URBAN INFORMATION MODELING

CHICAGO RECYCLING SYSTEM

BY KEVSER PINAR DURSUN- SOLEDAD HERNANDEZ

CHICAGO RECYCLING SYSTEM

Chicago generates 7,299,174 tons of waste every year. Residents recycle just more than 200,000 tons of materials per year.

HOW IS THE RECYCLING SYSTEM IN CHICAGO?

Blue cart – Drop off

WHO RECYCLES THE MOST?

People- Wards- Location

Three factors of the Urban Information City data :
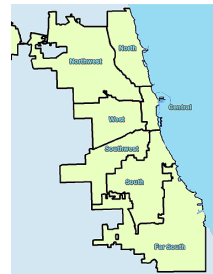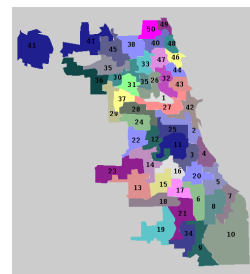**CENSUS DATA + RECYCLING SYSTEM DATA + GEOGRAPHIC DATA**
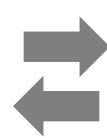
+

Blue Cart   Drop off

+

Methodology

External database

Database

Geographic System

U.S. Census Bureau

City of Chicago

PostgreSQL

QUANTUM GIS

BY KEVSER PINAR DURSUN- SOLEDAD HERNANDEZ
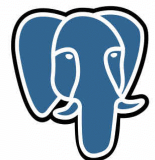
Chicago recycling system

two options:

1- Blue carts

-Recyclables are collected every two weeks.
-To participate in the Blue Cart program you must be a 1st Ward resident and live in a single-family home or a building of up to 4 units.

2- Drop-off centers

The Department of Streets & Sanitation services the drop-off centers. When they are full, they are picked up and delivered to a City-approved recycling center where your recyclables are sorted and shipped out to manufacturers for reuse or reconstitution. An empty container ready for use is left in its place.

Data

RECYCLING REGION
- ID
- Name
- Shape - geometry

WARD POPULATION
- ID
- Ward Name
- Population
- Type of people

WARD AREA
- ID
- Ward Name
- Shape area
- District
- Aldermen

BLUE CART LOCATION
- ID
- Name
- Shape
- Ward
- Recycling Region
- Week

DROP-OFF CENTERS
- ID
- Drop off Name
- Address
- Region
- Coordinate
- Geometry
- Ward

