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Updated methodology to estimate interjurisdictional employees

by Hanqing Qiu and Ping Ching Winnie Chan

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Interjurisdictional employees (IJEs) are individuals who work in other regions while maintaining their primary residence in their home province or territory. The concept of IJEs was previously termed "interprovincial employees," and several studies have examined interprovincial paid employment in Canada (for example, Morissette and Qiu, 2015; Laporte and Lu, 2013; Laporte, Lu, and Schellenberg, 2013). Since 2021, the Social Analysis and Modelling Division at Statistics Canada has released annual IJE estimates using data from the Canadian Employer–Employee Dynamics Database via the Common Output Data Repository (CODR).[1] This article describes an updated methodology to estimate IJEs and compares the previous and new methodologies using the IJE estimates from 2002 to 2020.[2] The updated methodology ensures that the number of IJEs sent by a given province or territory to all other jurisdictions is the same as the number of IJEs received from that province or territory by all other jurisdictions.

The methods section below first defines IJEs and then compares both methodologies for IJE annual production. The numbers of IJEs from 2002 to 2020 produced by the previous and new methodologies are also provided in charts to show the impact of the revision.

Methods

Definition of interjurisdictional employees

IJEs are defined as paid employees who maintain a permanent residence in a given province or territory while reporting earnings from a different province or territory.[3]

A given province or territory may provide workers to other jurisdictions (outgoing IJEs) and receive workers from other jurisdictions (incoming IJEs). Specifically,

- IJEs received by A from B are called IJEs incoming to A from B
- IJEs sent by B to A are called IJEs outgoing from B to A.

1. The most current estimates from 2002 to 2020 are available in CODR tables 14-10-0448-01, 14-10-0449-01, 14-10-0450-01 and 14-10-0451-01.
2. The upcoming IJE annual estimates for 2002 to 2021 to be released in February 2025 via CODR will be based on the new estimation methodology.
3. The in-scope population for IJEs is Canadian domestic employees aged 18 or older earning at least $1,000 in 2016 constant dollars within Canada.

For example, IJEs incoming to Alberta from Ontario are individuals whose main job is in Alberta but who reported Ontario as the place of residence on their T1 tax returns in year *t*, minus out-migrants from Alberta to Ontario and in-migrants received by Alberta from Ontario.[4] Because IJEs are used to measure employees who still maintain their primary residence in one province or territory while working in another jurisdiction, it is necessary to remove the counts of individuals who permanently move from one province or territory to another (in-migrants and out-migrants). To quantify the count of out-migrants and in-migrants, information on the place of residence in the previous year (*t*-1) and the following year (*t*+1) is needed in the estimation, as noted in Table 1.

In this example, as shown in Panel A of Table 1, out-migrants are defined as employees who permanently move from Alberta to Ontario (1) whose main job is in Alberta in year *t* but reside in Ontario at the end of year *t*, (2) who reside in Alberta in the previous year (*t*-1) and (3) who reside in Ontario in the following year (*t*+1). In-migrants are defined as employees who permanently move to Alberta from Ontario. As shown in Panel B of Table 1, they (1) have their main job in Alberta in year *t* but reside in Ontario at the end of year *t*, (2) reside in Ontario in the previous year (*t*-1) and (3) reside in Alberta in the following year (*t*+1).

Comparison of previous and new methodology

Conceptually, the number of IJEs sent by a given province or territory to other jurisdictions and the number of IJEs received from that province or territory by all other jurisdictions should be identical to one another. For example, if a given province or territory sends 10,000 IJEs to other jurisdictions in year *t*, the number of IJEs received from that province or territory by all other jurisdictions will equal 10,000.

A review of the previous methodology, however, showed that different estimates were produced when accounting for incoming and outgoing IJEs sent by a given province or territory to other jurisdictions and for the number of IJEs received from that province to territory by other jurisdictions. Updates are needed in two particular areas of the process to address the inconsistency of worker flows.

First, in the previous methodology, the number of IJEs sent by a given province or territory (outgoing IJEs) was based on the main job held by workers of that province or territory outside their home province. By contrast, the number of IJEs received from that province or territory by other jurisdictions (incoming IJEs) was based on any job held by workers of that province or territory outside the home province. As a result, a worker residing in Ontario and holding one job in Alberta and another job in Saskatchewan would be counted as one worker sent by Ontario to other jurisdictions but would be counted as two workers received from Ontario by other jurisdictions (i.e., one worker received by Alberta and one worker received by Saskatchewan). In the new methodology, only the concept of main job is used to define incoming and outgoing measures to maintain consistency.

Second, the previous methodology treated in-migrants and out-migrants asymmetrically when measuring worker flows between two jurisdictions. To ensure the counts of incoming and outgoing IJEs from the main job are the same between the two jurisdictions, two specific changes were implemented in the new methodology. First, when computing the number of IJEs received by jurisdiction A from jurisdiction B, jurisdiction A's out-migrants include workers leaving A to B only. Similarly, when computing the number of IJEs sent by jurisdiction B to jurisdiction A, jurisdiction B's in-migrants include workers leaving A for B only. A similar symmetric treatment is applied to jurisdiction A's in-migrants and jurisdiction B's out-migrants. Second, when computing estimates of the number of IJEs received by A from B, the new

4. In any year, employees can hold more than one job under different employers. The main job refers to the job that—among the subset of jobs held outside the home province—had the highest annual earnings in year *t*.

methodology now excludes both jurisdiction A's in-migrants and out-migrants.[5] Likewise, when computing estimates of the number of IJEs sent by B to A, both jurisdiction B's in-migrants and out-migrants are now excluded.

