

# Exploring Goods Movement and Export Diversification for Niagara Region Firms

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## EXECUTIVE SUMMARY

This report provides a detailed overview of the supply chain-oriented activities, domestically and internationally, for a sample of Niagara region firms from the manufacturing, wholesaling and agricultural/primary sectors. The information comes from the deployment of an in-depth online survey (median completion time: 30 minutes) which provided useful data for 103 firms in terms of full survey completions and an additional 98 firms in terms of partial survey completions.

The sample offers reasonable representation from a wide array of segments, including all municipalities within Niagara region. The sampled firms tend to be small but mature on average and with substantially more representation from manufacturing. 82% of respondent firms have annual revenues less than \$25M. The vast majority of respondent firms have a Canadian head office and about half are localized in terms of the footprint of their operating facilities.

There is substantial evidence of a complex web of activities at many of the firms with most firms having many product lines/SKUs, export SKUs and supplier firms. 30% of firms have more than 100 SKUs and 8% of firms in the sample have more than 100 suppliers. About two-thirds report that they export at least one SKU. Many firms appear to have further potential to develop given that 60% generate zero sales via e-commerce and 12% remain as one-product firms.

### Geographic Scope and Internationalization/Exporting

The geographic scope and variety inherent in how Niagara region firms operate their supply chains is a central topic (Figure 2-14). Respondent firms are more internationalized in sourcing inputs than they are in the generation of revenues and this is particularly the case for contexts beyond the United States. The differences are especially stark for wholesaling which appears to source goods into the country and distribute mostly within Ontario. Manufacturing is the most internationally balanced between sourcing and revenues but is more international on the sourcing side.

About 28% of firms report that they do not have exporting relationships with any countries whereas only 13% state the same for sourcing inputs. Conversely, if a firm does deal with a very large number of countries (i.e. >25) this is much more likely to take place on the exporting side. Approximately 25% of firms do not deal with any US states with this number being a little larger for exporting. For those firms with US dealings, most engage with up to 5 states but there are a good number of firms that deal with many states and especially on the selling side.

A series of charts (Figures 2-17 to 2-20) show that exporting patterns (either to other countries or to US states) are more simplified on average than importing patterns. As an exporting destination, the US dominates, and the adjacent New York dominates among states. The US is dominant (but much less so) as a source of imports and the importing pattern across countries is

more nuanced. For importing sources at the state level, the pattern is quite diversified with New York, California and Florida being the leading states.

With respect to export diversification, most respondent firms would like to see tax incentives to encourage exporting and there is general agreement that exporting essentially improves a firm's capabilities/acumen. But only 10% of firms strongly agreed that exporting was part of the firm's "DNA" (Figure 2-22). Approximately 30% of manufacturing firms expressed fairly high levels of enthusiasm for their export diversification potential (Figure 2-23) but these levels were much lower for agriculture/primary and wholesaling firms. In terms of top challenges to export beyond the United States, perceived regulatory impediments and large travel distances rank highest while protection of intellectual property and culture/language differences are not ranked highly (Figure 2-22).

Firms in the sample that generate sales outside of Canada and the United States were compared against firms that did not. Approximately one-third were in the former internationalized group and two-thirds in the latter. The two groups were similar in terms of sales, use of e-commerce and the number of supplier firms. The international group had more favourable views on outsourcing and tended to make greater use of modes other than trucking. The international group appeared more decisive about key elements of exporting and exhibited more optimism about it.

### **Logistics Costs, Outsourcing and Other Elements**

Logistics costs on average are reported at approximately 15% of revenues (Table 2-1) with the result being generally higher than this for wholesaling firms and less for agricultural/primary firms. Transport costs were reported at 6.9% of revenues on average with little apparent variation by the major sectors. Inventory carrying stands out as a significant logistics cost for wholesaling firms. There is wide variation in the annual amounts that firms spend on transport costs but about 45% of those sampled spend in the range between \$25,000 and \$250,000 per year. More firms report "significant expenditures" on trucking services as opposed to the operation of their own private fleet. Due to this outsourcing, substantial private trucking fleets among surveyed Niagara firms appear to be rare.

In terms of the operation of supply chains, outsourcing emerges as an important theme. About 2/3 of firms report that they do at least some outsourcing to a 3PL but there is wide variation in the degree of importance of these services to firms. Elements that are valued most highly include the reduction of transportation costs, better service for customers and better access to more carriers. In terms of relative frequency of outsourcing, those aspects of logistics with an international dimension are most emphasized with customs brokerage and international transport being the leading items selected as "Always outsourced."

Results on inbound logistics suggest that firms emphasize it less than outbound. While about 1/3 of firms undertake measures such as seeking to consolidate inbound shipments, a much larger share note that suppliers take care of shipping or inbound transportation costs are lumped together with the costs of the goods.

Nearly 70% of firms generate outbound truck movements that are best described as “daily” in frequency and about 60% receive daily inbound trucks. For firms that use air, rail or marine the frequency is best described as “weekly” or “monthly”.

### **Local/Regional Considerations**

In terms of potential improvements that could be considered to help supply chains (Figure 2-23), highway oriented improvements dominated but there was more emphasis on regional (Greater Toronto Hamilton Area) than local highways, and congestion pricing on major highways was rejected as a potential improvement. Highway congestion also arises as the top source of delay for supply chains (Figure 2-24) but again regional over local congestion is emphasized. About one-third of firms identified the Canada/US border as the top-ranking delay type. Nearly half of sampled firms expect to spend more than 30 minutes getting goods across the border.

On the topic of perceived stresses in the supply chain (Figure 2-27) high costs and “red tape” are top ranked while supply chain redundancy and visibility are not emphasized as prominent stresses.

### **Supply Chain Technologies**

A set of statements that addressed technological themes (Figure 2-28) in the supply chain (with an emphasis on automation) showed that most respondent firms do not closely follow areas such as autonomous vehicle pilot projects for freight or applications for drones. At this stage they would not “pay extra” to obtain an autonomous vehicle. Firms had more interest in aspects of automation that they perceive as core to their business. Nearly half of respondent firms stated that it would never be commonplace for their goods to be moved in autonomous vehicles although 30% believed that this could happen within the next 15 years.

In terms of existing use of technology, a segmentation compared firms with zero and non-zero sales due to e-commerce. Those firms with at least some e-commerce sales show much more optimism about exporting and more interest in a wider range of potential supply chain improvements in Niagara (e.g. improved public transit).



# Introduction and Background

## 1.1 Context

The main objectives of this research are to collect and analyze primary data gathered at the level of Niagara region firms to better understand:

- 1) The nature of goods movement within and beyond Niagara region for firms that reside within Niagara region.
- 2) Themes of interest within the realm of goods movement and supply chains including: sector-specific logistics cost breakdowns, utilization of trade routes, shipping modes and others.
- 3) The potential and the possible mechanisms for greater export diversification for Niagara region firms -- particularly beyond the United States and North America.

The geographic scope for the project, in terms of primary data collection, is Niagara Region and respondent firms that are based within, taking into account that associated supply chains utilized by these firms in many cases will extend beyond the boundaries of the region. In fact, the ability of firms to have influence and export widely are central themes of the research.

The sectoral scope of the project has focused essentially on firms that would be expected to move goods and to either receive them or ship them. Broadly speaking, the firms that have been contacted for this study reside in agricultural/primary industries, manufacturing or wholesaling.

To better inform policy it is useful to understand the cost environment for firms (total landed costs, warehousing, transportation etc.) and to gain a good knowledge of the demands that are placed on transportation and other forms of infrastructure as firms deliver products or source inputs. Related to these demands are aspects including the types of modes that are utilized (and to what extent) along with the trade routes that are employed. It is also useful to identify any related gaps as seen through the eyes of the firms that depend on Niagara Region infrastructure. These are also aspects that have been covered with this study's survey instrument.

In many ways, this work seeks to build on extensive consultations that took place over the Winter of 2019 [1] with a wide variety of stakeholders associated with the Hamilton-Niagara region. Some of the findings from that process have acted as inputs into this process.

## **1.2 The Survey and Development of the Survey Instrument**

The survey instrument that was developed for this study was implemented on-line. The overall effort represented a partnership between the McMaster Institute for Transportation and Logistics (MITL), Niagara Region and Dynata Corporation. The draft of the survey instrument was developed by MITL with feedback from Niagara Region and Transport Canada. The survey was then implemented on-line through Dynata. The on-line version was extensively tested to ensure that it was performing as it should, and a few iterations of programming changes were required to reach the required high standard. The distribution of the survey instrument via introductory e-mail and embedded survey link was administered by Niagara Region with MITL reporting progress as survey responses came in. Some minor changes to the survey were implemented after the first few observations came in.

To a large extent this study is focused on gathering data and interpreting it. The nature of the subject matter is such that extensive and detailed data is required. The survey was extensive and in-depth and as it turned out, the median survey completion time was 30 minutes. In addition, there were many survey respondents who took much longer or who would take breaks before getting back to the survey and completing it. And of course, there were many respondents who

chose to complete only a subset of the survey. Accordingly, the sections in the survey were prioritized with generally the most important questions coming first in the sequence of the survey instrument. Given the level of detail that was required of respondents about the firms they represented, it was understood in advance that many who would start the survey would not finish it.

The basic outline of the survey instrument is as follows:

- Some basics about the firm such as industry, geographic scope, size, age and other aspects
- Aspects related to the firms supply chains such as number of product lines, number of suppliers, role of e-commerce, breakdowns of estimated logistics costs, geographical sales and inputs patterns and others
- Aspects of the firm's international trade (if any) such as leading countries or U.S. States that serve as trading partners, ratings of the perceived challenges associated with exporting and others
- Niagara and regional issues such as the evaluations of potential improvements within the region and of the stresses and delays that are experienced within supply chains.

As well as gathering useful quantitative information from respondents about firms they represent, the survey gathers extensive qualitative information to give an idea of a firm's positions/perspectives on a wide range of relevant topics.

Some of the detailed insights that are made possible by this information become clear in the results chapter to follow. Note that this report seeks to capture some of the most important insights but the detailed data set that has been collected may well permit other types of analyses that fall beyond the scope of this summary report. It is also worth noting that the scope of this report is focused on outlining the results from the sample as opposed to making statistical inferences about the finite population of Niagara region firms in the sectors covered. Certainly, more in-depth analysis of this type is possible as well.



## Results

### 2.1 Basics on the Responding Firms

Representatives from 201 respondent firms completed a significant share of the survey questions but only 103 of those answered all the questions. The philosophy in this section is to report on the data that are available. Accordingly, the number of respondents is reported below for each survey element covered and this number does vary, with the later questions in the survey having fewer respondents.

In Figure 2-1 some basic frequency information on respondent firms is covered. The graphs within are segmented to differentiate the counts of respondents who completely/fully completed the survey versus those who only partially completed the survey. Some observations to be made from Figure 2-1 are:

- Just under 1/3 of the respondents are associated with operations (e.g. managers or supervisors) but this group was less likely to offer fully completed surveys, perhaps owing to a perception of time stress or concern with level of detail required.

- About half the firms describe the footprint of their firm’s facilities as being located within Niagara Region. There are few firms that describe themselves as having a pan-Canadian footprint, but this number is greatly exceeded by firms with a North American or international footprint.
- There are relatively few of the firms that have more than half of their employees working outside Niagara region

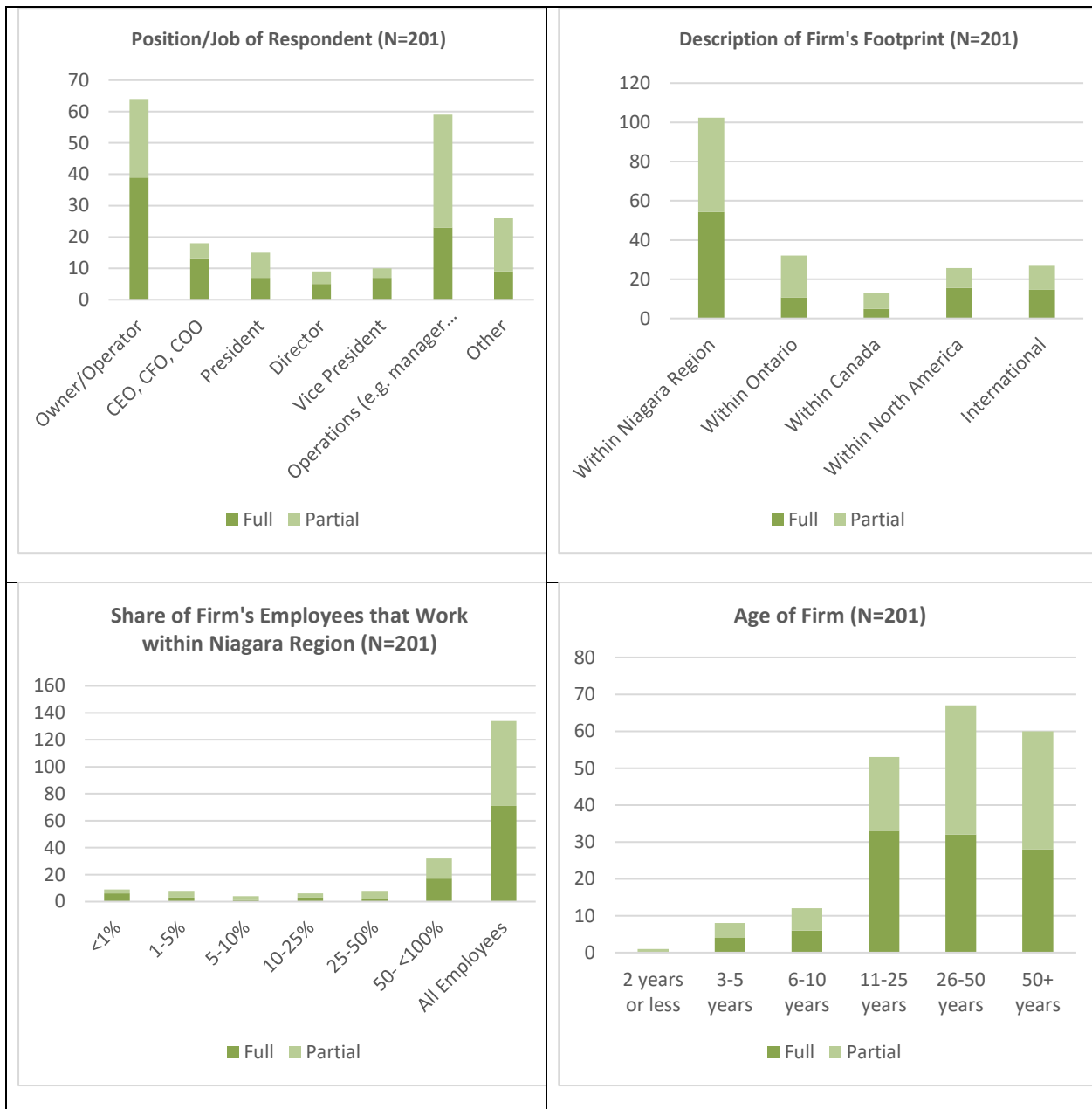


Figure 2-1: Frequency distributions segmented by partial or full survey completions

- Many of the responses responded are from mature firms with the vast majority have been established more than a decade ago. There are very few “brand-new” firms in the sample.