BLUE CART AMOUNT
- ID
- Tons
- Shape connection
- Recycling Region

DROP-OFF AMOUNT
- ID
- Drop Off name
- Tons
- Community Area

MATERIAL
- ID
- Classification Material
- Material Name

UML Diagram = Relationship between factor

Data

GRAPHICAL CONNECTION OF TABLES

Logical Representation- PostgreSQL 9.1

Location Blue Cart + Drop off center in Recycling Region
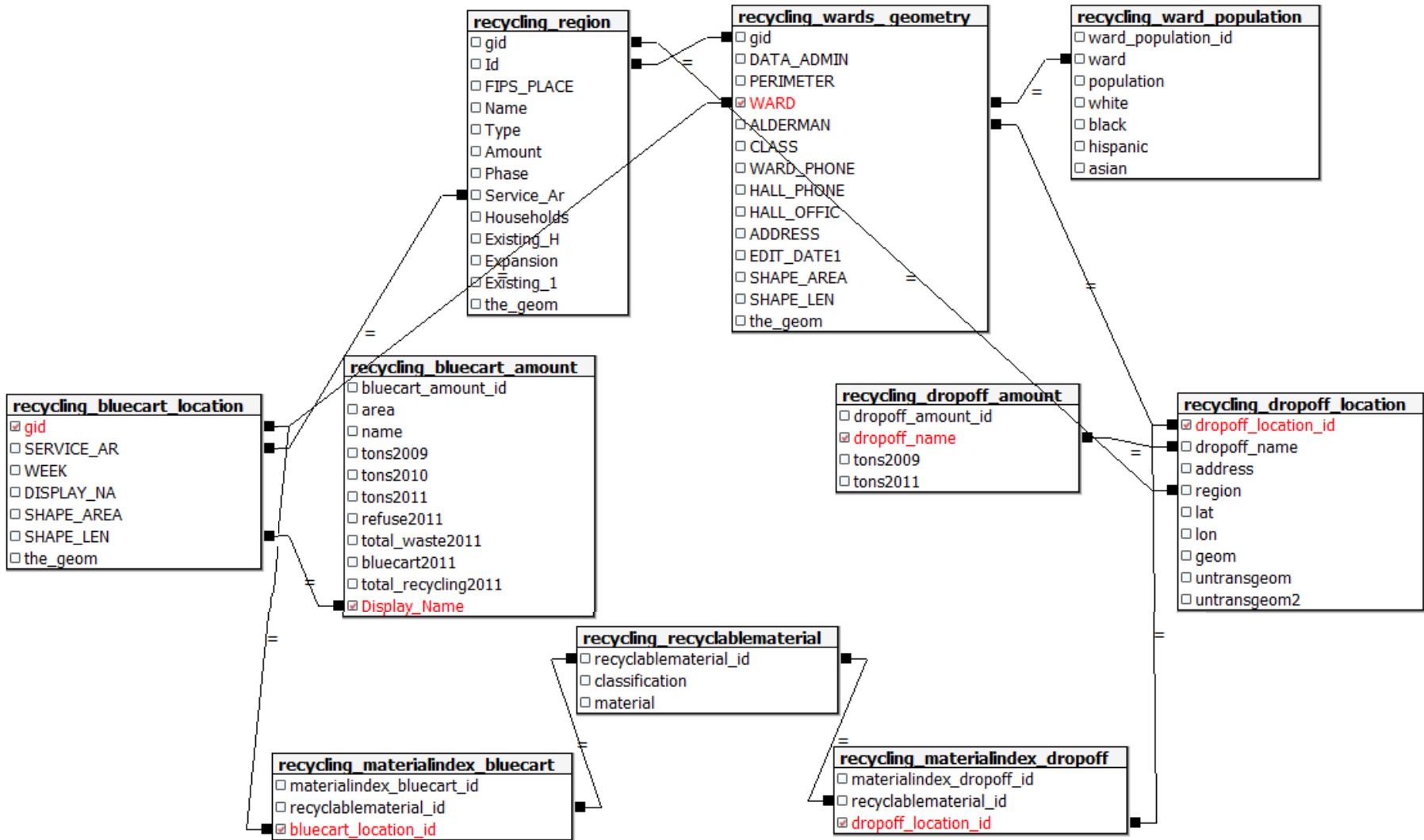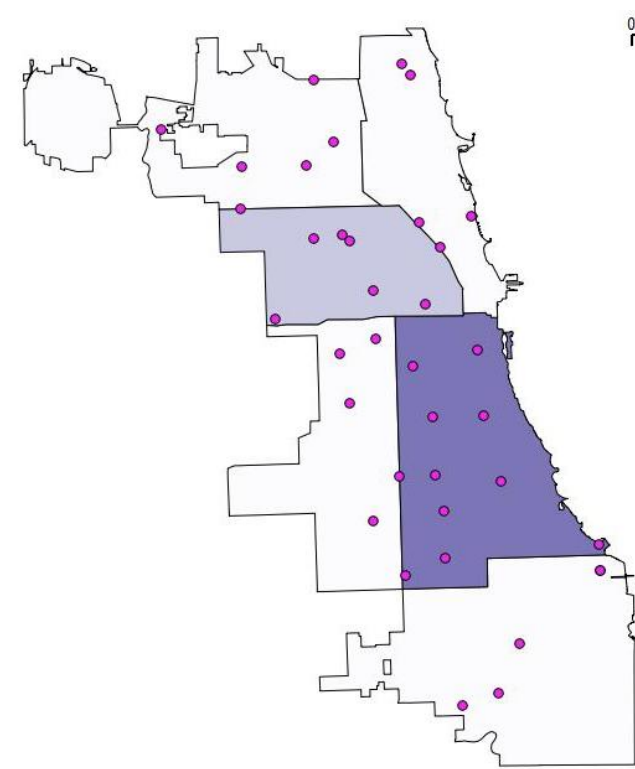

