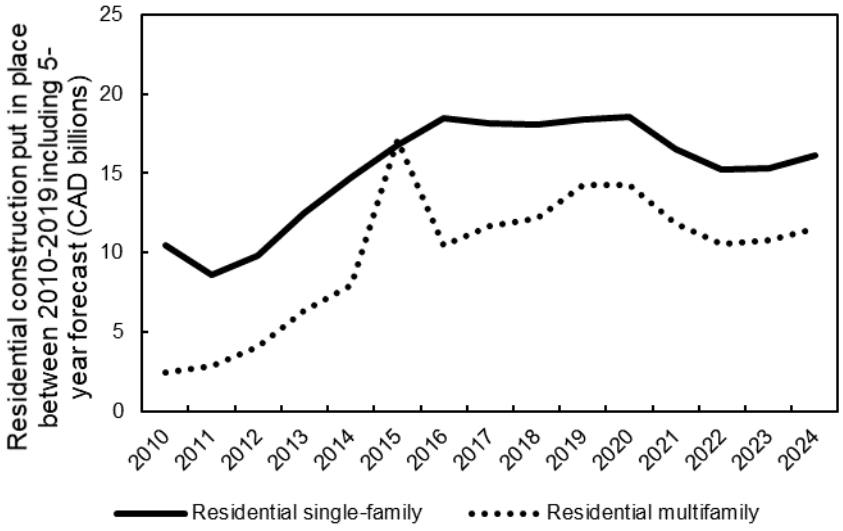


Fig. 14. Residential construction put in place in the US Northeast between 2010 and 2019, including a five-year forecast in CAD billions. Data source: US Census Bureau 2019b and FMI (2021).

The residential market size in the US Northeastern region is CAD 32.6 billions. Even during the current economic crisis, the market is expected to fall 14% in 2021, but it is expected to start recovering in 2023 (FMI, 2021) (Fig. 14). Quebec wooden prefabricated buildings exports to US Northeast covered 0.1% of the total market in 2019, so there is a considerable potential in the region to import from Quebec.

CONCLUSIONS

1. The study suggests that potential for wooden prefabricated building exports from the Province of Quebec to the US Northeastern region is high in terms of market share, but there is no data available on the actual size of the wooden prefabricated building market in the Province of Quebec.
2. Results of this study suggests that by drastically increasing the production capacity of the industry in Quebec there is no chance that supply will overcome demand of wooden prefabricated buildings in the US Northeastern region.
3. Results also suggest that due to this increase in the building export to regional capacity ratio, there could be a shortage of wooden prefabricated buildings in the Province of Quebec. It should be interesting to carry out an elasticity analysis of wooden prefabricated buildings in the Province of Quebec.
4. Other findings of this study suggest that wooden prefabricated buildings production capacity in Quebec cannot be determined accurately and there is the need to build better data sources for NAICS code 321992, coming either from ICRIQ or Statistics Canada.
5. The study has limits that could influence the results. The approach used to forecast the Northeastern US imports does not consider the effects of the trade conditions between the US and Canada or the US markets preferences to adopt wooden prefabricated construction in the future.
6. This study will help to define future trade activity goals and strategies, altogether with investment targets and personnel requirement from the wooden prefabricated buildings industry.

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