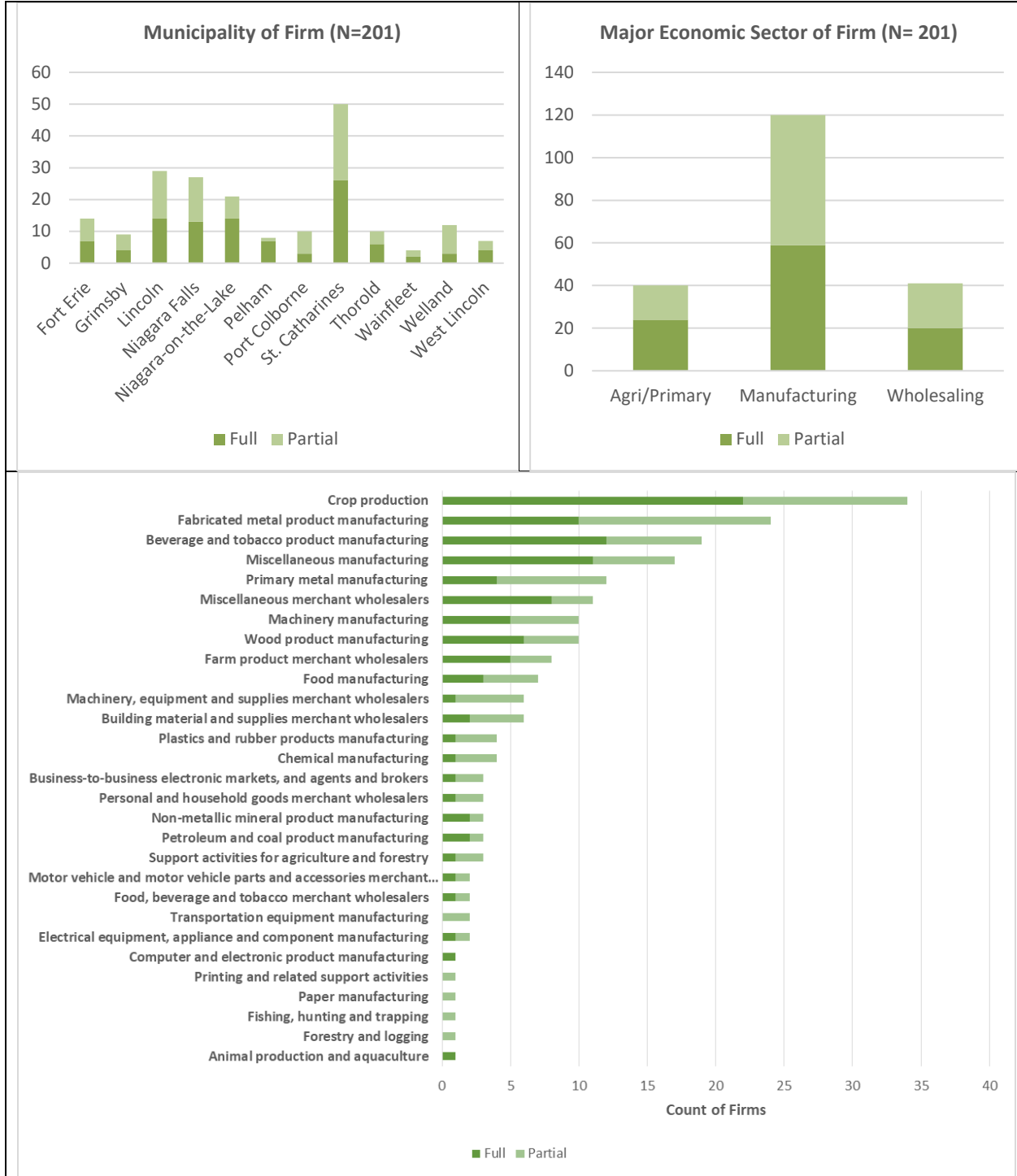


Figure 2-2: Firm Location and Sector Information

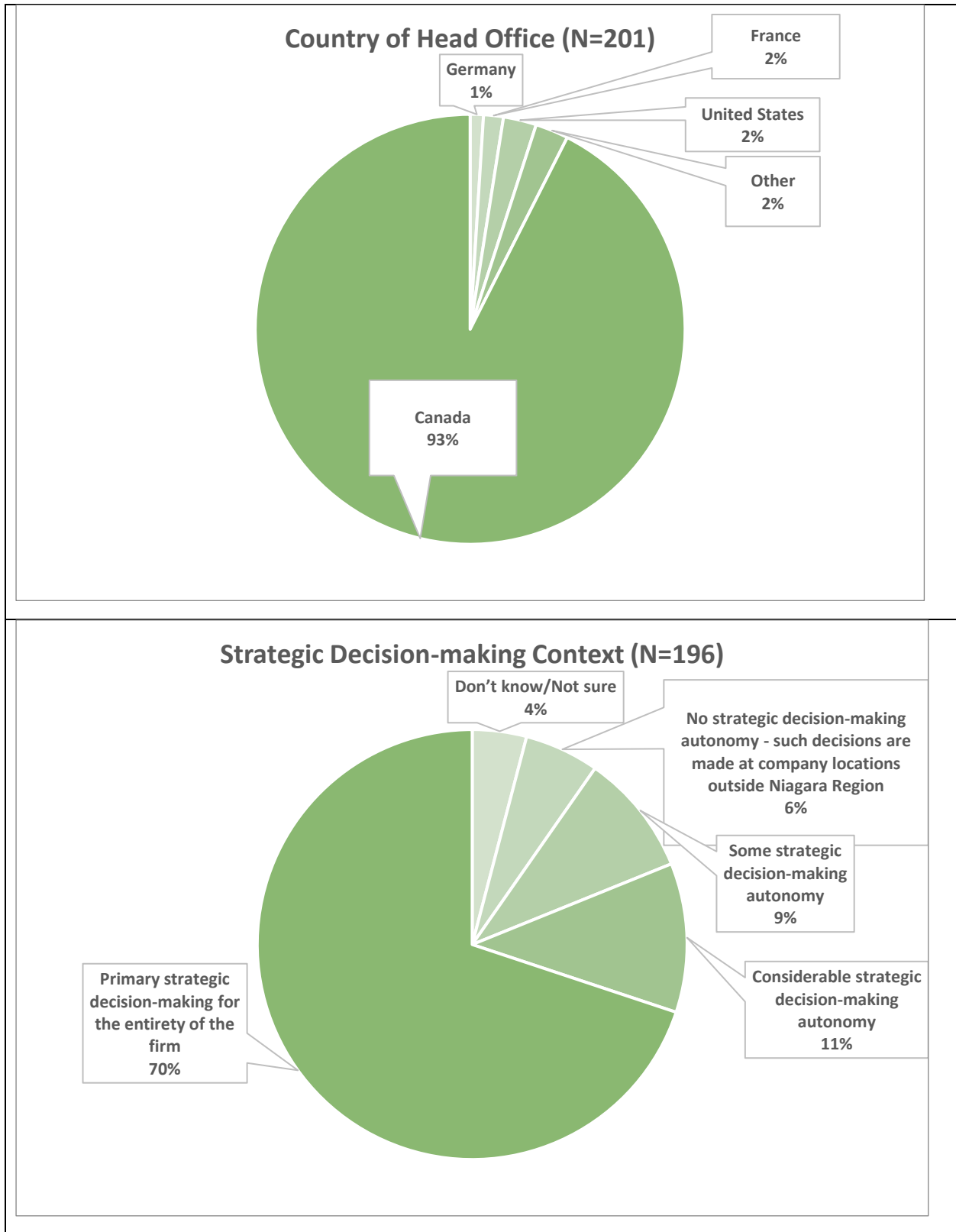


Figure 2-3: Head Office Location and Decision-making Context

- In Figure 2-2 above, note that the sample has representation from all the municipalities in Niagara region. St. Catharines accounts for about a quarter of the responses with the other prominent municipalities being Lincoln, Niagara Falls and Niagara-on-the-Lake
- Figure 2-2 also breaks down broad sectors and more detailed three-digit NAICS classifications. Manufacturers predominate but the largest single NAICS sector is actually crop production. It is also true that a higher proportion of fully completed surveys comes from the crop production sector. The most prominent manufacturing sectors are fabricated metal products, beverage and tobacco and primary metal manufacturing. For wholesaling, there is not a notable concentration in any particular specialization.
- Figure 2-3 illustrates that sampled firms are, to a large extent, run from Canadian head offices. The lower graph shows that strategic decision-making autonomy for firms tends to lie in Niagara region. There are only a handful of cases where Niagara operations are essentially being run based on strategic decisions made elsewhere.

The four charts in Figure 2-4 focus on aspects that relate to the sales patterns of the firms. Somewhat more than ½ the firms fall within the annual revenue range of \$1 million to \$25 million and the number of respondent firms above this level declines as revenue increases. The “prefer not to answer” option is disproportionately selected by those that give partial survey responses. It is possible that those with “intermediate” roles within their firm feel less comfortable with providing the level of detail that was required by the survey. Thought not shown here, agricultural firms tend to account for a larger share of the lower revenue firms.

The e-commerce orientation of the firm is a topic of significant interest as it may say something about the technology orientation of the firm. 60% of respondent firms have replied that their e-commerce share of sales is zero. Among firms with a non-zero share of sales, there are a significant number that are at less than 1% and appear to be in early stages but having 1-5% share of sales is most common. A single firm from the sample claims that all sales are derived from e-commerce.

With regard to other aspects of sales, 12% of the firms declare themselves as one-product companies and another 15% are highly dependent on one product. 27% of the firms could be considered highly diversified in the sense that no product accounts for more than 10% of sales. With respect to share of sales associated with the largest customer, 18% could be considered very well diversified in the sense that no customer accounts for more than 5% of sales. Having a single customer that accounts for up to 50% of sales appears to be quite common.



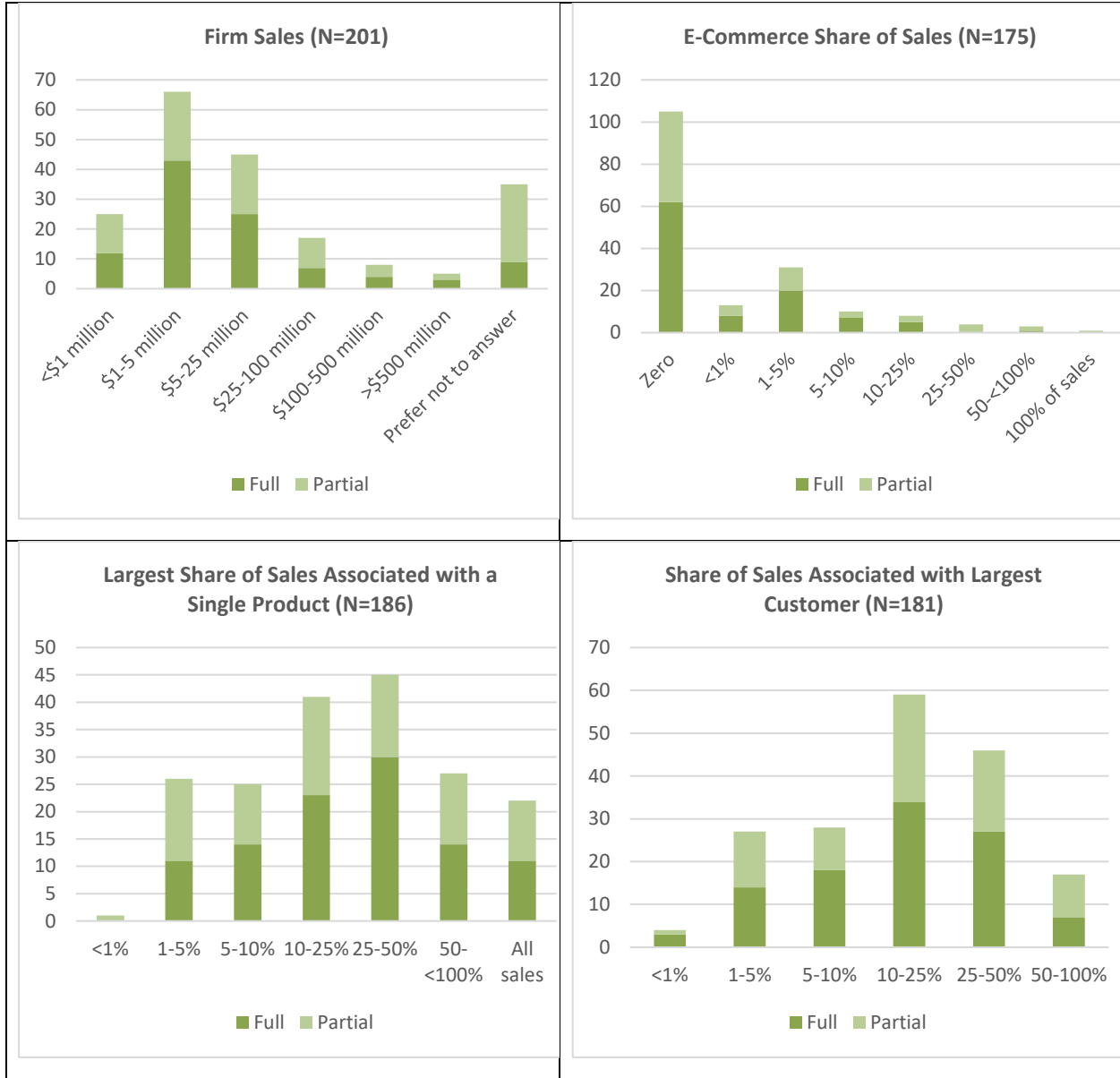


Figure 2-4: Frequency Counts related to Sales/Revenues

Figure 2-5 offers insight into the complexity of operations of Niagara region firms. For one, the typical firm offers many product lines/SKUs with the most common result being 26-50. 30% of sampled firms offer more than 100 SKUs. There are relatively few one or two product companies. Over 2/3 of these firms are seen in the middle chart to export at least one of these SKUs. The share of SKUs that gets exported does seem to decline significantly as the number of SKUs at a firm increase. The lower chart in Figure 2-5 shows that most firms have a substantial or even large number of suppliers to help make their product outputs possible. It is most common for sampled firms to have between 11 and 50 suppliers. Approximately 8% of firms in the sample have more than 100 suppliers which suggests a complex array of inbound supply chains.



Figure 2-5: SKUs and Suppliers

## 2.2 Elements of Supply Chains

### 2.2.1 Costs

There are complications in attempting to capture information about logistics costs elements through a survey. For one, some respondents are likely to be more knowledgeable about such aspects than others. Also, a survey format may not be ideal for certain aspects to be given careful consideration as one responds. There is potential for variations in the precision of the answers/estimates that are given. Nevertheless, respondents were asked to provide estimates related to logistic cost elements and to provide this information to the best of their ability. While there may be individual and sampling variability in responses, it is expected that measures of central tendency (e.g. the mean) should not differ by a large amount from the true population means given also that the sample is of a reasonable size (N=105).

Some effort was dedicated to screening the cost data prior to calculating results. For example, there were a handful of respondents who provided “zero” estimates for all four components of logistics costs as a percentage of revenues, perhaps in an effort to move on quickly to the next survey question. These observations were removed from this portion of the analysis. In the end, the final “logistics costs” data set of N=105 was based on those respondents who had completely and properly answered all the questions related to this portion of the survey.

**Table 2-1: Average Logistics Costs as a Percentage of Revenues by Logistics Element and Sector (N=105)**

Logistics Element	Overall	Agriculture/Primary	Manufacturing	Wholesaling
Transportation	6.86	7.16	6.39	7.80
Warehousing	2.63	1.36	2.96	3.00
Inventory Carrying	5.13	2.07	5.31	7.61
Other	0.84	0.45	0.60	1.9
Total	15.46	11.04	15.26	20.31
Sample Size	105	22	60	23

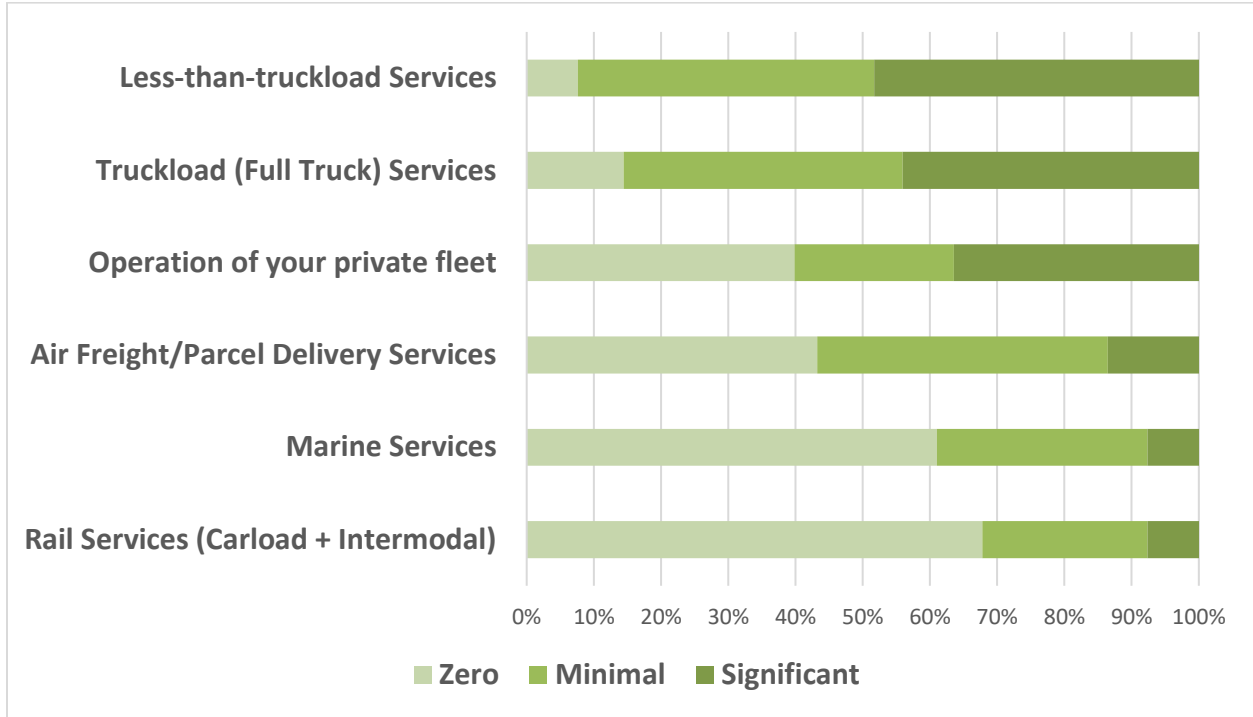
In Table 2-1, the results for logistics costs as a percentage of revenues is summarized. The overall mean estimate across all firms is 15.46% of revenues with transportation costs accounting for the largest share. Overall, logistics costs as a share of revenue are largest for wholesaling and least for agriculture/primary. There does not appear to be significant variation in the share associated with transportation costs across the major sectors represented in the sample. The costs of carrying inventory is the 2<sup>nd</sup> most important logistics costs but this varies widely across the three major sectors and is a substantial cost of doing business in the wholesaling sector. It is much less significant for agriculture most likely due to the perishable nature of products. The costs of warehousing define the third ranking element with agriculture/primary being notably lower with no significant difference in this regard between manufacturing and wholesaling. The sample sizes for agriculture/primary and wholesaling are smaller than would be ideal.

Comparison with other sources [2, 3, 4] that have also informed this analysis may be worthwhile for the interested reader.

While Table 2-1 is based on a question that asked about logistics costs, the results shown in Figures 2-6 and 2-7 are derived from a somewhat involved question that focused on overall absolute expenditures on transportation combined with qualitative assessments of the components of transportation costs.



**Figure 2-6: Firm’s Quantitative Assessment of Annual Expenditures on Transportation (N=105)**



**Figure 2-7: Firm’s Qualitative Assessment of Annual Expenditures on Specific Transportation Items (N=105)**

In Figure 2-6 the most common annual expenditure level on transportation is in the range from \$25,000 to \$250,000 but is no doubt related to the size and nature of the specific firm. Figure 2-7 suggests that almost all firms spend at least some amount on transportation outsourcing in the form of less-than-truckload or truckload services, though in many cases the expenditures are considered minimal. Less than 10% of firms spend significant amounts on rail or marine, with air freight actually being a more prominent item.

**2.2.2 Vehicle Fleets, Modes and Shipment Frequencies**

Approximately a third of firms in Figure 2-7 spend “significant” amounts on operating their own fleet for the movement of goods and Figure 2-8 gives a sense of the transportation assets that firms deploy to that end. Approximately 20% of the firms operate large “semi-trucks” with trailers but the vast majority of these fleets are fewer than five vehicles. Only a tiny minority operate a large fleet of over 25 such large vehicles. There is no company in the sample that operates a large fleet of straight trucks, but small fleets of straight trucks are more common than for the largest of trucks. Over ¾ of firms operate fleet vehicles such as vans or pick-up trucks with a small percentage operating fleets of these that are up to 25 in size. Over 10% of firms operate small passenger vehicle fleets that are composed of between 3 and 10 such vehicles. The results, taken as a whole, suggest that the outsourcing of transportation among Niagara region firms is prominent and this is also confirmed with forthcoming results.