Blue cart location table

gid [PK] integer	SERVICE_AR integer	WEEK character v	DISPLAY_N character v	SHAPE_AREA double precision	SHAPE_LEN double prec	the_geom geometry
1	1	1		1OUT	906319000	322089	
2	2	2		2OUT	211312000	113173	
3	3	4		4OUT	480483000	151254	
4	4	3		3OUT	449345000	209189	
5	5	5		5OUT	1044450000	212941	
6	6	6		6OUT	1114720000	202982	
7	7	1	ORANGE	1IN	146973000	49610.1	
8	8	1	YELLOW	1IN	118111000	47702.9	
9	9	2	ORANGE	2IN	259650000	96974	
10	10	2	YELLOW	2IN	244637000	91231.4	
11	11	4	ORANGE	4IN	247133000	79766.2	
12	12	4	YELLOW	4IN	241771000	82996.4	
13	13	3	YELLOW	3IN	159838000	98188.8	
14	14	5	YELLOW	5IN	161274000	81635.8	
15	15	6	ORANGE	6IN	112980000	55972.1	
16	16	6	YELLOW	6IN	104585000	71989.5	
17	17	6	YELLOW	6IN	115783000	54498.4	
18	18	3	ORANGE	3IN	158324000	58238.3	
19	19	5	ORANGE	5IN	78809600	42354	
20	20	6	ORANGE	6IN	87994100	40013	

