**Purpose:**

To describe how OMI data was linked to postal code.

**Introduction:**

Canadian Marginalization Index ([www.torontohealthprofiles.ca/onmarg.php](http://www.torontohealthprofiles.ca/onmarg.php)) has data in regards to various socio-economical data for each dissemination area(DA). Data collected from patients usually has Postal code for their residence. Since the link between DA to Postal code(PCODE6) is not linear, it has proven a challenge to link all DA to appropriate PCODE6. To make matters complicated, patients only have first three letters of postal code, referred to as PCODE3 or forward sortation area (FSA).

University of Toronto provides PCCF (<http://data.library.utoronto.ca/content/postal-code-conversion-file>) which provides a set of data files that can be used to link various divisions used in Sensus area to postal codes of different levels. These data files are available for different years.

On page 8 of OMI(<http://www.torontohealthprofiles.ca/onmarg/userguide_data/ON-Marg_user_guide_1.0_FINAL_MAY2012.pdf>) steps to properly combined different records of OMI are mentioned. Once each record in OMI is assigned a postal code, all records with same postal code can be combined. And calculations for quantiles repeated.

Since patient data only has PCODE3, we have assigned PCODE3 instead of PCODE6 to each record in OMI. There are 3 solutions to go about this step:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PCCF files needed | Population in Ontario(12.16 million) | Assigned version |  |
| Average out quantiles only | PCCF1512.PCCF.DUPS.csv  PCCF1512.PCCF.UNIQ.csv | N/A | V1 |  |
| Assign PCODE6 use SLI, convert to PCODE3 | PCCF1512.PCCF.DUPS.csv  PCCF1512.PCCF.UNIQ.csv | 8,233,423(67%) | V2 |  |
| Assign PCODE6 for unique PCODE6, convert to PCODE3 | PCCF1512.PCCF.DUPS.csv  PCCF1512.PCCF.UNIQ.csv | 7899594(65%) | V2.1 |  |
| Assign PCODE3 | PCCF1512.WC3DUPS.txt | 10210300(84%) | V3 |  |

NOTE: OMI only covers 12120034(99.671%) of Ontario population in 2006

**Steps:**

1. Setup a mysql server.
2. Import all needed files from PCCF (PCCF1512.PCCF.DUPS.csv, PCCF1512.PCCF.UNIQ.csv, PCCF1512.WC3DUPS.txt)
3. Import omi data.
4. Assign PCODE3 to each OMI record. Note: This is the key step for generating new OMI data
5. Add columns for population de-weighted values
6. Create new table for final result
7. Populate new table by grouping on PCODE3
8. Calculate new quantiles

**Codes:**

The following SQL code should do all of these steps. You may uncomment V1,V2,V3 to complete the desired step4 approach:

/\*create a table that has OMI data and linked to PCODE there, run this code:\*/

drop table if exists `pcode\_only`;

CREATE TABLE `pcode\_only` LIKE omi2006;

INSERT `pcode\_only` SELECT \* FROM omi2006;

/\*add PCODE3\*/

ALTER TABLE `pcode\_only` ADD COLUMN `PCODE3` varchar(6);

/\*populate PCODE3\*/

/\* V1

update pcode\_only, (select \*, count(distinct(PCODE3)) from pccf where SLI = 1 and PR = 35 group by DAuid having count(distinct(PCODE3)) = 1) c

set pcode\_only.PCODE3 = c.PCODE3

where pcode\_only.DAuid = c.DAuid

and pcode\_only.PCODE3 is NULL;

/\* covers 8233423 \*/

/\* V2

update pcode\_only, (select DAuid, PCODE3 from pccf group by DAuid having count(distinct(PCODE3))=1) c

set pcode\_only.PCODE3 = c.PCODE3

where pcode\_only.DAuid = c.DAuid

and pcode\_only.PCODE3 is NULL;

/\* covers 7899594 \*/

/\* V3

update pcode\_only, (select DAuid, PCODE3 from wc3dups group by DAuid having count(distinct(PCODE3))=1) c

set pcode\_only.PCODE3 = c.PCODE3

where pcode\_only.DAuid = c.DAuid

and pcode\_only.PCODE3 is NULL;

/\* covers 10210300 \*/

/\* combined all 3 covers 10586000 \*/

/\*add general population altered values and port to a new table\*/

ALTER TABLE `pcode\_only` ADD COLUMN `pop\_instability\_DA06` DECIMAL(65,30) NULL DEFAULT NULL AFTER `PCODE3`;

ALTER TABLE `pcode\_only` ADD COLUMN `pop\_deprivation\_DA06` DECIMAL(65,30) NULL DEFAULT NULL AFTER `PCODE3`;

ALTER TABLE `pcode\_only` ADD COLUMN `pop\_dependency\_DA06` DECIMAL(65,30) NULL DEFAULT NULL AFTER `PCODE3`;

ALTER TABLE `pcode\_only` ADD COLUMN `pop\_ethniccon\_DA06` DECIMAL(65,30) NULL DEFAULT NULL AFTER `PCODE3`;

/\* calculate population de-weighted values \*/

UPDATE `pcode\_only` set `pop\_instability\_DA06` = `instability\_DA06` \* DAPop\_2006;

UPDATE `pcode\_only` set `pop\_deprivation\_DA06` = `deprivation\_DA06` \* DAPop\_2006;

UPDATE `pcode\_only` set `pop\_dependency\_DA06` = `dependency\_DA06` \* DAPop\_2006;