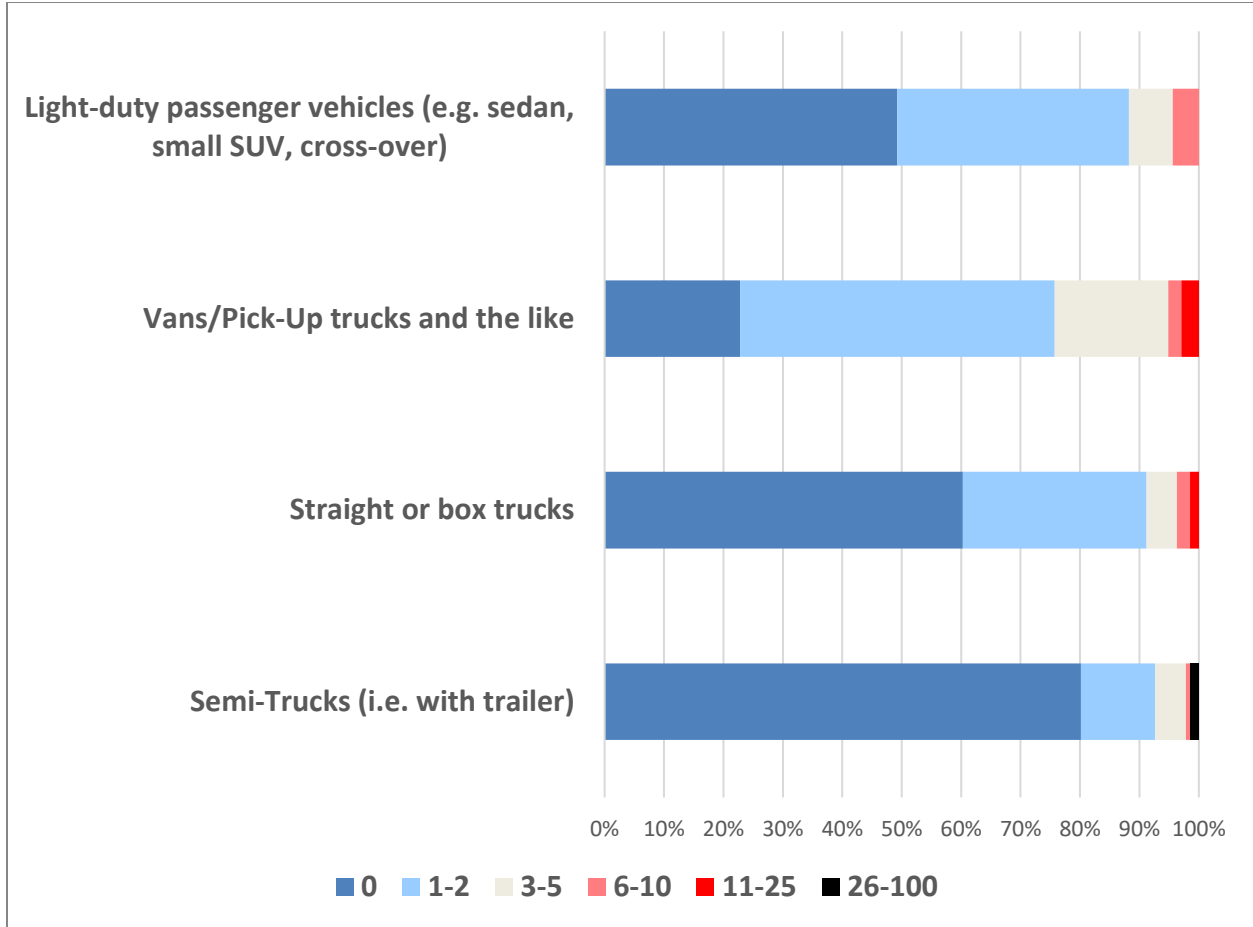


Figure 2-8: Quantities of Firm's Transportation Assets by Vehicle Type (N=136)

Figure 2-7 from the prior section showed that trucking dominates in terms of transportation expenditures and Figure 2-9 communicates the clear message that it prevails in terms of trip/shipment frequencies as well. For most firms in the sample, the arrival/departure of trucks is most accurately described as a daily occurrence. For the marine, rail and air modes the best description of the frequency of such movements is “Never” and this appears especially the case for outbound movements from Niagara firms. Overall, air freight appears to be experiencing slightly more frequent usage than rail and marine is the least frequently used. For firms that do use air, rail or marine modes, weekly or monthly usage appears most common.

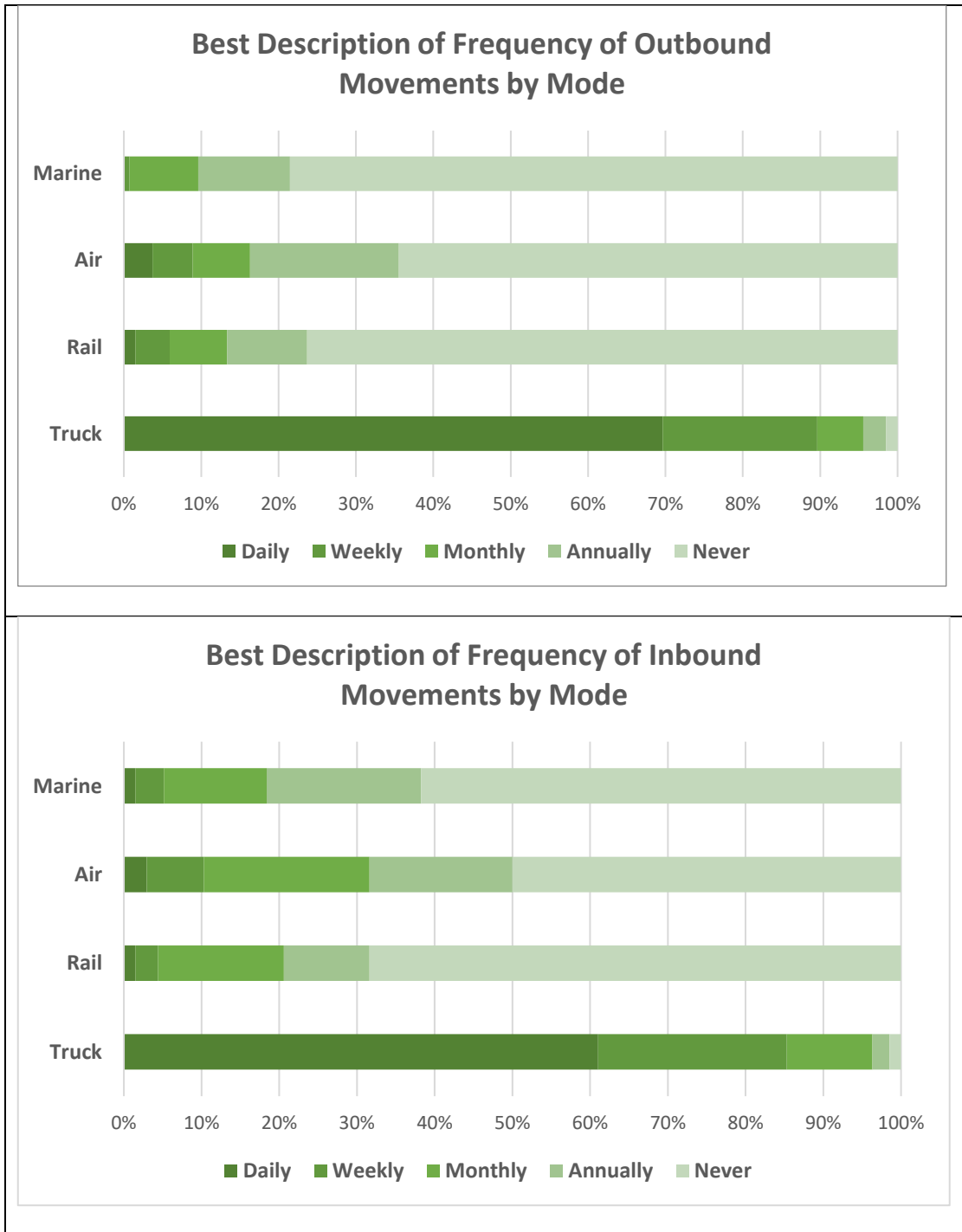


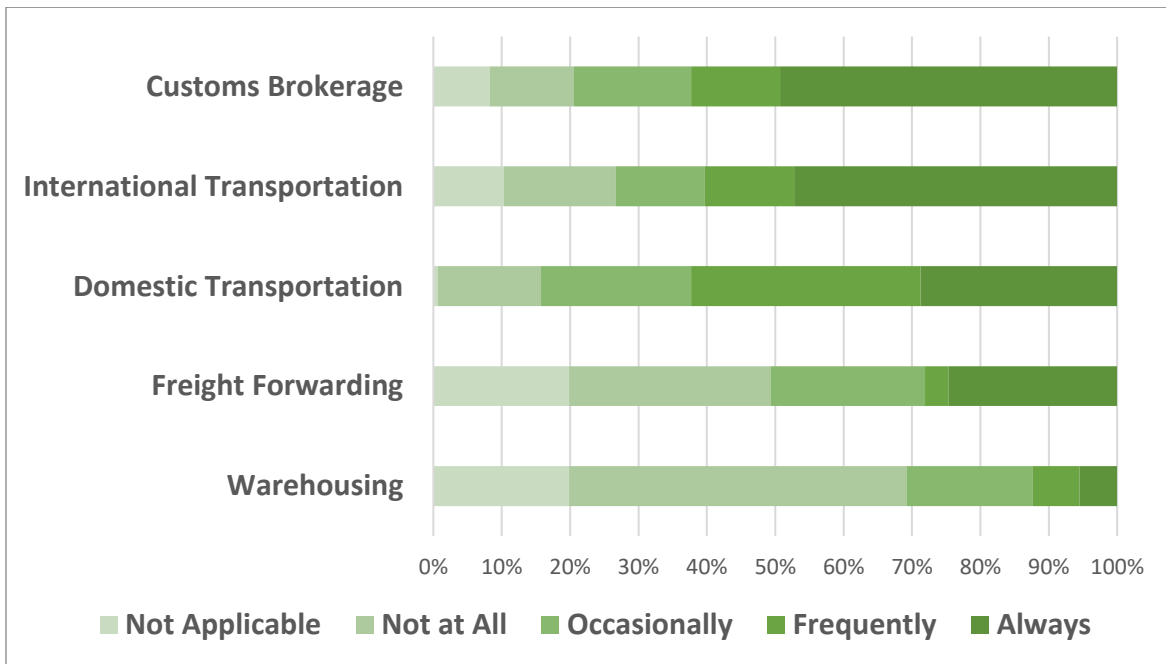
Figure 2-9: Frequency of Outbound/Inbound Movements by Mode (N=136)

**2.2.3 Logistics Outsourcing and 3<sup>rd</sup> Party Logistics**

Transportation outsourcing has been covered to an extent in the prior section in considering cost items, but there are other aspects of logistics outsourcing that require attention including the relationships between Niagara firms and 3PLs.

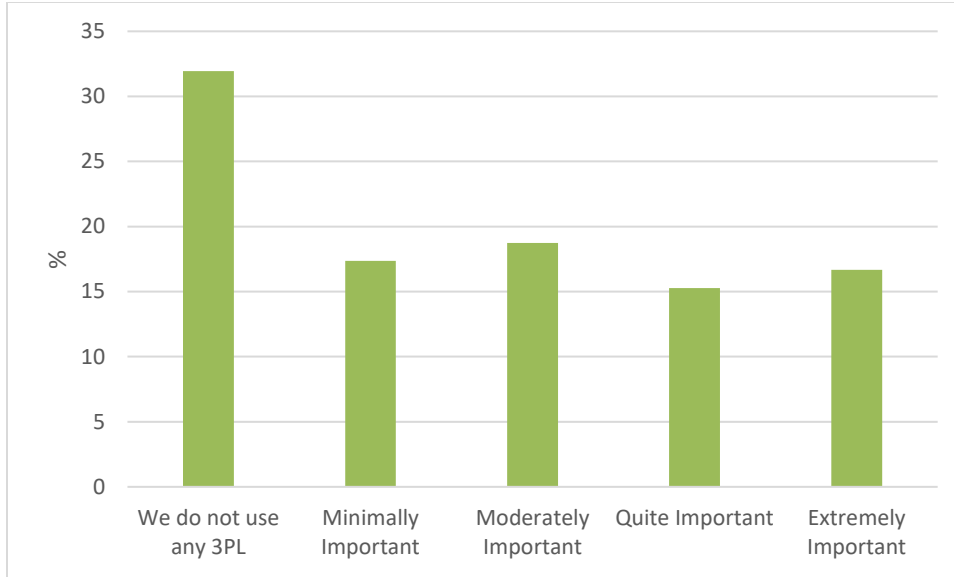
Figure 2-10 examines specific logistics elements and shows the extent to which they are outsourced. Except for domestic transportation, all of the logistics elements are considered “not applicable” by significant percentages of firms, with freight forwarding and warehousing registering at 20% in this regard. Dealing with customs brokerage is the most outsourced element but the results closely mimic the results for international transportation indicating that the two aspects may seem bundled to many firms. If removing firms that do not consider these items as applicable, over half of firms will “Always” outsource customs brokerage and international transportation. About 2/3 of firms are outsourcing domestic transportation “Frequently” or “Always.”

For firms that consider freight forwarding relevant for their operations (Figure 2-10), nearly 2/3 of firms are relying on some outside help to organize the movement of goods from origin to destination but the intensity of outsourcing is less than for other logistics elements. Warehousing is the least frequently outsourced element of all.



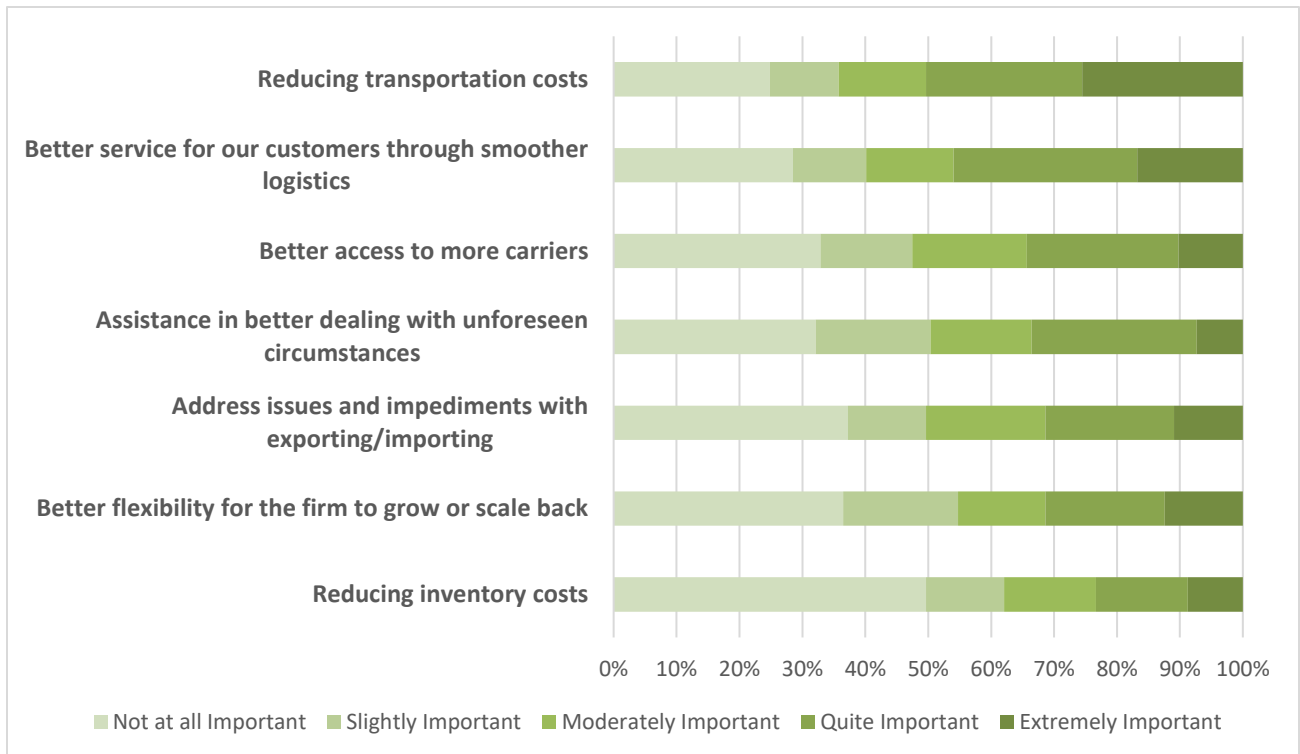
**Figure 2-10: Outsourcing Tendencies by Logistics Element (N=146)**





**Figure 2-11: Importance of Third-Party Logistics Services by Firm (N=144)**

In Figure 2-11 approximately 1/3 of respondent firms do not use a 3PL in any form. For the other 2/3 that do use a 3PL to some extent, the responses are fairly evenly split between the four assessed levels of importance.



**Figure 2-12: Importance Assessment of Potential 3PL Benefits (N=137)**

The items in Figure 2-12 assess the types of benefits that are generally associated with the use of a 3PL firm [5]. The results suggest that prospective or existing clients of 3PLs are generally more focused on what they perceive as fundamental aspects such as reducing transportation costs, serving customers better or using the resources of a 3PL to effectively have more carriers to choose from. The one item that appears to stand out as being the least appreciated is the potential reduction in inventory costs through use of a 3PL.