With these changes in the process adopted in the new methodology, the number of IJEs sent by a given province or territory to all other jurisdictions is now consistent with the number of IJEs received from that province or territory by all other jurisdictions.

Impact of the revision of the methodology

Chart 1 shows the total count of IJEs in Canada from the previous and new methodologies. As explained in the last section, the goal of the update is to ensure the counts of incoming and outgoing IJEs calculated from the new methodology are identical. This is reflected in Chart 1, where the two measures from the new methodology are identical to one another.

Another observation is that the total counts of IJEs under the new methodology are moderately smaller compared with the measures under the previous methodology. Nevertheless, the two measures from both methodologies still show very similar trends over time from 2002 to 2020.

In addition to the total counts of IJEs, total annual earnings were also reviewed. Similar to what was found with the total count measures, the level of annual earnings under the new methodology is a bit lower compared with the previous methodology. However, the two measures show very similar trends.

Conclusion

The IJE methodology was revised to ensure that the same numbers are found for incoming and outgoing IJEs between two jurisdictions. With the new methodology, the total counts of IJEs are moderately lower, but the two series (previous and new) show the same time trend. The reduction in counts is more significant for incoming IJEs than for outgoing IJEs because of the new focus of counting IJEs with the main job rather than any job.

Table 1
Illustration of out-migrants and in-migrants from Alberta to Ontario

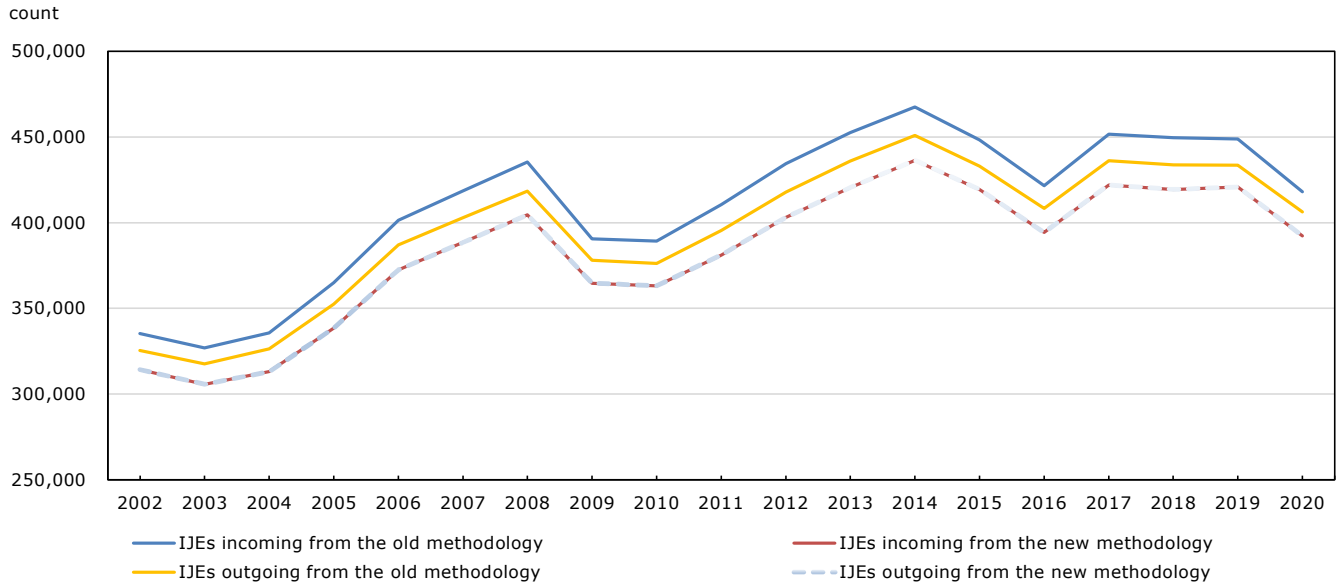
	Year *t* -1	Year *t*	Year *t* +1
Panel A			
Province of work	…	Alberta	…
Province of residence	Alberta	Ontario	Ontario
Panel B			
Province of work	…	Alberta	…
Province of residence	Ontario	Ontario	Alberta

… not applicable

Source: Authors' own example.

5. In the previous methodology, when IJEs incoming to province or territory A were computed, only A's out-migrants were excluded, whereas when IJEs outgoing from province or territory B were computed, only B's in-migrants were excluded. In the new methodology, a symmetric treatment is applied to jurisdiction A's in-migrants and jurisdiction B's out-migrants (i.e., both in-migrants and out-migrants are excluded from the IJEs). This is an important revision to ensure that the same numbers are found for incoming and outgoing IJEs between two provinces or territories.

Chart 1
Total count of interjurisdictional employees calculated from the previous and the new



Note: IJEs = Interjurisdictional employees.
Source: Statistics Canada, Canadian Employer-Employee Dynamics Database, 2002 to 2021.

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