



Some Notes Regarding Benefits of Census Prelisting

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The following is a discussion of potential use of a prelisting approach in the Population and Housing Census (PHC) as opposed to one in which the listing of dwellings takes place at or very close to the time of enumeration.

We also discuss some of the key factors to be considered in implementing such an approach.

In this discussion we assume that listing will consist of an approach in which all buildings are to be listed and in turn all units in each building. Each unit must be classified as to its use or intended use; something like:

- Under construction – residential
- Under construction – business/commercial
- Residential
- Business/commercial
- Mixed – residential and business
- Demolished (only needed at the listing stage if buildings/units that are not in a fit state for use must be included in the listing.)

While this note will speak in terms of buildings and units within them, procedures must also account for inclusion of non-building living quarters which could include cars, tents, boats, yachts, etc. that are expected to be at their location on a long term basis. Another option to consider for such things is listing of parcels of property on which such types of living quarters might be located (e.g. a marina).

The focus here is only on the listing as it concerns the PHC and in particular on the listing of private dwellings. Separate procedures should be developed for collectives (e.g. prisons, jails, nursing homes, hotels, hospitals) that are known to the NSO a priori.

Nonetheless, it's important not to work in silo and if the Census listing could contribute to improving the Business Register (BR), you should consider including this in your planning for listing. Listing procedures as considered here will typically leverage satellite or other imagery to identify and geolocate potential buildings. At the field listing stage each of these polygons must be identified as to its use. Those non-residential buildings or units within buildings can be identified and via a suitable questionnaire information in support of the BR can be gathered.

Residential and mixed units will need to be classified as to their occupancy status. Depending on the timing relative to census day this may or may not be useful to do at the time of listing. This is briefly discussed later.

Recommendation

PRASC's view is that a prelisting procedure provides for some significant advantages over an approach where listing takes place at or very close to census day and the start of enumeration work.

The reason is quality.

First, doing the listing ahead of time provides for the creation of really good means of monitoring, controlling and managing census enumeration work in a way that is not possible when listing is done along with the enumeration. Through prelisting and the good quality paradata available from collection software like Survey Solutions and its incorporation and use in master control systems and dashboards for managers and supervisors, direct and near real time feedback can be made available so as to ensure progress is according to plans and to determine where operational adjustments may be needed. Progress can be monitored down to a dwelling by dwelling level basis, if needed.

In as related advantage, it allows the NSO, its managers and field supervisors to get an early read on whether listing counts are about what they should be. Efforts can then be directed as needed to careful review of problem areas and retraining or support of listing enumerators. This advantage is predicated on having available adequate forecasts of what dwelling counts ought to be. For example, such forecasts could first be based upon counts from the previous census with adjustments for areas where growth has taken place. Adjustments could be informed by: recent satellite or other imagery, results from listing work for intercensal household surveys, building permits, local knowledge.

Second, both listing quality and enumeration quality may be improved. It may be possible to engage a smaller more experienced team to do the listing on its own. The employees can be trained only regarding the listing procedures. This keeps the job simpler and more focused and, in addition to the management and control capabilities, may also contribute to reduced error in coverage of dwellings. This is in contrast to the situation where listing is done as part of the enumeration process. Most enumerators are relatively inexperienced and have multiple responsibilities to learn and attend to. So, removing listing from their tasks also simplifies their job somewhat.

Discussion

An additional potential advantage arises in the consideration of CAWI and multimode strategies. With multimode strategies great control of collection operations is more complex and even more important than usual. The prelisting makes this easier. As well, depending on the particulars of the approach, the prelisting can be valuable in facilitating delivery of census notifications or CAWI invitation letters to dwellings.

A disadvantage is the effect on census cost since two field data collection activities must be undertaken instead of a single bigger and more complex one. One means of managing this cost effect might be to limit prelisting to urban areas where effects of increased travel costs would be lower than in rural areas.

A second potential disadvantage is change in the dwelling stock between listing and census day. Thus a first question in implementing a prelisting strategy is how far in advance of census day it should be done. Our opinion is that it could be reasonable to do the prelisting several months in advance. It must be sufficiently in advance that the work can be completed, verified and incorporated into control systems well in advance of the start of actual enumeration. At the same time it should not be “too far” in advance to avoid excessive change in the dwelling stock.