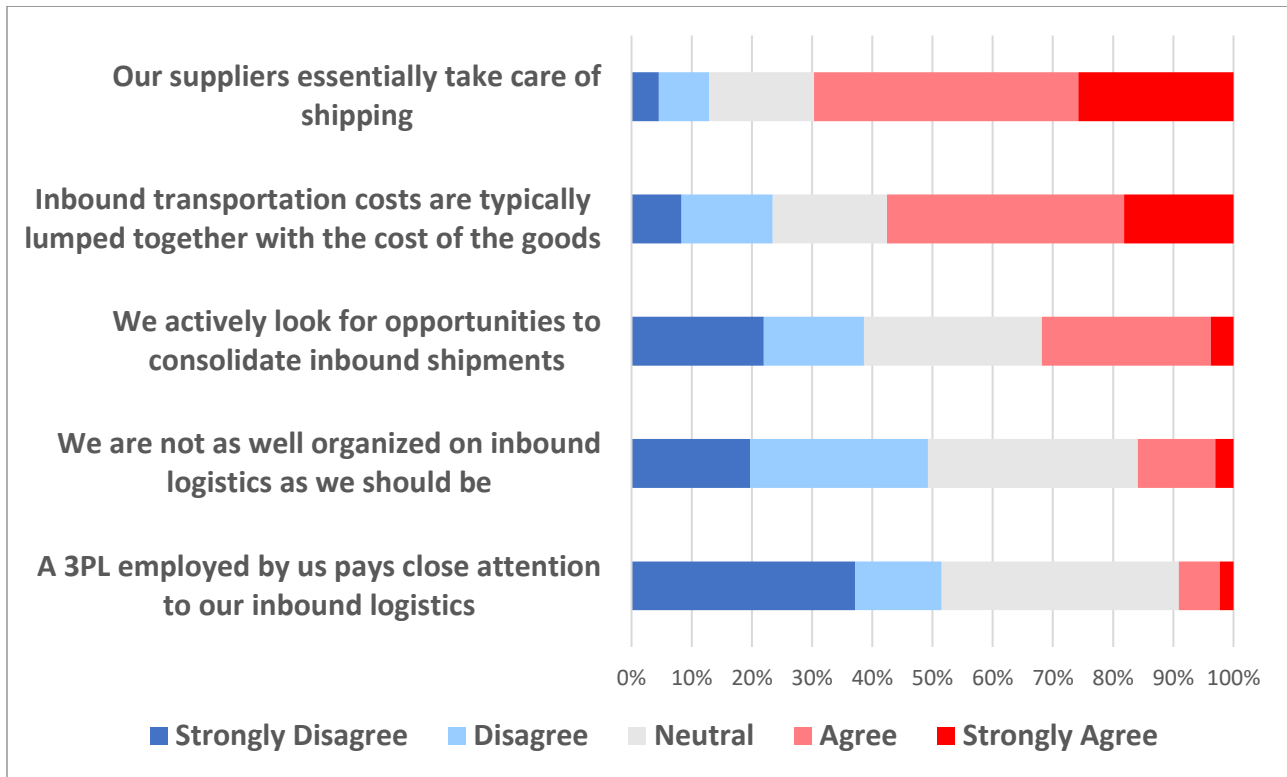


Figure 2-13: Assessments of Aspects of Inbound Logistics

Figure 2-13, which focuses on perceptions of inbound logistics is also partly related to how the firms see outsourcing. One thing that is immediately clear is that inbound shipping movements are largely administered by the selling firm (perhaps through a 3PL) and not by the purchasing firms in Niagara Region – so effectively this element is outsourced. On the other hand, there is fairly strong disagreement that a 3PL hired by Niagara Region firms is paying close attention to inbound logistics. Partly this is because 3PLs are often not hired for any purpose by Niagara region firms.

Regarding other points, there is strong agreement that inbound transportation costs are lumped together with the costs of the goods. This lack of transparency may make it more difficult for the Niagara region firm to maximize cost efficiencies. The firms tend to deny that they could be better organized on inbound logistics but at the same only about 1/3 of firms actively seek to consolidate inbound shipments.

## 2.3 Trade Patterns

The primary themes of interest in this section are exporting and export diversification beyond the United States. However, the approach in the survey was to ask equally about importing and exporting relationships. The philosophy was that understanding the existing patterns of both would add clarity and provide insight on export diversification.

### 2.3.1 Geographical Patterns on Revenues and Sourcing

The survey asked respondents to characterize the geographical profiles of their firms in significant detail but did so in a reasonably user-friendly way. There was a question that examined the geography of a firm's revenue and the geography of where inputs were sourced. For each of the two related survey questions, respondents were asked to estimate (via dropdown menus) the percentages associated with geographies such that the result would sum to 100%. This constraint was enforced.

Figure 2-14 illustrates the average outcome of this process by major sector with red colours being associated with internationalization and blue colours with domestic activities. It becomes immediately clear that Niagara firms are much more internationalized on the input side than on the revenues side. The gap is particularly noticeable for wholesaling which seems to focus substantially on importing goods and distributing them predominately in Ontario. Wholesaling firms export little beyond the United States. Internationally, manufacturing is more balanced though there is substantially more sourcing of goods from beyond the United States than there is revenue generation beyond the United States. The agricultural/primary sector is on average the least focused on provinces other than Ontario and particularly so in terms of revenue generation. Interactions within Ontario are really quite prominent for all sectors and especially for agriculture/primary.

The reader who is interested in seeing more detailed geographical patterns on a firm-specific basis is invited to consult Figures 5-1 and 5-2 in Appendix A. These additional figures help to compensate for the main weakness of Figure 2-14 – the fact that it shows only averages. The results in the appendices show clearly that some firms are highly internationalized while others are almost entirely localized in their operations.

Figure 2-15 provides further information about how firms connect with other countries through exporting and importing. The results show that importing is more pervasive than exporting (i.e. there are many more firms in the sample which have no exporting relationships with other countries than is the case with importing relationships).

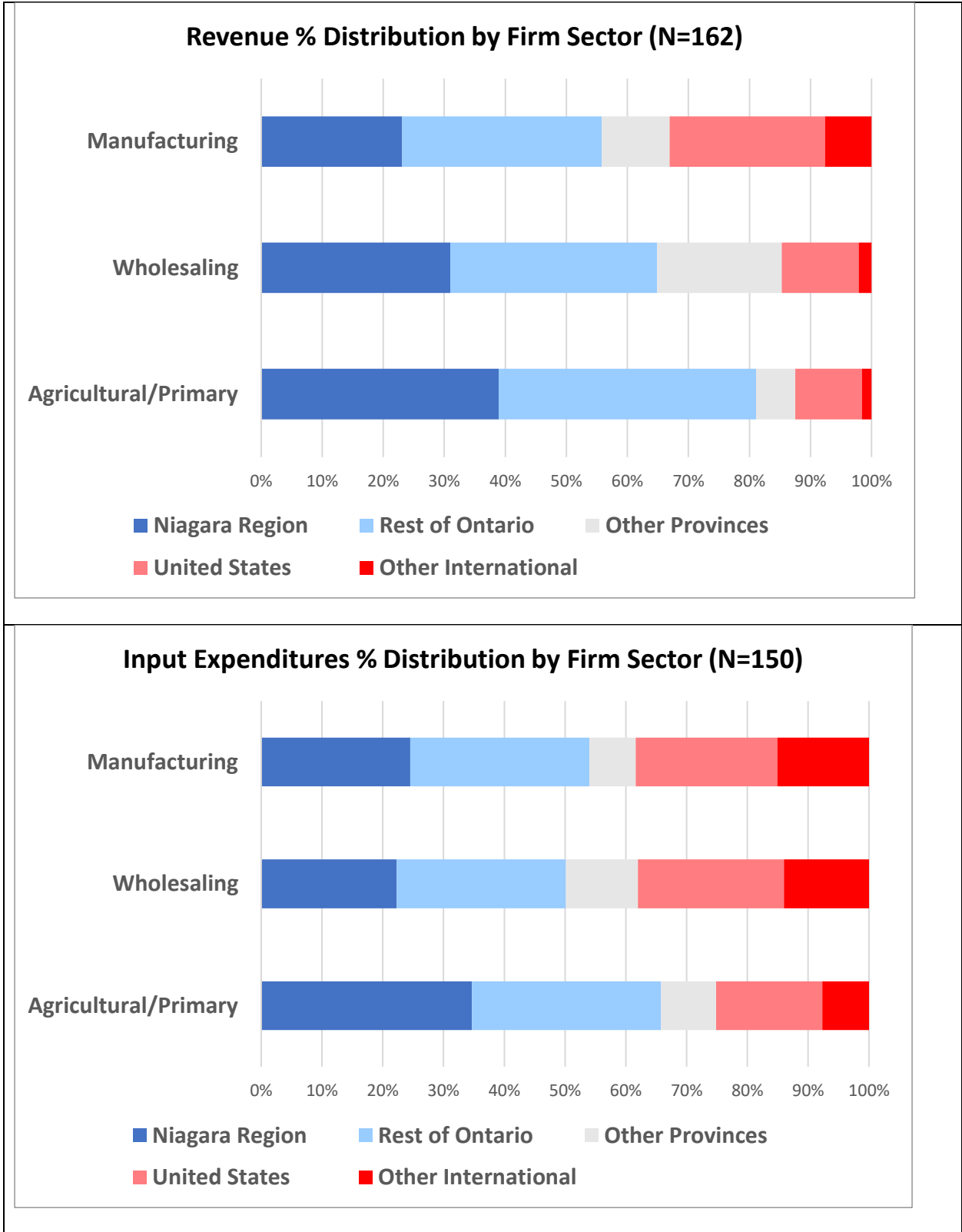


Figure 2-14: Geographical Allocation of Revenues and Input Expenditures by Sector

Conversely, there is evidence in Figure 2-15 that exporting is more likely to be done “in a big way” than importing. There are several firms that export to more than 25 countries but very few that import from that many. But there is a large share of firms that import from 3 to 5 countries.

Figure 2-16 reveals that it is more common to have trade linkages with a large number of U.S. states compared to a large number of countries and this appears to be true on both the export and import sides. There is again the tendency that exporting firms are likely to export to more states than they would import from. It may well make sense to sell in every US state but the same could not be said for sourcing inputs.

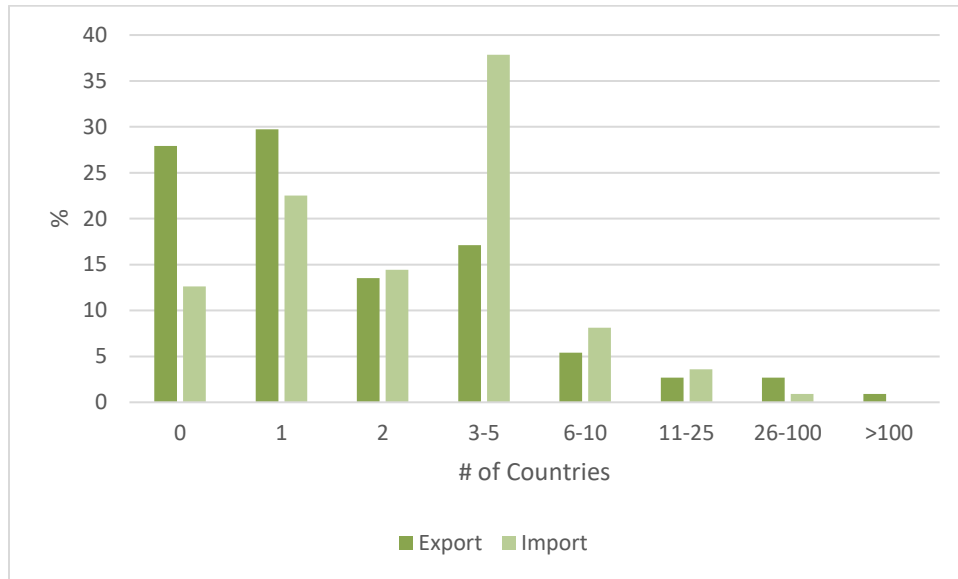


Figure 2-15: Percentage Distribution of Exporting/Importing International Linkages (N=111)



Figure 2-16: Percentage Distribution of Exporting/Importing Linkages with U.S. States (N=108)

### 2.3.2 Identification of Prominent Countries and U.S. States as Trading Partners

Over the next several pages are a series of pie charts that indicate the specific countries or U.S. states with which Niagara region firms have a trading relationship. On each page there is an upper chart that shows which countries/states are top ranked by firms and a lower chart that shows which countries/states are 2<sup>nd</sup> or 3<sup>rd</sup> ranked by firms.

For exporting, Figure 2-17 shows that two countries (the United States and China) define the top-ranked export destination for 90% of firms. While other countries do receive the top-ranking, the number of cases is very small. The bottom chart shows that the identities of 2<sup>nd</sup>/3<sup>rd</sup> ranking exporting countries is much more nuanced and diversified. For 16% of firms, the U.S. is ranked 2<sup>nd</sup> or 3<sup>rd</sup>.

For importing, Figure 2-18 shows that the top-ranked importing source is much more diverse than is the case for exporting destinations. The U.S. is again the most prominent but the share for being top-ranked is less than two-thirds. Countries other than the U.S. or China account for 22% of the top rankings for importing but only 10% of the top rankings for exporting. Like the lower exporting chart, the 2<sup>nd</sup> or 3<sup>rd</sup> ranking import countries is diverse. It is interesting to note that Mexico is a significant exporting destination, which will likely be linked to the automotive supply chain but is not a prominent source for imports. Germany shows up as a prominent 2<sup>nd</sup> or 3<sup>rd</sup> source for imports but less so for exports. The U.S. is more likely to be 2<sup>nd</sup> or 3<sup>rd</sup> ranked as an importing source rather than as an exporting destination.

Note that the discussion on Figures 2-19 and 2-20, having to do with U.S. states, takes place on the pages that follows those charts.