UPDATE `pcode\_only` set `pop\_ethniccon\_DA06` = `ethniccon\_DA06` \* DAPop\_2006;

/\*create new table\*/

drop table if exists OMI\_PCODE3;

create table OMI\_PCODE3

select

PCODE3,

sum(`pop\_instability\_DA06`) / sum(DAPop\_2006) as 'instability\_DA06',

sum(`pop\_deprivation\_DA06`) / sum(DAPop\_2006) as 'deprivation\_DA06',

sum(`pop\_dependency\_DA06`) / sum(DAPop\_2006) as 'dependency\_DA06',

sum(`pop\_ethniccon\_DA06`) / sum(DAPop\_2006) as 'ethniccon\_DA06',

sum(DAPop\_2006) as 'DAPop\_2006'

from `pcode\_only`

where PCODE3 is NOT NULL

group by PCODE3;

/\*add quantile columns\*/

ALTER TABLE `OMI\_PCODE3` ADD COLUMN `instability\_q\_DA06` INT(11) NULL DEFAULT NULL;

ALTER TABLE `OMI\_PCODE3` ADD COLUMN `deprivation\_q\_DA06` INT(11) NULL DEFAULT NULL;

ALTER TABLE `OMI\_PCODE3` ADD COLUMN `dependency\_q\_DA06` INT(11) NULL DEFAULT NULL;

ALTER TABLE `OMI\_PCODE3` ADD COLUMN `Ethniccon\_q\_DA06` INT(11) NULL DEFAULT NULL;

/\*add quantile values\*/

update OMI\_PCODE3 set instability\_q\_DA06 = NULL;

select @min := min(instability\_DA06), @max := max(instability\_DA06) from OMI\_PCODE3;

update OMI\_PCODE3 set instability\_q\_DA06 = 1 where instability\_DA06 >= (select (@max - @min)\*0.00 + @min);

update OMI\_PCODE3 set instability\_q\_DA06 = 2 where instability\_DA06 >= (select (@max - @min)\*0.20 + @min);

update OMI\_PCODE3 set instability\_q\_DA06 = 3 where instability\_DA06 >= (select (@max - @min)\*0.40 + @min);

update OMI\_PCODE3 set instability\_q\_DA06 = 4 where instability\_DA06 >= (select (@max - @min)\*0.60 + @min);

update OMI\_PCODE3 set instability\_q\_DA06 = 5 where instability\_DA06 >= (select (@max - @min)\*0.80 + @min);

update OMI\_PCODE3 set deprivation\_q\_DA06 = NULL;

select @min := min(deprivation\_DA06), @max := max(deprivation\_DA06) from OMI\_PCODE3;

update OMI\_PCODE3 set deprivation\_q\_DA06 = 1 where deprivation\_DA06 >= (select (@max - @min)\*0.00 + @min);

update OMI\_PCODE3 set deprivation\_q\_DA06 = 2 where deprivation\_DA06 >= (select (@max - @min)\*0.20 + @min);

update OMI\_PCODE3 set deprivation\_q\_DA06 = 3 where deprivation\_DA06 >= (select (@max - @min)\*0.40 + @min);

update OMI\_PCODE3 set deprivation\_q\_DA06 = 4 where deprivation\_DA06 >= (select (@max - @min)\*0.60 + @min);

update OMI\_PCODE3 set deprivation\_q\_DA06 = 5 where deprivation\_DA06 >= (select (@max - @min)\*0.80 + @min);

update OMI\_PCODE3 set dependency\_q\_DA06 = NULL;

select @min := min(dependency\_DA06), @max := max(dependency\_DA06) from OMI\_PCODE3;

update OMI\_PCODE3 set dependency\_q\_DA06 = 1 where dependency\_DA06 >= (select (@max - @min)\*0.00 + @min);

update OMI\_PCODE3 set dependency\_q\_DA06 = 2 where dependency\_DA06 >= (select (@max - @min)\*0.20 + @min);

update OMI\_PCODE3 set dependency\_q\_DA06 = 3 where dependency\_DA06 >= (select (@max - @min)\*0.40 + @min);

update OMI\_PCODE3 set dependency\_q\_DA06 = 4 where dependency\_DA06 >= (select (@max - @min)\*0.60 + @min);

update OMI\_PCODE3 set dependency\_q\_DA06 = 5 where dependency\_DA06 >= (select (@max - @min)\*0.80 + @min);

update OMI\_PCODE3 set ethniccon\_q\_DA06 = NULL;

select @min := min(ethniccon\_DA06), @max := max(ethniccon\_DA06) from OMI\_PCODE3;

update OMI\_PCODE3 set ethniccon\_q\_DA06 = 1 where ethniccon\_DA06 >= (select (@max - @min)\*0.00 + @min);

update OMI\_PCODE3 set ethniccon\_q\_DA06 = 2 where ethniccon\_DA06 >= (select (@max - @min)\*0.20 + @min);

update OMI\_PCODE3 set ethniccon\_q\_DA06 = 3 where ethniccon\_DA06 >= (select (@max - @min)\*0.40 + @min);

update OMI\_PCODE3 set ethniccon\_q\_DA06 = 4 where ethniccon\_DA06 >= (select (@max - @min)\*0.60 + @min);

update OMI\_PCODE3 set ethniccon\_q\_DA06 = 5 where ethniccon\_DA06 >= (select (@max - @min)\*0.80 + @min);

**NOTES:**

If you are doing this manually, make sure to account for null/empty records. It will result in mismatches during calculations.