There is room for potential refinements to the process. Consider areas thought to be at risk of material change in the dwelling stock (e.g. known construction sites, urban fringes). One could list such areas in advance like other areas and then much closer to census day go back and validate the list in affected areas, looking for change. (Listing notes from the first listing effort could be a useful guide.) Alternatively, listing for such areas could just be scheduled closer to census day. In either case for these refinements one would need to be sure that the later processing of such areas could be completed in time.

It is mentioned above but a key aspect of quality management for listing is validation of listing counts relative to expected counts. Some variation is of course to be expected but a procedure should be put in place to identify discrepancies big enough that some verification should be undertaken.

It must be stressed for listers to provide a clear enough description of a building (especially in the absence of a formal street address) that a different person would be able to correctly locate the building. Referring to landmarks such as mile markers, hydro pole numbers, etc. in the description is helpful. As well, listers should be encouraged to provide notes about special features (e.g. gated communities) or difficult to locate dwellings in the ED; these can be very helpful for enumerators.

Where available listing should indicate both address and GPS coordinates. One of the steps of listings quality management should be verification that GPS coordinates and addresses are consistent with each other. (Part of this is managed by good training on exactly where the lister should be when capturing GPS coordinates. And hardware that captures accurate coordinates!). Enumerators should also refer to both to confirm they are at the correct location; a procedure will be needed for when they detect discrepancies.

To help minimize coverage error and to make the subsequent job of enumerators easy the listing order is important. Listers need clear instructions on how to use maps with street networks and imagery of building polygons to proceed in a prescribed manner in doing their ED listing work. Clearly identifiable ED boundaries are critical ... but that’s nothing new.

Hopefully not many but there may be errors in the prelisting as well as changes to the dwelling stock by the time enumerators are doing their work. Enumerators need to be provided with procedures and a mechanism to deal with things like:

- Units or buildings identified at listing as residential which must be reclassified to some other category (e.g. demolished, business, etc.)
- Listed dwellings that in fact never existed (e.g. lister included more units in a building than there actually are) and must be classified as cancelled or deleted
- Other reclassifications such as from under construction to (habitable) dwelling

Importantly, enumerators must also be aware and monitor for dwellings not appearing on their list. A first possibility for this is units or buildings that are now dwellings but which at listing were classified as something else. A mechanism is needed to reclassify or add such units to the list of dwellings.

More difficult are new dwellings and dwellings entirely missed by the listers. Enumerators must be provided with instructions to monitor for such units that need to be added and a good means of adding them to the list, preferably in a way that fits with the desired order of listing. However, doing this in a manner that respects the desired order of listing may be difficult.

Last, the enumeration should include some mechanism for enumerators to indicate that they were unable to locate a dwelling (because of unclear or inconsistent description/address and/or wrong GPS). It may need to be part of the supervisor's duties to confirm these situations.

Appendix

A prelisting like procedure has been successfully used for several censuses in Canada.

Starting in the early 1990s we have had an address register (AR). It originated from census listing and is maintained intercensally using survey feedback as well as several admin data sources (e.g. building permits, data from utility companies, tax data). Early on it was used as a listing validation tool. Census enumerators went out and did their listing as usual. These lists were validated against lists from the AR and updates made to both the census list and the AR.

(Note that prior to listing work, enumerators were not provided with the existing AR based lists. Research had shown that independent listing with post-validation produced better results than dependent listing where the enumerator would update an existing list.)

As AR quality improved we moved to an approach where we were mailing out questionnaire packages based on lists from the AR. Using various indicators AR quality was assessed geographically, as being excellent, updateable or not good enough. Roughly speaking these tended to corresponded respectively to stable urban areas, growing areas with construction going on and last rural and other areas without good civic style addressing.

For those geographic areas where it was known the AR was of excellent quality the AR list was used as is. The updateable areas with lower coverage quality or higher coverage risk underwent a process of "block canvassing" – essentially a prelisting – several months prior to the census to identify needed updates (again by an independent listing approach)

This strategy of having good quality dwelling lists available ahead of time provided exactly the advantages I noted above.