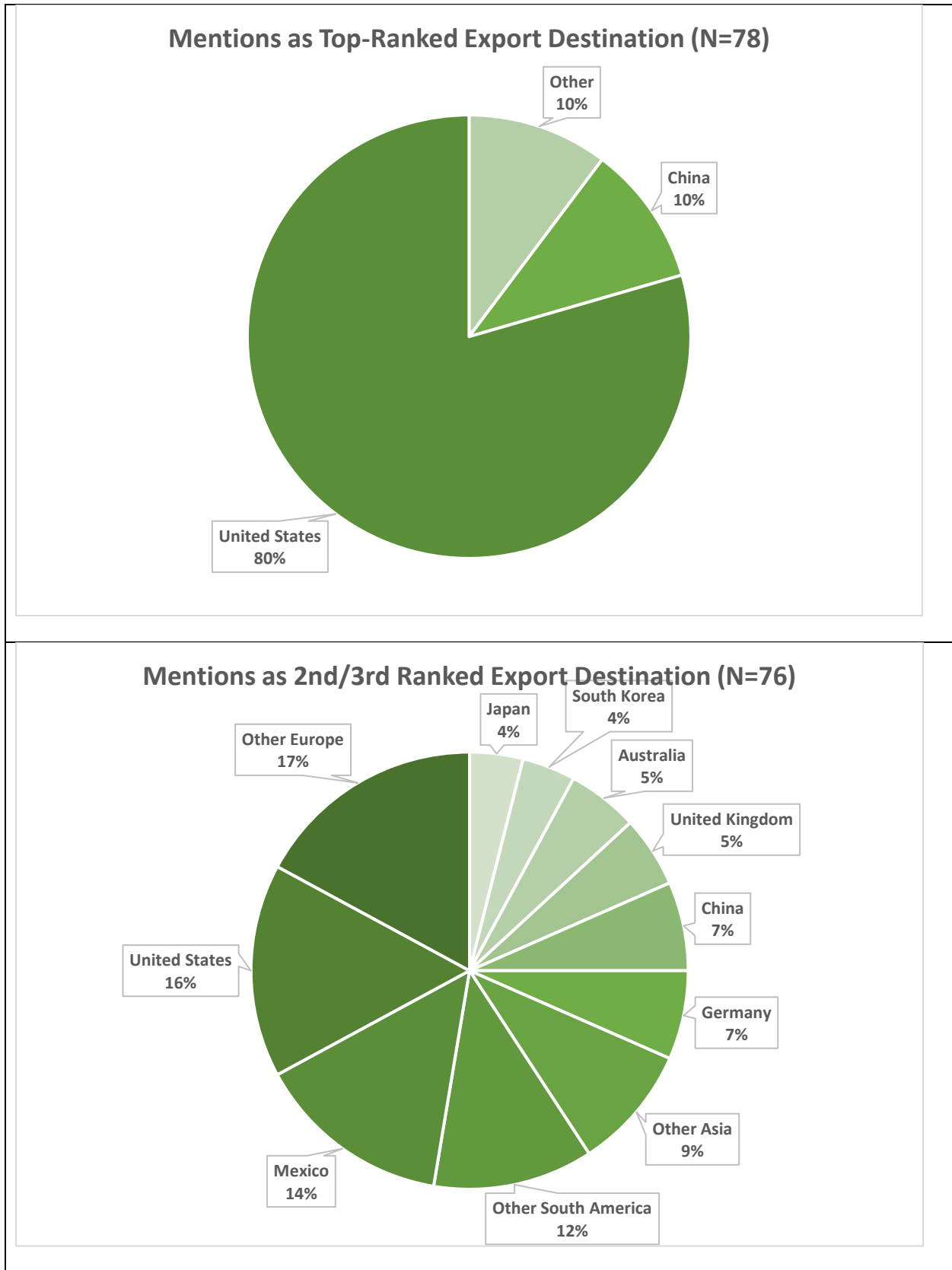


Figure 2-17: Top Ranked Exporting Countries for Niagara region Firms

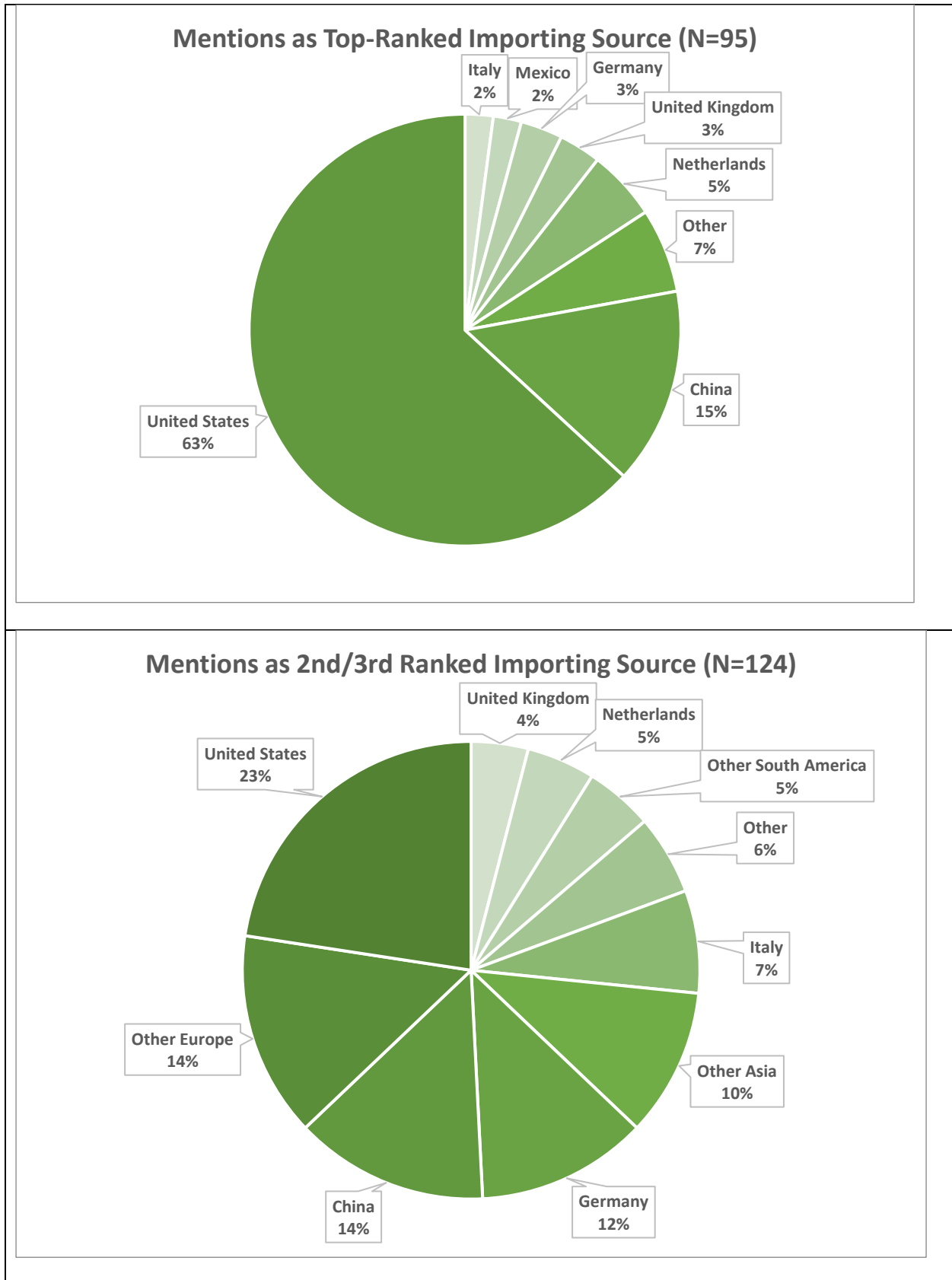


Figure 2-18: Top Ranked Importing Countries for Niagara region Firms



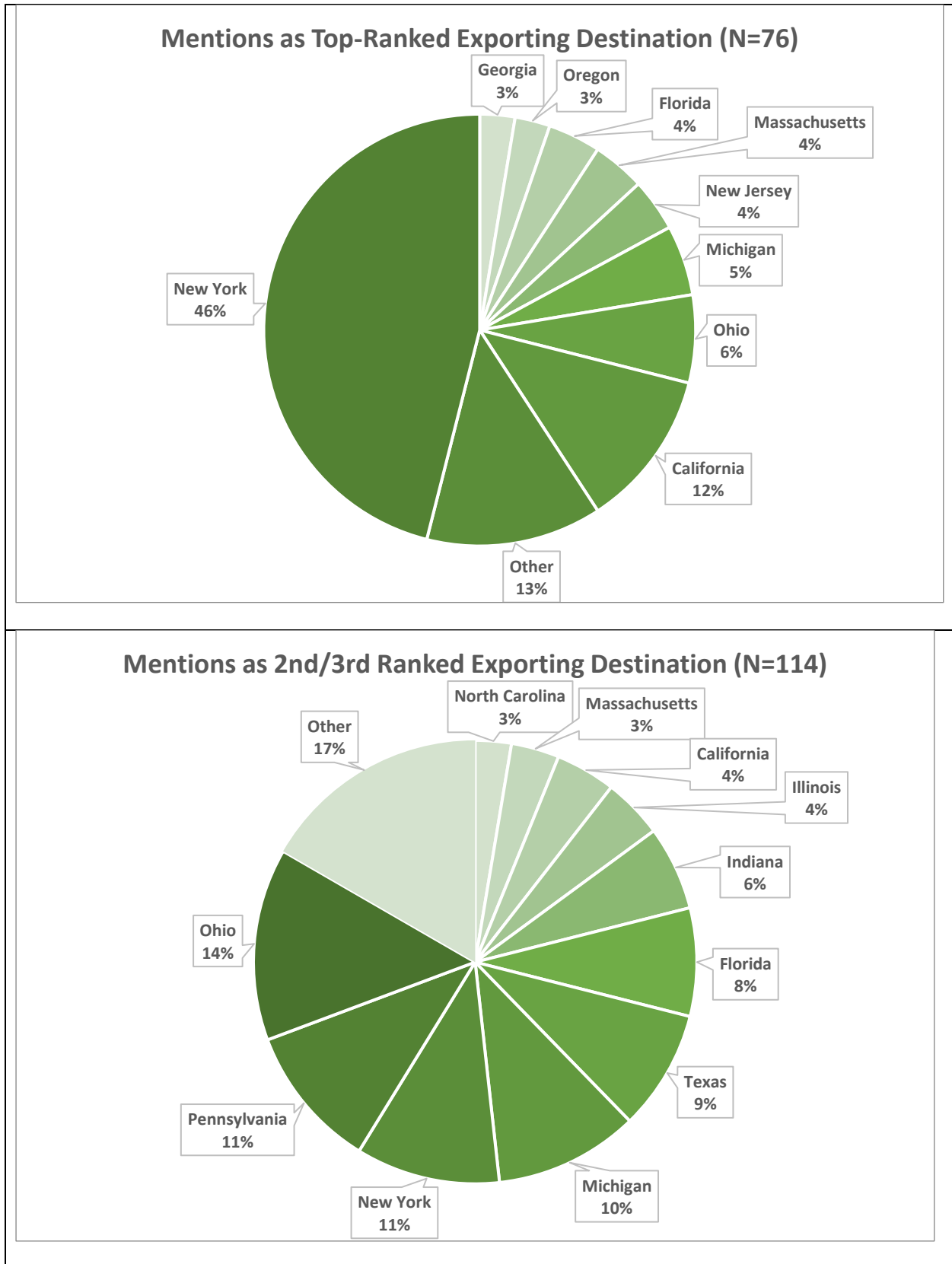


Figure 2-19: Top Ranked U.S. States for Exports from Niagara region Firms

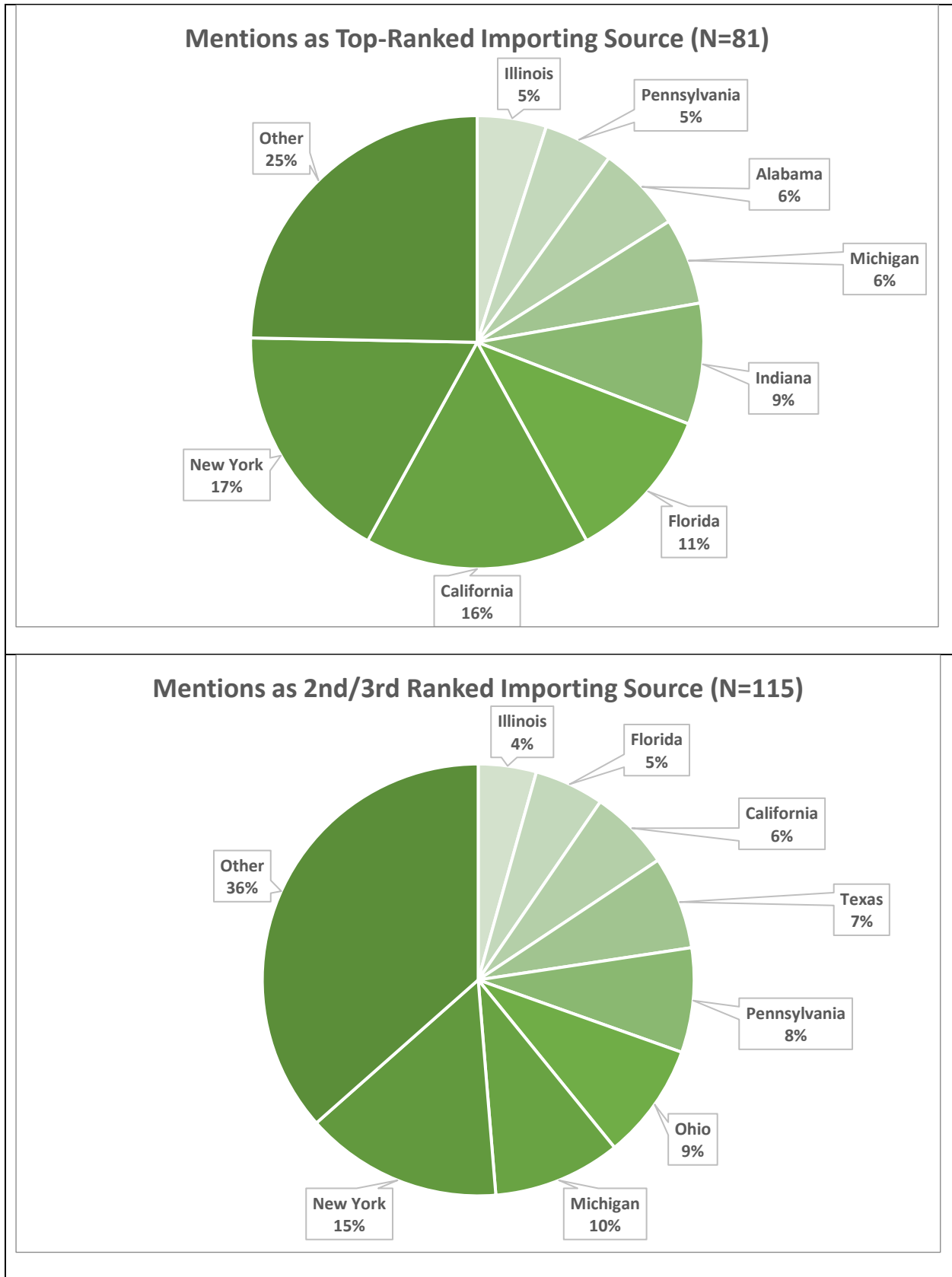


Figure 2-20: Top Ranked U.S. States for Imports to Niagara region Firms

On the prior two pages are a similar set of four charts that deal with connections of Niagara region firms to the United States at the level of individual states. In general, we see a much more diversified pattern for connections to U.S. states than we do for connections to other countries. Strong friction-of-distance affects in the magnitude of trading relationships will explain much of this pattern. The nearby New York state stands out as the dominant top-ranked export destination (Figure 2-19), but several other states are prominent, most of them eastern or central. California is top ranked for many firms which is noteworthy since it is not nearby. For the 2<sup>nd</sup> or 3<sup>rd</sup> ranking states in terms of exporting destinations, the pattern is again diversified but the states that stand out are either heavily populated, nearby or both.

Considering states as import sources in Figure 2-20, the most obvious result is that New York state is much less prominent as a top-ranked import source than it is as an export destination. It is interesting to note that the distant California is almost equally likely to be top ranked as an importing source by firms. For the 2<sup>nd</sup>/3<sup>rd</sup> ranked states the dominant theme is that over one-third of the named states fall within the “Other” category. This demonstrates that a very large number of U.S. states indeed are involved with Niagara region firms as prominent sources for imports. This result again reinforces the prevailing theme, that also applies with countries, that more sophisticated patterns of interaction are involved with inputs/imports than is the case with exports for Niagara region firms.

## 2.4 Exporting Attitudes and Challenges

In Figure 2-21 respondents were asked to assess their level of agreement with a series of statements on exporting. Many of these statements, and others in this section to follow, were developed based on a review of the literature [6, 7, 8, 9, 10, 11, 12], which suggested key aspects that might affect whether a firm would have exporting as part of its repertoire. The statements are sorted in descending order of the level of agreement that firms, in aggregate, expressed. Many of the statements are associated with fairly high levels of neutrality/uncertainty suggesting that some may have required more thinking than the respondent was willing to do. No doubt some of the pattern reflects genuine uncertainty.

A few noteworthy points are as follows:

- A current prominent theory of exporting [13, 14] is that some firms are “Born Global” and they see exporting as immediately central to their future starting from initial firm planning/ time of inception. Only about 10% of firms strongly agreed with the notion that exporting is part of the firm’s “DNA” but somewhat less than 30% offer some level of agreement.

- Less than 10% of firms disagree with the notion that new domestic tax incentives to encourage exporting would be useful and such incentives also have the strongest level of agreement.
- There is strong agreement that exporting essentially improves a firm and this is based on two statements having to do with 1) exporting enhancing the potential for innovation and 2) making a firm more capable and resilient.
- There are fairly high levels of agreement with the notion that the firm challenges or revisits past assumptions about their business (a characteristic that is generally considered beneficial for exporting potential) but it appears that many firms of the region could enhance their exporting potential by attracting talent that has previous experience with a multi-national firm.

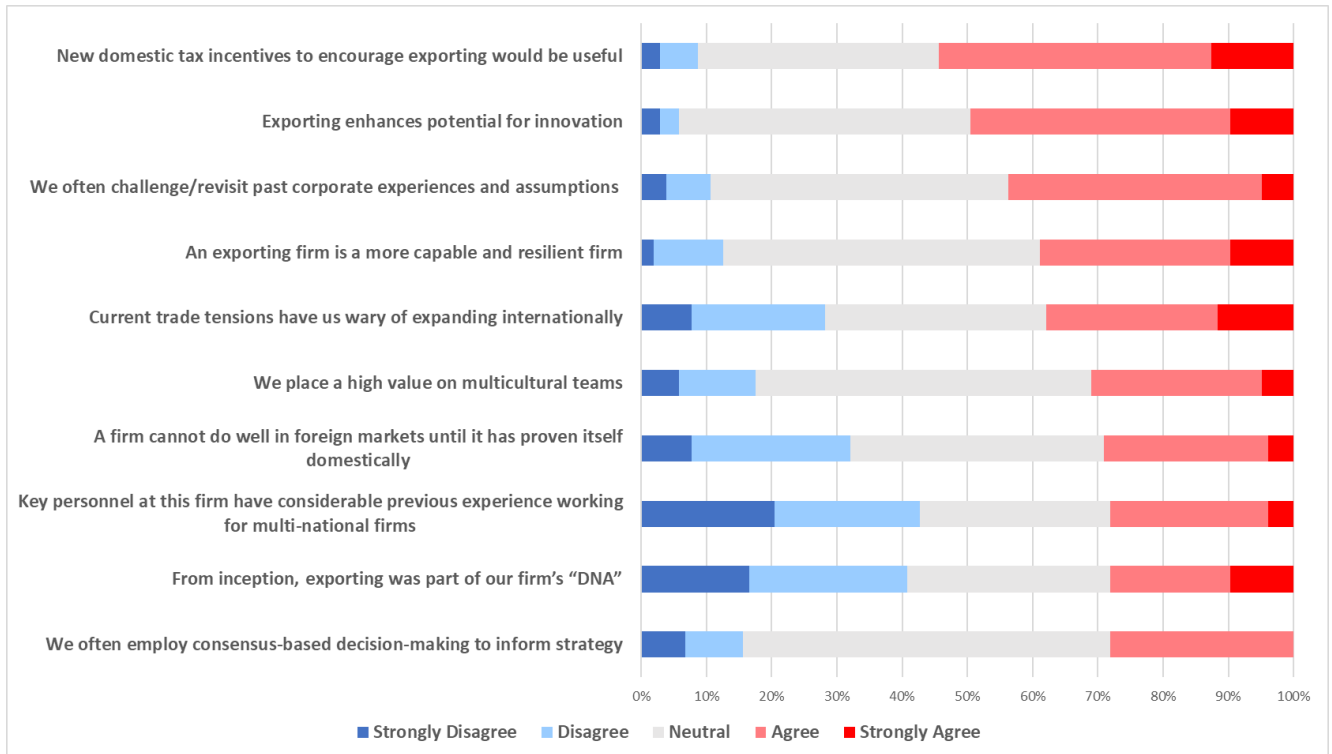
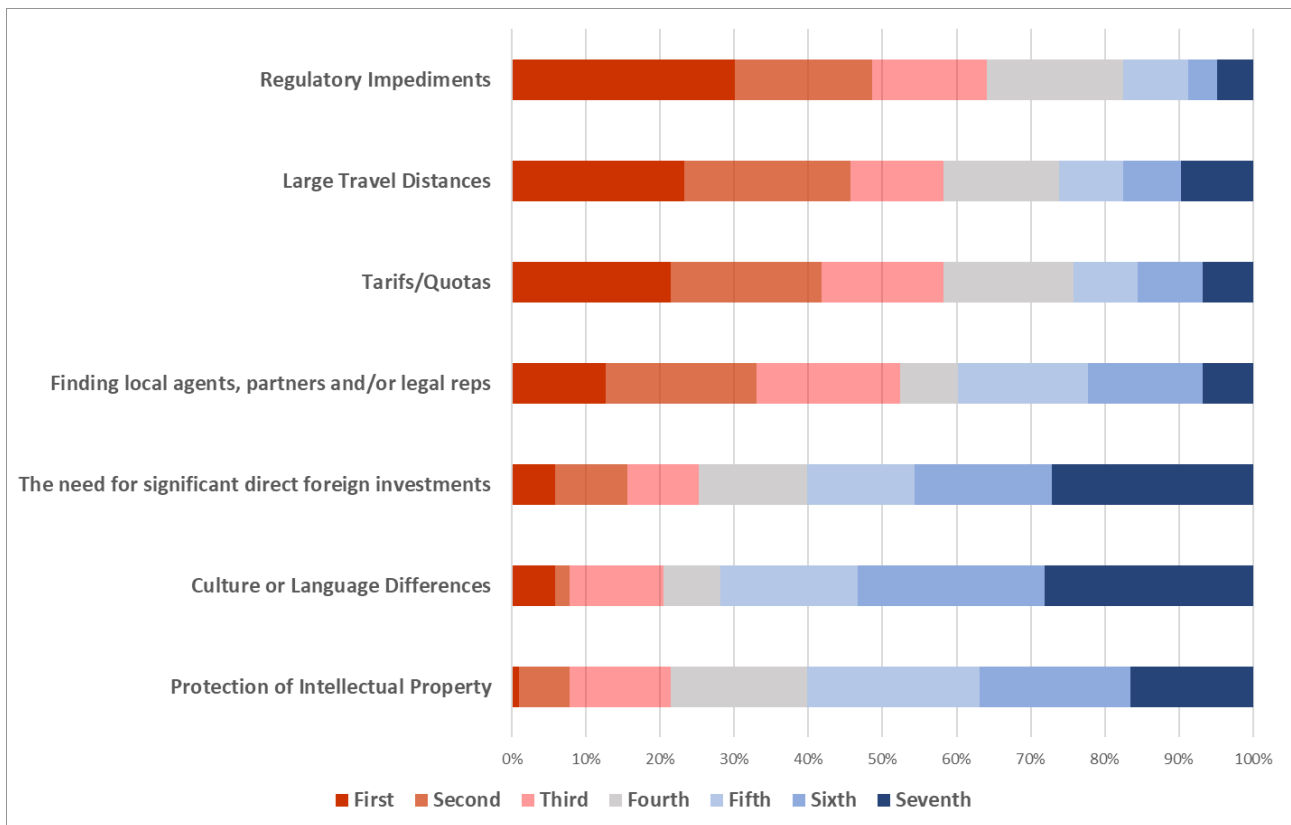


Figure 2-21: Opinions on Selected Exporting-Related Aspects (N=103)

In Figure 2-22 below, the results of an exercise are shown where respondents sorted a series of potential exporting challenges (using either point and click or drag and drop) from most to least important. As with other similar questions in the survey, the exercise was capped at seven items to limit the cognitive burden to answer. The question was posed to exporters and non-exporters alike noting that one group would answer based on experience and the other based on

perception. Respondents were asked to focus on exporting beyond the United States to help keep results aligned with the diversification theme.

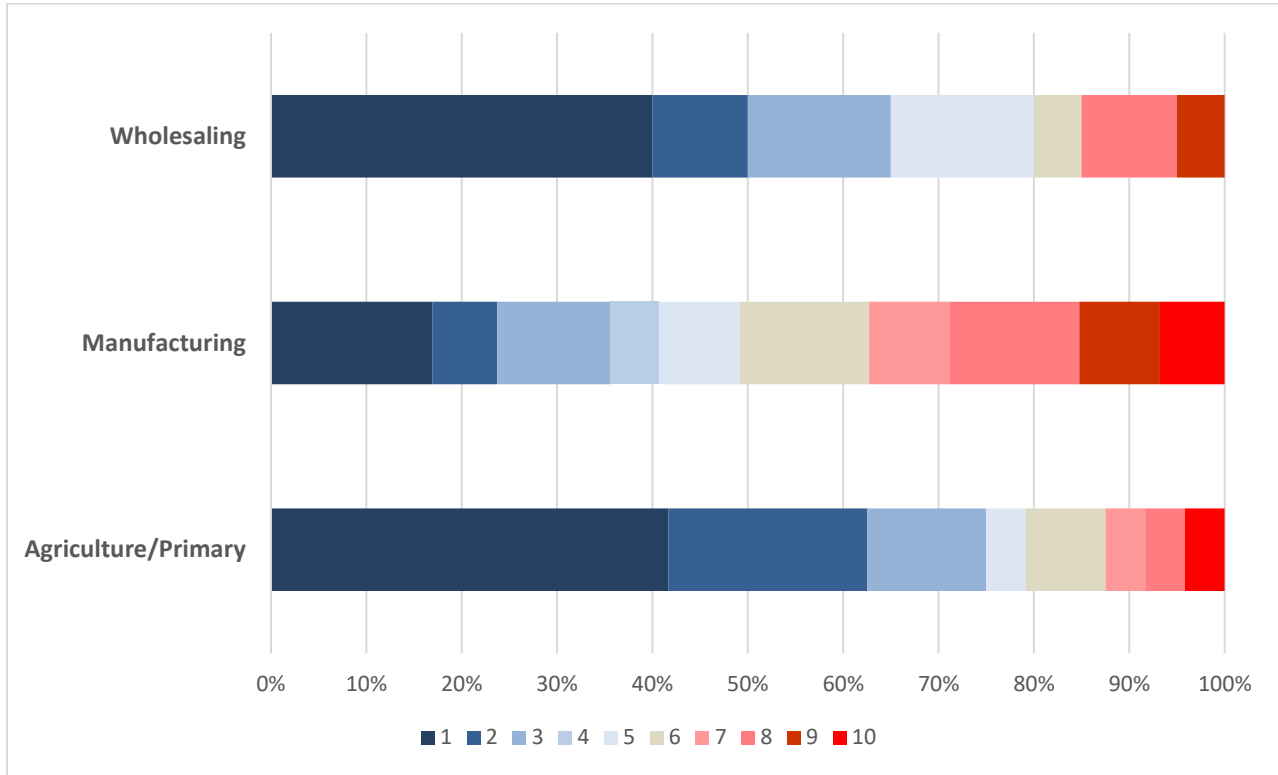
In terms of results, general regulatory impediments and also the more focused item to do with tariffs and quotas are the challenges that are ranked most highly by respondents. It appears that “the rules” are often perceived as getting in the way. Respondents also seem to be confirming that there is a strong “friction-of-distance” effect that gets in the way of international trade. Potentially this is more of an issue for smaller firms than larger firms where the principals of the former are perhaps reluctant to do all the travel that is required. A prominent Niagara winery noted in the 2019 consultation process [1] “If you don’t go, you won’t know” in reference to the need to develop export markets through in-person visits. The challenges associated with finding local partners of differing types is the last of the top four items that receive a lot of high importance rankings.



**Figure 2-22: Ranking of Top Challenges to Exporting (beyond the United States) (N=103)**

At the bottom of the rankings are the protection of intellectual property and culture or language differences. The low IP rating is perhaps surprising when it is considered that there has been so much publicity about the risks to intellectual property through doing business in China, for example. It is also interesting that cultural/language aspects rank so much lower as important

challenges than the travel distances involved. Finally, there does not seem to be large concern with the significant direct foreign investments that might be required.

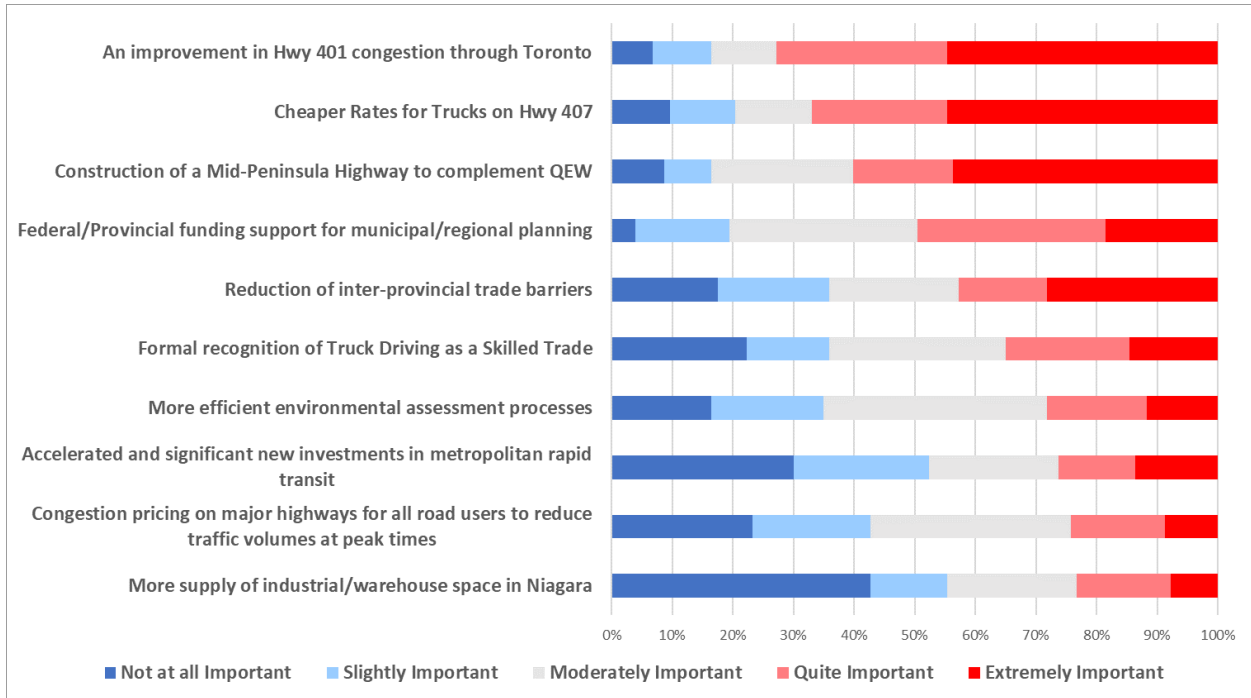


**Figure 2-23: Firm Self-Assessment of Untapped Exporting Potential (N=103)**

Also related to the export diversification theme (Figure 2-23) is a question that asked respondents to rank their firm from 1 to 10 for its potential to export more beyond Canada and the United States. A score of 1 means no potential on the horizon while a score of 10 indicates “massive opportunity and potential.” The results in Figure 2-23 are segmented by the sector of the firm and reveal that by far, there is more perceived export diversification potential in the manufacturing sector. Wholesaling and Agriculture/Primary perceive less potential and the patterns among these two are somewhat similar.

## 2.5 Regional Pressures and Needs

The survey included a significant section on issues that were more regionally oriented in nature. Suites of statements were included that assessed the level of importance that respondents assigned to a set of supply chain related improvements. Respondents also went through a ranking exercise to assess “delay types” that applied to the region and also a ranking of potential stresses on regional supply chains.



**Figure 2-24: Importance Ratings for Potential Supply Chain Related Improvements (N=103)**

In Figure 2-24 the list of potential improvements is assessed via the survey responses. These constitute the leading “prescriptions” that came out of the MITL interview and forum process in 2019 [1]. The results suggest that most of the pre-occupation with improvements is focused on highways. Interestingly, the two improvements that were considered most important would not reside in Niagara region (i.e. Hwy 401 congestion and cheaper tolls on Hwy 407). However, the construction of a Mid-Peninsula highway was also viewed as quite important. A relatively high level of importance was assigned to the concept of “funding to plan” whereby upper levels of government help to pay for required local planning, but a higher level of extreme importance was assigned to finding ways to reduce inter-provincial trade barriers. The data from other questions in the survey certainly suggests that trade to other provinces is somewhat muted.

Considering some of the improvements that were least important to businesses, there seemed to be a lack of concern about industrial/warehouse space in the region. While this issue was raised during the 2019 process, most notably by the meat processing sector, it could be a sector-specific issue for Niagara. Businesses often tend to be against measures that increase their costs and this could be the main reason for the lack of interest in having congestion pricing introduced to reduce traffic levels. Respondents would appear to prefer infrastructure investments over pricing measures to reduce congestion. There is also a lukewarm response to the potential improvements that would come from significant investments in transit. Possibly, a lack of interest in transit is linked more to Niagara region firms than might be the case in more densely

populated areas. Finally, medium assessments were made for recognizing trucking as a skilled trade and streamlining environmental assessments.

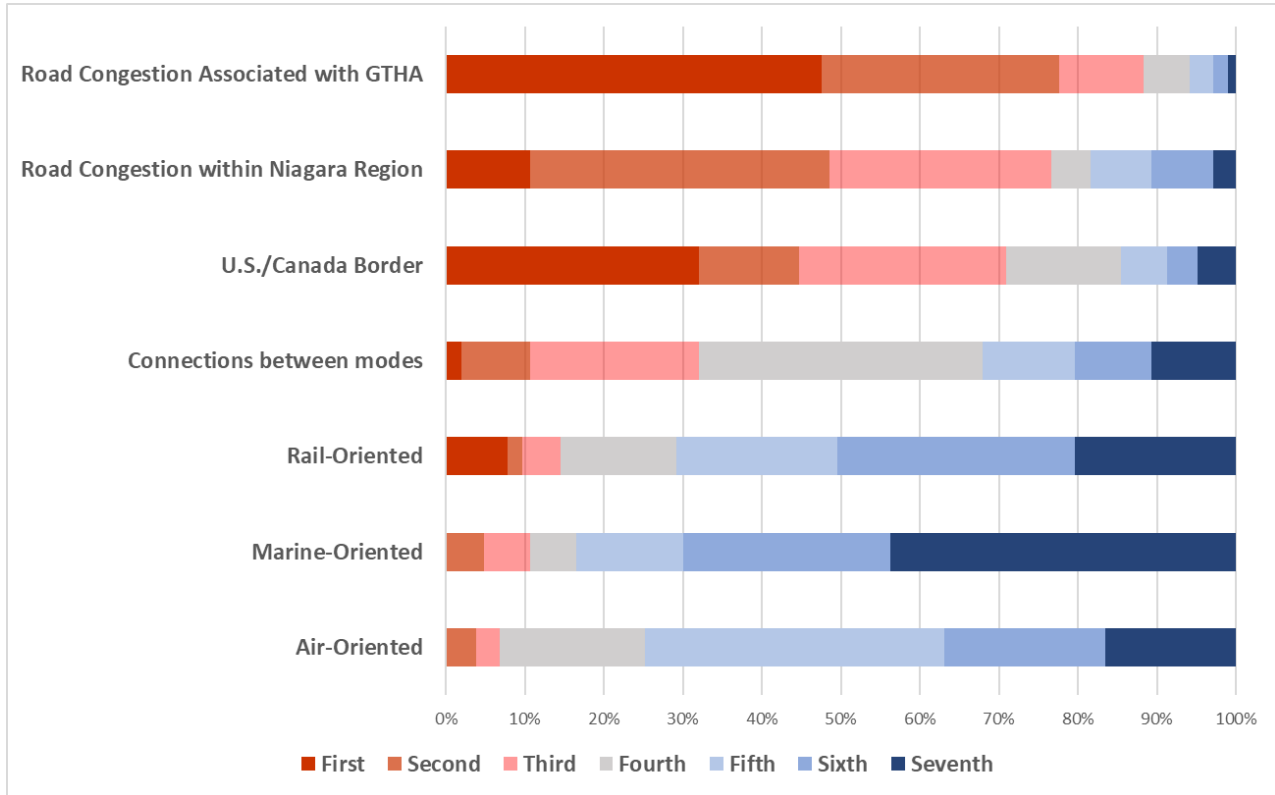
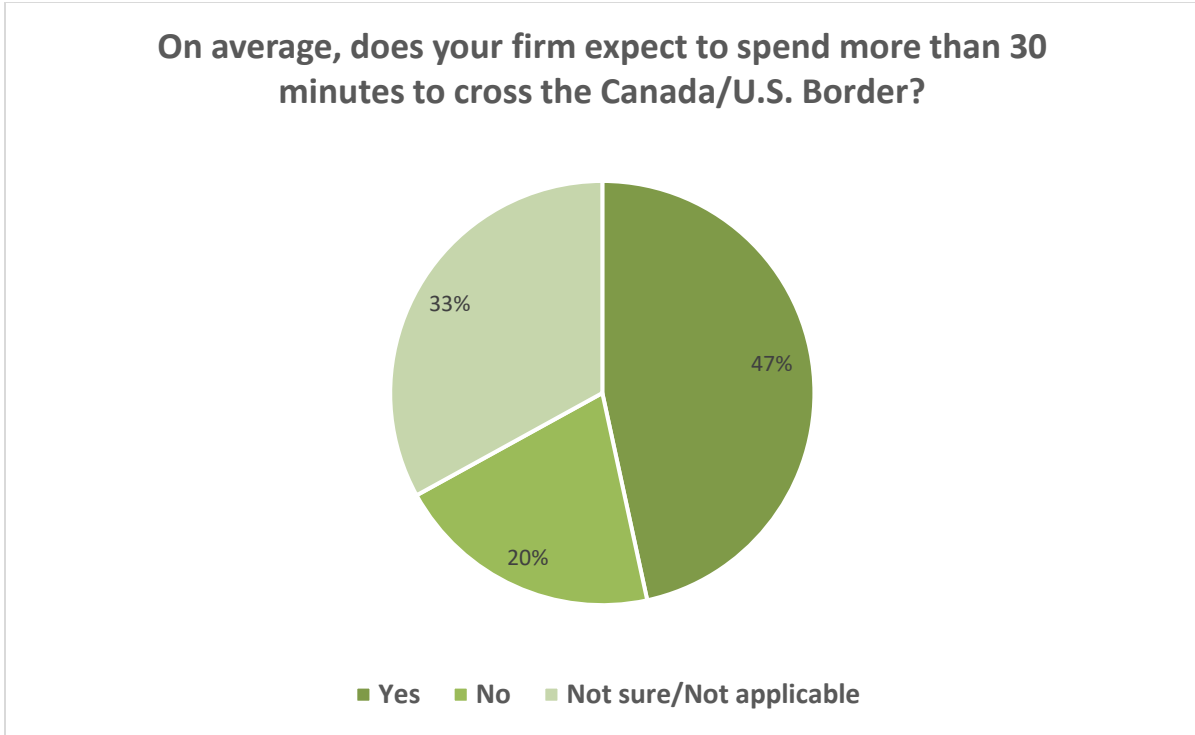


Figure 2-25: Ranking of Key Delay Types in the Supply Chain (N=103)

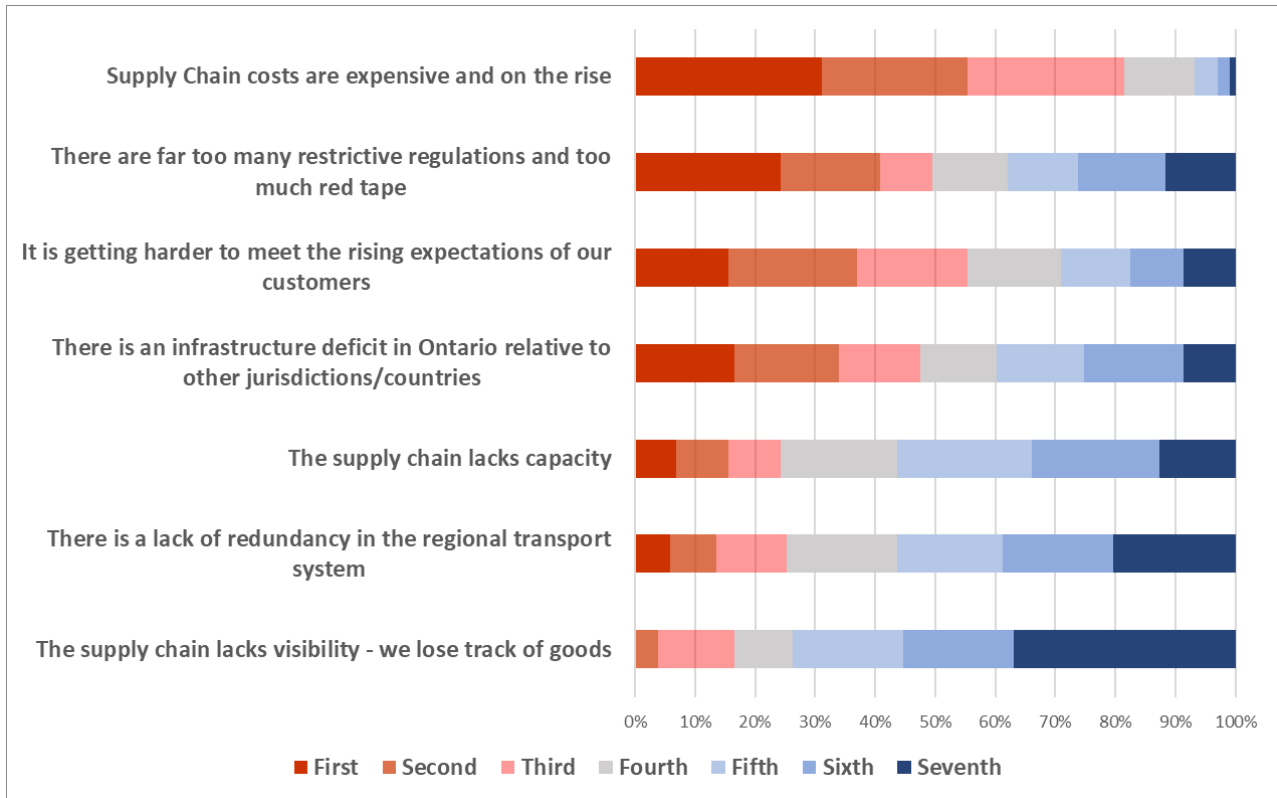
Figure 2-25 shows results for a sorting exercise similar to the process that produced Figure 2-22. The results indicate clearly that road congestion is the biggest worry but more so with respect to the heavily populated Greater Toronto Hamilton Area. This result reinforces the desire from the prior question for an improvement to Hwy 401 congestion. Road congestion within Niagara region is generally considered high ranking but not often top-ranked. Perceived issues at the Canada-US border is the top-ranked delay type for approximately 1/3 of the firms.

In terms of other results, it is not apparently seen as a major issue for most firms but there appears to be potential to improve connections between the modes. With regard to rail, there is a subset of firms that strongly consider rail delays (which have been noted in the 2019 consultations) as a significant problem though most firms (which probably do not use rail) do not consider it to be a problem at all. About 8% of firms consider this to be the top-ranked issue. Marine and air-oriented delays are not considered as top ranked by any firms and marine the single delay type that is most lowly ranked as a concern.





**Figure 2-26: Expectations for Border Crossing Times (N=103)**



**Figure 2-27: Ranking of Stresses on the Supply Chain (N=103)**

Given that many firms identify border issues as a top delay type, the results in Figure 2-26 are useful to consider. It reveals that nearly half of firms expect border crossing times for their freight movements to exceed 30 minutes. Only one in five firms expects the border crossing process to take less than 30 minutes. Given (from prior reported results) that most firms are outsourcing their international transportation, there is the possibility that many of these evaluations are not based on direct experience.

For Figure 2-27, some of the prominent regional supply chain stresses and issues that arose from the 2019 consultations were posed to respondents who were asked to rank the stresses from most to least important. The ranking was perhaps less clear-cut than what has been witnessed for the other ranking questions. Nevertheless, there is a clear pre-occupation with high and rising costs in the supply chain. To an extent, aspects such as traffic congestion are part of what explains higher costs along with some the potentially excessive regulation/red tape that followed closely as a significant perceived stress on supply chains. The stresses associated with meeting rising customer expectations and the potential perceived existence of an infrastructure deficit in Ontario receive a significant share of high ranking.

Working from the bottom up, issues such as visibility, redundancy and a potential lack of capacity are not seen as the highly ranked issues. A lack of emphasis on redundancy is interesting when it is considered that many of these same firms have assigned considerable importance to the construction of a Mid-Peninsula highway. Respondents perhaps value a Mid-Pen for attributes other than its ability to add redundancy.

## **2.6 Attitudes Towards Logistics Technologies**

New technologies are highly prominent theme with society-at-large and the same is true in transportation and logistics contexts. The electrification of freight movements and the decarbonization of supply chains are central technological themes but the possibilities linked to autonomous technologies are seemingly attracting even more attention from thought leaders. In the survey, a suite of attitudinal statements on technology themes in logistics was administered to see if a cross-section of leaders from Niagara region firms viewed these with similarly high levels of interest and engagement.

Largely, the results in Figure 2-28 and Figure 2-29 reflect that this was not the case. In Figure 2-28, responses to some statements suggest that autonomous technologies are not being too closely followed by most firms. There appears to be limited interest, at this stage, to pay a premium for such technologies. There is less interest in autonomous driving, for example, than other automated technologies that are potentially perceived as more useful to the firm. One result indicates that decarbonization may be seen as generally more important than vehicle automation. Part of the rationale for a lack of enthusiasm may relate to the outsourcing of

transportation functions. Vehicle automation may be seen as an emerging issue for carriers more so than shippers.

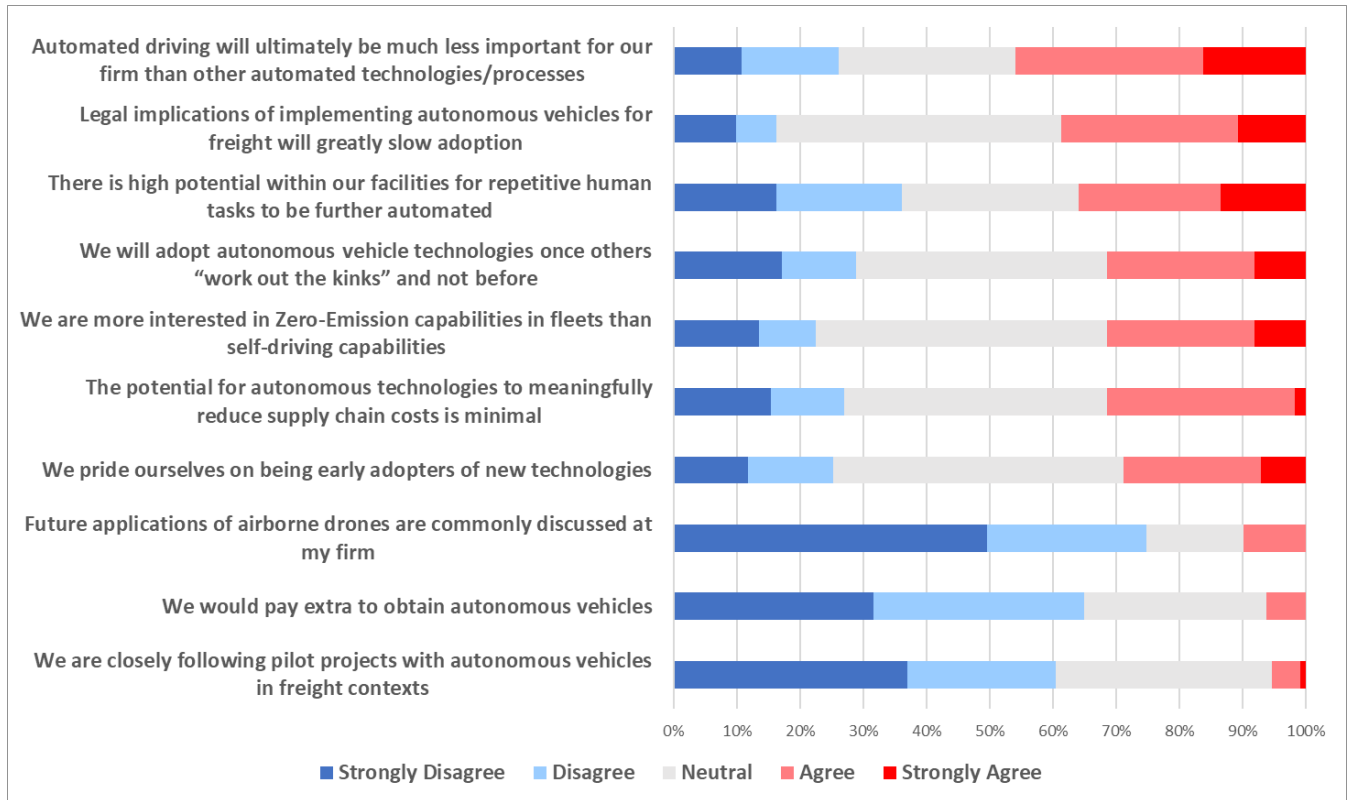
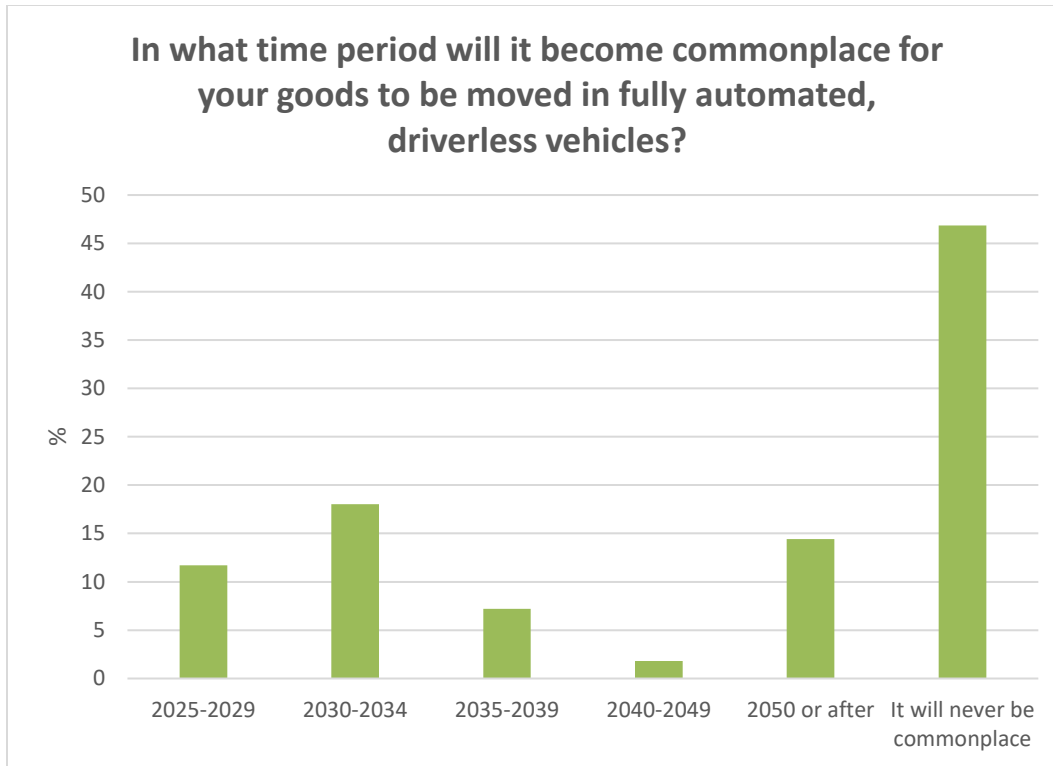


Figure 2-28: Level of Agreement with Statements on Logistics Technologies Elements (N=111)

A final question as seen in Figure 2-29 is asked about the timing of commonplace autonomous movements of goods and the results are perhaps surprisingly pessimistic. Nearly half of the respondents indicate their belief that it will never be commonplace for their goods to move by autonomous vehicles. To some extent the pattern is bifurcated with nearly 30% being optimistic that these types of automated movements will occur within the next 15 years.

## 2.7 Useful Segmentations

There are enough respondents captured in the survey data to divide observations into two or more groups and then report on some of the differences (or similarities) in those groupings over a wide range of variables. This is done below for certain useful segments and the results described.



**Figure 2-29: Attitude on the timing of widespread autonomous goods movement (N=111)**

### 2.7.1 Urban-Rural Dimensions

An emerging topic of interest is the rural-urban dimensions of supply chains and competitiveness. Many of the important topics of transportation and logistics and supply chains (e.g. logistics hubs, traffic congestion and many others) seem inherently urban in character. There is a tendency to view the needs of firms and their supply chains through an urban lens. However, in a region such as Niagara, there is a very strong rural element to commerce, and it is important to consider needs/gaps from the perspectives of those associated stakeholders and firms.

The Niagara region sample that has been collected has a reasonable sampling of both urban and rural firms sufficient to provide useful insights. For the purposes of this discussion, it is assumed that firms from the agricultural/primary sector can be considered as “rural” firms and all other firms in the sample (i.e. manufacturing and wholesaling) can be considered as “urban” firms. While this classification cannot be considered foolproof, discussion with Niagara Region suggest that this is a reasonable assumption to make with the current sample. Bear in mind that wineries tended to identify themselves as manufacturers and this places them in the urban grouping.

Based on segmentation (between urban and rural firms) and comparison of the responses to survey questions, the points below offer a comparison between the two groups of firms along some important dimensions:

- Rural firms are more likely to limit the spatial footprint of their facility operations to within Niagara region
- Rural firms on average are smaller in terms of revenue and spend less on transportation. There are relatively more rural firms with small sales and there are few with large sales totals.
- Rural firms tend to sell fewer product lines/SKUs, especially in relation to urban wholesaling firms.
- Rural firms appear very unlikely to have a large number of supplier firms (i.e. > 100)
- Rural firms appear somewhat less likely to engage in e-commerce and tend to be involved at a smaller level if they do participate.
- Rural firms appear much less reliant on outsourcing for their international transportation
- In terms of exporting, rural firms appear the least likely to diversify beyond the United States
- Rural firms appear much less likely to utilize the services of third-party logistics
- Rural firms appear less likely to see the construction of a Mid-Peninsula highway as important but meanwhile they are very focused on improvements related to Highways 401 and 407.
- With regard to exporting, rural firms appear most to emphasize regulatory impediments as a challenge,
- Rural firms appear to be less optimistic than urban firms (especially relative to urban manufacturing) about their untapped potential to export more beyond the United States. The pattern is similar to the one for urban wholesaling which is focused often on domestic distribution.

The results of this basic comparative analysis suggest that rural firms in Niagara region are certain to have their own unique views on supply chains and their own unique needs. The picture that emerges is that rural firms in Niagara are on average more localized/regional in their operations but also in some perceptions and attitudes. They are also more likely to avoid outsourcing which is consistent with the simpler web of supply chains that they seem to have in place. The results

suggest that some localized improvements for the benefit of supply chains could be perceived as disproportionately more important for rural firms, but they are very focused on important regional issues as well such as traffic congestion in the Toronto region.

### 2.7.2 E-commerce Sales

An interesting way to segment firms is based on whether they have e-commerce sales or not. There were 175 responses to that question and 40% of firms reported at least some sales from e-commerce with the majority of the latter group having e-commerce account for less than 5% of sales.

Here are some of the important observations that can be made about firms that have at least some e-commerce sales:

- E-commerce appears less prevalent in the agricultural/primary sector.
- Beverage and tobacco product manufacturing really stands out as an e-commerce-oriented sector in Niagara region (this would include wineries).
- There is some penetration of e-commerce into Fabricated metal product manufacturing but not for most firms of this type.
- The oldest group of firms appears less likely to engage in e-commerce.
- E-commerce oriented firms appear to have less dependence on a small number of products (i.e. they are more diversified).
- E-commerce oriented firms appear more likely to embrace outsourcing of various types and to be more open/appreciative to the benefits of third-party logistics.
- E-commerce firms show more utilization of air freight (which to some extent will be driven by the nature of goods produced).
- Almost all e-commerce-oriented firms use less-than-truckload freight but the same cannot be said for firms that have not implemented e-commerce.
- E-commerce oriented firms show greater openness to emerging transportation technologies.
- E-commerce firms are more likely to source from a larger number of countries.
- In terms of exporting diversification challenges, e-commerce firms show more concern about finding local agents and partners but less with large travel distances.

- In terms of perceived “untapped potential” for sales beyond Canada/US, the e-commerce group shows considerably more optimism.
- In evaluating potential improvements for Niagara and the wider region, e-commerce firms assign more importance to more of the improvements while the firms with no e-commerce sales are quite dismissive of certain improvements such as public transit investments and more industrial/warehouse space. However, the items are ranked similarly between the two groups.

### 2.7.3 International Sales Beyond the United States

Export diversification is a fundamental theme associated with this research project. Accordingly, it is useful to segment those firms that generate at least some sales outside of Canada and the United States from those that do not. A total of 162 firms can be categorized on this basis and 1/3 generate sales internationally in this way. The larger group of firms oriented toward Canada and the United States is quite heterogeneous in that it contains many locally oriented firms and others that may trade extensively (albeit in a North American context). Important notes and findings about the two groups are as follows:

- The agricultural sector is prominent in the North American group of firms while beverage and tobacco product manufacturing and fabricated metal product manufacturing are more oriented to the international group.
- The international group is much more likely to describe an international footprint for its firm’s facilities and also a stronger North American footprint (as opposed to a more local one).
- There is not a significant difference in the sales magnitudes between the two groups.
- The International group is very unlikely to have only one SKU/product line. This is true of the North American group but to a lesser extent.
- There is not a significant difference between the two groups in terms of share of sales which are e-commerce based.
- There is not a significant difference in terms of the number of supplier firms.
- The international group appears far more likely to outsource international transportation and freight forwarding and to have a more positive view of third-party logistics. The

international group is more likely to stress that certain 3PL benefits are quite or extremely important.

- Utilization of trucking is similar between the two groups but the international group appears more likely to use other modes (rail, air, marine). For example, there is a large difference in monthly rail shipments between the two groups.
- The international group is less likely to operate its own private fleet of vehicles.
- There are not strong differences between the groups on attitudes towards emerging transportation technologies, but the international group does appear more optimistic about the timing and likelihood of automated goods movement.
- There is a low likelihood that the international group would not source from other countries.
- In terms of perceived barriers to exporting, the international group appears to worry significantly less about regulatory impediments and more about finding local agents and partners. The international group is less dismissive of culture or language differences.
- For the attitudinal suite of statements on exporting, there are some strong differences between the groups. One noticeable result is that the international group is more decisive about many of the statements and exhibits lower levels of neutrality on many statements. Neutrality can be seen as a surrogate for indecision among the North American group. The international group is much more likely to see an exporting firm as more capable and resilient and is much more likely to offer strong agreement to the idea of domestic tax incentives to encourage exporting. The international firms appeared to express more concern with the negative international trading environment that prevailed over much of 2019 with China. The international group appears to have more experienced personnel with experience at multi-national firms and stronger levels of agreement that exporting is part of their firms “DNA.”
- For the question relating to “untapped potential” the international group was considerably more optimistic about future increased exports and potential for further export diversification.
- In terms of the ratings of delay types, the international group rates road congestion quite highly but less so than the North American group. There is a subset of the international group that is quite focused on rail delay and the international group is relatively quite focused on potential delays at the Canada/US border.



- In terms of potential improvements within Niagara and the larger region, the international group places more emphasis on the reduction of international trade barriers, the supply of industrial/warehouse space, and significant investment in metropolitan public transit
- Regarding stresses on the supply chain, the international group strongly emphasizes that supply chain costs are expensive and on the rise while the North American group places more relative emphasis on restrictive regulations and “red tape.”



## Conclusions

This concluding section seeks to highlight the important results captured from the survey while intermingling some of the specific comments that we received from survey participants. In some cases, respondents wrote lengthy passages that offered feedback on issues that they considered as important. It is useful to highlight some of these points here.

This survey-based study has yielded a valuable and detailed profile of Niagara region firms that have given generously of their time to respond. There were 103 full survey completions and also 98 partial survey completions that yielded some additional useful information. The full completions did skew somewhat towards smaller firms and respondents who were owners/senior management, and this is something that has been kept in mind. Among all completions, it is perhaps worth noting that very few of the respondent firms were recently founded. So, respondent firms were also mature firms. A high percentage of the respondent firms are operated from Canadian head offices and in most cases, there was considerable strategic decision-making autonomy residing at the Niagara facilities of these firms.

While there are commonalities between respondent firms, there is also a great deal of diversity among the firms and in terms of how and where they operate. Data collection focused on businesses that were expected to generate freight movements through their operations but certainly the contexts were different. Many agriculturally oriented firms focus on serving local and regional markets while wholesaling firms concentrate on distributing goods that are often imported. But these types of generalizations help only to a point since the stories of firms are unique.

### **Exporting and its Diversification**

It is interesting to note that a lack of international sales beyond Canada and the United States is not something on which most individual firms seem to dwell. Governments have the ability to look at the compiled statistics and come to the conclusion that Canadian firms are perhaps not exporting at levels they could, or even should, but there is not a real “sense of lacking” in this regard that comes through in the survey results. In contrast, there is a strong sense of urgency communicated by individual firms for aspects such as traffic congestion, high costs, red tape, expensive electricity and other factors. These types of constraints/barriers seem more pressing and immediate to most firms than potential needs related to exporting and its diversification. Certainly, this is not to suggest that there are not concerns about border crossing challenges and aspects such as tariffs (e.g. firms involved in metal fabrication) that might dampen international trade.

Perhaps what the results indicate above all else is that export diversification at the level of the firm is a major strategic decision but there are many firms that come across in the results as quite content to serve the geographies that they serve. Many firms see themselves as experiencing challenges as it is without adding export diversification to the equation. There is a very clear result that those firms that have international sales beyond the United States are much more excited about the potential for growth in this regard. There is also a clear result that many firms are not optimistic at all about their potential for export diversification or perhaps simply do not view it as a strategic objective.

The study has provided interesting results on some subtle apparent differences between firms that restrict their markets to North America and those that generate at least some international revenues beyond the United States. One of the main differences appears to be a greater willingness to outsource logistics functions, particularly international transportation. Related to this is a reduced tendency to operate a truck fleet and more reliance on a diversity of modes. Potentially, a firm can operate well on a North American scale focusing solely on the truck mode. Truly internationally oriented firms appear to think more highly of exporting and what it can mean for a company and seem to dwell less on potential regulatory impediments to exporting.

Such firms communicate a sense of optimism about exporting and considerable interest in the development of “new domestic tax incentives to encourage exporting.”

### Supply Chain/Logistics Costs

The survey sought to quantify current cost logistics/landed costs with respect to supply chains and some useful results are generated in this regard. As a “rule of thumb” logistics costs appear to represent about 15% of revenues among Niagara region firms but this statistic masks variability. Costs are estimated by respondents as closer to 20% for Niagara wholesaling firms and 10% for agricultural firms.

Of course, costs are not static as many respondents indicated, and the continuing threat of rising costs in the supply chain was a recurring theme. It was noted that “transport costs have risen considerably year over year” and that there is a need to keep “freight costs under control for our customers.” Potential policy measures that might raise costs (e.g. congestion pricing) are not well-received by most respondents.

There is acknowledgement of the interplay between high levels of traffic congestion and high costs in the supply chain. One firm notes that perishable, time-sensitive products and “incredible congestion” in the Greater Toronto Area is an unfortunate and costly combination. Also related to higher costs (and less timely service) is an observation that the number of carriers is decreasing to serve Niagara region, leading to a tighter market. One specific example notes higher less-than-truckload rates and longer transit times to California.

There is considerable concern expressed about cost items not directly related to transportation and logistics. For example, there are multiple complaints about high electricity rates. This is seen as galling with cheap hydro-electric sources nearby. High labour costs and taxes are also repeatedly mentioned.

### Modes

Trucking is the mode of choice in the region, as with most places, and for many firms truck arrivals and departures are best described as a daily occurrence. There are exceptions. One firm notes that much of its annual revenue was derived from a handful of shipments made to the U.S. each year. There are subsets of firms, that came across as generally more logistically sophisticated, that make more intensive use of rail and air.

One firm notes the challenges of operating a private fleet of a half-dozen trucks while at the same time trying to expand the geographic scope of its customer base. The issues of a serious driver shortage and difficult constraints imposed by high insurance premiums (e.g. for trying to address empty backhauls) are making it hard for the firm to achieve returns on their fleet investment.

Another firm suggests that more tools to develop expertise on logistics would be welcome. The firm evolved from courier to less-than-truckload and express doubts that they are doing things efficiently.

### **Traffic Congestion**

It is safe to say that traffic congestion, as was consistent with MITL's 2019 consultations, emerges as the leading supply chain concern for Niagara region firms, taking into account that this aspect is also intertwined with high costs in the supply chain. One Niagara firm notes the considerable difficulty in operating its own same day logistics involving multiple pick-ups/deliveries within the Toronto area due to high congestion levels. It is leading to more shipping via carriers and/or multiple trips. Many Niagara firms, especially those linked to tourism, are concerned about prevailing 3+ hour weekend driving times from Toronto to Niagara – transportation alternatives are requested whether by commuter rail or marine sources.

The current study has had the interesting result that more concern is attributed to regional congestion and especially with the Greater Toronto Area than is attributed to Niagara region per se. Highway 401 congestion is seen as a paramount concern. On average, respondents would choose to have GTA congestion improved ahead of Niagara Region congestion (perhaps via a mid-peninsula highway). By the same token, there does not appear to be large concern about delays for other modes apart from a minority of logistically advanced firms that are very sensitive to rail delays. One sobering element of feedback is that some firms are beginning to look to the U.S. for growth opportunities simply because they perceive a wall of logistics complications and high costs in the direction of the Greater Toronto Area.

### **The Geography of Interactions with Suppliers and Customers**

The data collected provides considerable information on how individual Niagara firms are connected to suppliers and where revenues are generated. The typical Niagara firm is apparently connected to many suppliers – having 25-50 suppliers, for example, is not unusual and many firms have even larger numbers of suppliers. In terms of internationalization, it is a consistent theme that Niagara region firms have a more complex web of connections to suppliers (inputs) than to customers (revenues). The supply chains of Niagara firms are substantially more internationalized with regard to imports than exports in terms of dealing with the United States and beyond. Manufacturing does stand out as the most internationally oriented sector in terms of revenue generation, but most of the business is linked to the United States. It is also interesting to note that exporting widely (i.e. to many countries) is more likely to be done on a large scale than importing widely. For the vast majority of Niagara firms that export, the top ranked destination is either the U.S. or China.

### Regulatory Barriers, Red Tape and the Border

Survey results seem to suggest a natural grouping related to regulatory barriers, red tape and the Canada/US border. Several survey questions highlight that regulatory concerns show up prominently in domestic contexts and with respect to exporting into international markets. With regard to “red tape” the theme certainly goes beyond logistics but nevertheless it is useful to consider survey quotes such as “red tape is taking half our time” and “red tape is the largest danger to effectively running a business nowadays.”

Perceived issues with crossing the Canada/US border seem also to revolve mostly around red tape. The survey results indicate that only 20% of firms expect to spend less than thirty minutes for their shipments to cross the border and that border delays are considered as a prominent “delay type.” But crossing times per se were not stressed in qualitative feedback. There are some interesting quotations that shed light on the topic. One firm is critical of the “cumbersome paperwork associated with shipping and receiving international shipments” and another describes “a lot of paperwork to deliver over the border.” A sector-specific observation notes that that the U.S. Food and Drug Administration has become “part of the border crossing issue” with “hold orders” being issued on occasion. Another observes that “definitely the border can play havoc with our freight at times” and describes difficulty with getting refrigerated less-than-truckload shipments across the border.

Other firms complain about barriers that affect inter-provincial movements of goods. Trade barriers of this type are noted as a major concern for one winery. Another firm opines that “exporting over provincial borders should NOT be a burden to food suppliers” and then expresses concern with new Canadian Food Inspection Agency regulations that are perceived as making matters more difficult in this regard.

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## 5.0 Appendix A: Detailed Firm Interactions by Geography

Figure 5-1 focuses on the geographic distribution of revenues for each firm in the sample and the Figure 5-2 illustrates the geographical pattern of expenditures on inputs. A few of the important points about these figures are as follows:

These figures may not be very intuitive for many people, so consider the following description carefully. Each coloured, horizontal line/bar on the figures represents the allocation results for one firm. Potentially, each one of those lines (162 on one and 150 on the other figure) could have been replaced by a pie chart to represent the same information. By expressing the results for each firm in a bar rather than as a pie, it is possible to simultaneously show the results for all sampled firms. These two figures are essentially more detailed versions of Figure 2-14.

- There is not a one-to-one correspondence of the firms between the two figures. There are a slightly different number of respondents and the sorting results differ also.
- The red colours are associated with internationalization (i.e. with United States and other international) while the blue colours are associated with domestic connections (i.e. with Niagara region, Rest of Ontario, Rest of Canada).
- The results for all firms are sorted by the major sector of the firm and secondarily they are sorted by geographical categories.
- The firms in each sector are sorted from most internationalized to least. Manufacturing firms account for more than the top half of each figure. Wholesaling firms follow immediately below and agricultural/primary firms are at the bottom of each figure.
- For manufacturing, the overall levels of internationalization are similar between the two figures but the level beyond the United States appears to be notably higher on the inputs side.
- International sourcing of goods for distribution in Canada is a highly prominent wholesaling pattern for Niagara firm. To a lesser extent the same pattern exists in the agricultural/primary sector.
- There is certainly a strong theme of strong sales and sourcing that stays within Niagara region. For a few firms this seems to be almost entirely so. Another strong pattern is for connections with the rest of Ontario, with the Greater Toronto Area no doubt looming large in this respect. While there are a few firms with strong connections to other provinces (i.e. Rest of Canada) this linkage generally appears as not a strong one.

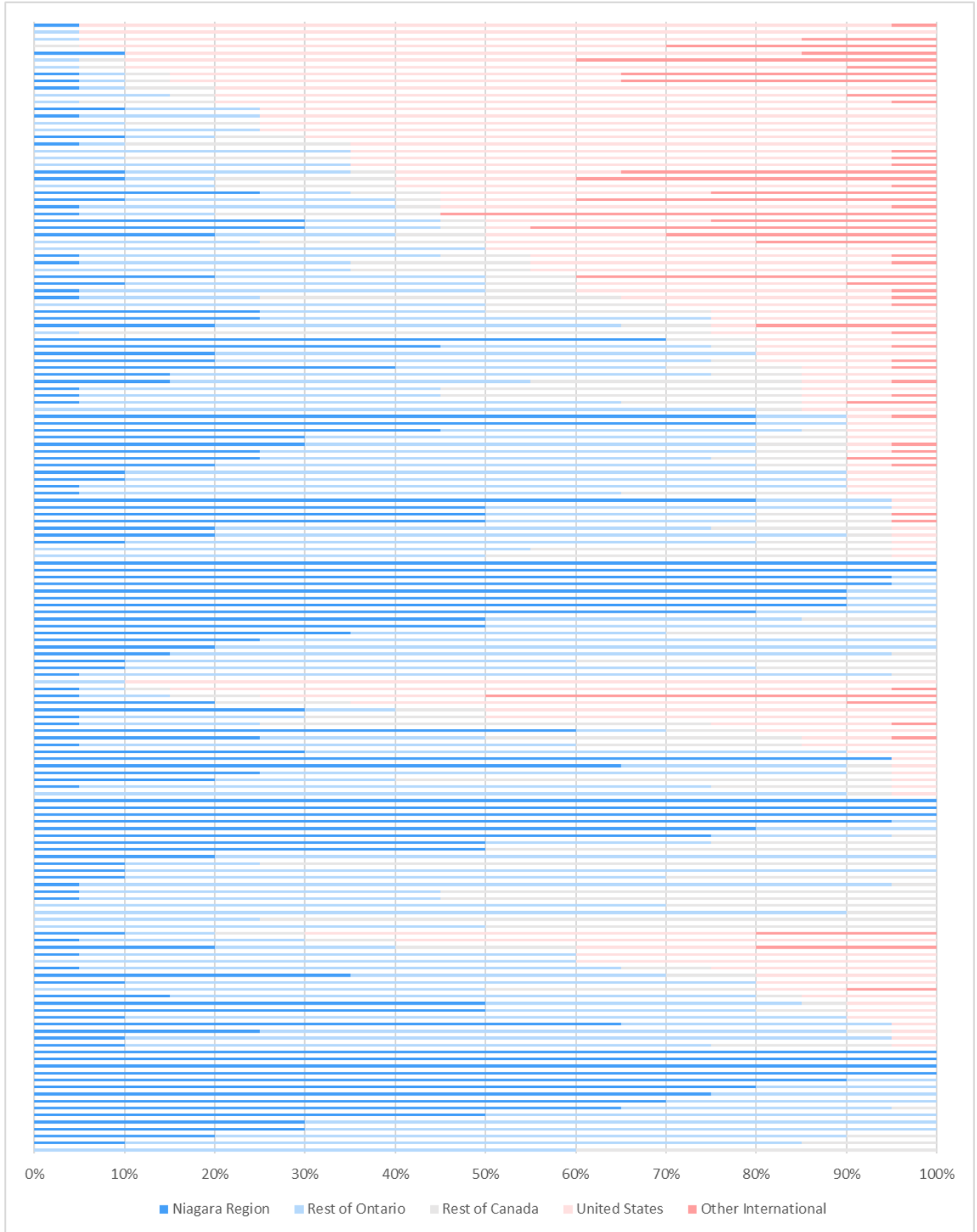
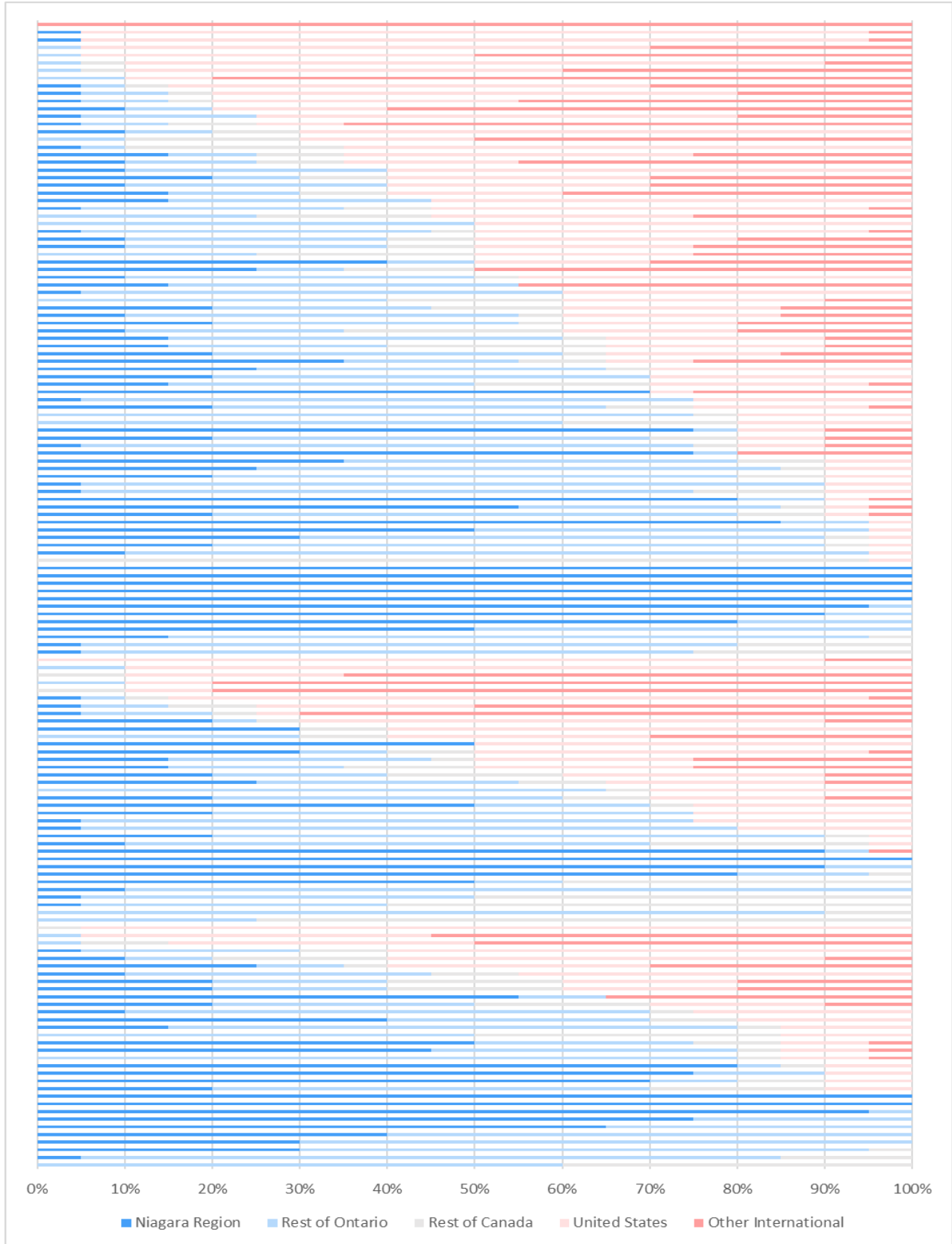


Figure 5-1: Geographical Sales Profiles of All Respondent Firms Sorted by Sector (N=162)



**Figure 5-2: Geographical Expenditures on Inputs for All Respondent Firms Sorted by Sector (N=150)**