Drop Off Location table

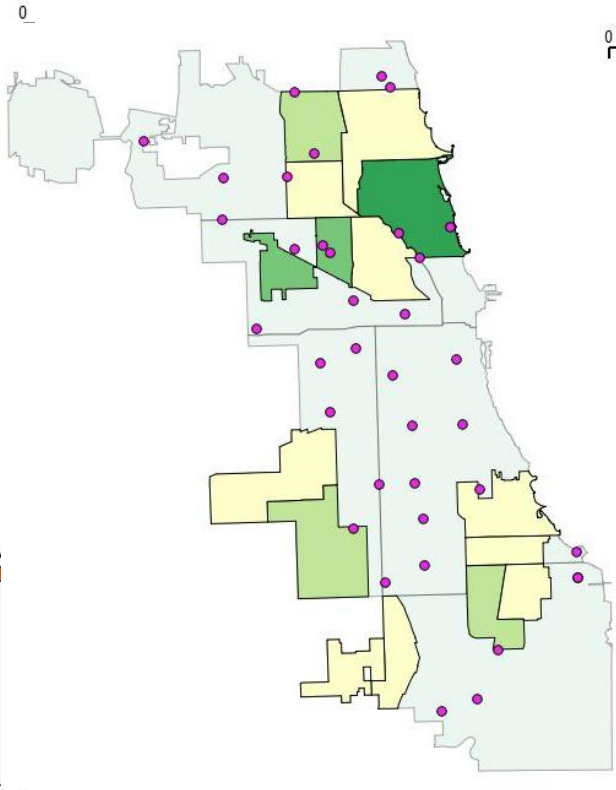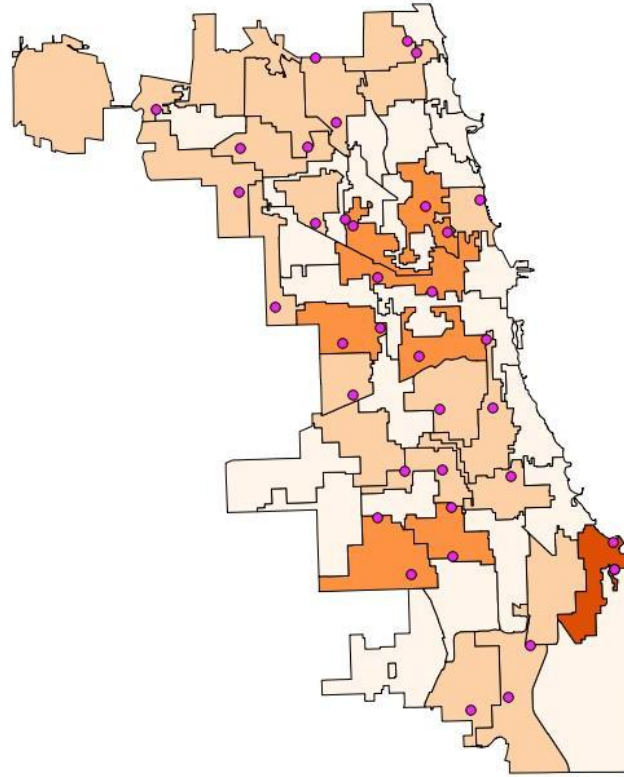| dropoff_loc [PK] integer	dropoff_nar character v	address character v	region integer	lat double prec	lon double prec	geom geometry	untransgeo geometry	untransgeo geometry
1	1	Golf Cou 2045 W.	2	42.005132	-87.6812	0101000	01010000	010100002
2	2	Caldwell 6358 W.	1	41.99731	-87.7410	0101000	01010000	010100002
3	3	Far Nort 6441 N.	1	41.99920	-87.6750	0101000	01010000	010100002
4	4	Chevaili 5530 N.	1	41.97243	-87.8465	0101000	01010000	010100002
5	5	Police D 4617 N.	1	41.96520	-87.7279	0101000	01010000	010100002
6	6	Schiller 8700 W.	1	41.95340	-87.7473	0101000	01010000	010100002
7	7	Portage 4243 N.	1	41.95285	-87.7908	0101000	01010000	010100002
8	8	City Ser 2817 N.	1	41.93126	-87.7917	0101000	01010000	010100002
9	9	Hermosa 4619 W.	1	41.91606	-87.7424	0101000	01010000	010100002
10	10	Mozart P 2036 N.	1	41.91786	-87.7229	0101000	01010000	010100002
11	11	Notebaer 2430 N.	1	41.92692	-87.6342	0101000	01010000	010100002
12	12	City Ser 1817 N.	1	41.91423	-87.7175	0101000	01010000	010100002
13	13	City Fac 1633 W.	2	41.92411	-87.6697	0101000	01010000	010100002
14	14	Househol 1150 N.	2	41.91083	-87.6553	0101000	01010000	010100002
15	15	Old 10th 1952 W.	3	41.85038	-87.6748	0101000	01010000	010100002
16	16	Chicago 445 N. Sa	1	41.88933	-87.7014	0101000	01010000	010100002
17	17	Columbus 400 S. Gc	1	41.87479	-87.7691	0101000	01010000	010100002
18	18	West Loop 1519 W.	1	41.88211	-87.6661	0101000	01010000	010100002
19	19	North La 1817 S.	3	41.85661	-87.7247	0101000	01010000	010100002
20	20	Douglas 1359 S.	3	41.86429	-87.7001	0101000	01010000	010100002
21	21	Near Sou 1752 S.	3	41.85833	-87.6302	0101000	01010000	010100002
22	22	City Fac 3757 W.	2	41.83153	-87.7182	0101000	01010000	010100002
23	23	Old Attu 3850 S.	5	41.82460	-87.6265	0101000	01010000	010100002
24	24	City Fac 1424 W.	4	41.82419	-87.6617	0101000	01010000	010100002
25	25	Gage Par 2411 W.	4	41.79385	-87.6844	0101000	01010000	010100002
26	26	Sherman 1300 W.	4	41.79413	-87.6598	0101000	01010000	010100002
27	27	Washingt 5560 Rus	5	41.79049	-87.6149	0101000	01010000	010100002
28	28	Marquette 6734 S.	5	41.77098	-87.7029	0101000	01010000	010100002
29	29	Ogden Pa 6500 S.	5	41.77593	-87.6543	0101000	01010000	010100002
30	30	Auburn G 7811 S.	5	41.75188	-87.6536	0101000	01010000	010100002
31	31	Rainbow 3111 E.	6	41.75792	-87.5481	0101000	01010000	010100002
32	32	Dan Ryan 2300 W.	5	41.74285	-87.6811	0101000	01010000	010100002
33	33	Calumet 9801 S.	6	41.74481	-87.5478	0101000	01010000	010100002
34	34	Gately St 810 E. 1	6	41.70758	-87.6037	0101000	01010000	010100002
35	35	West Pul 11615 S.	6	41.68234	-87.6179	0101000	01010000	010100002
36	36	City Ser 829 W. 1	6	41.67598	-87.6429	0101000	01010000	010100002
37	37	William 12949 S.	6	41.74481	-87.5478	0101000	01010000	010100002

Blue cart area

Drop Off

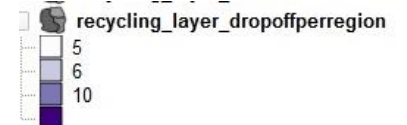# System: Blue cart + Drop off center in Recycling Region

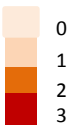How many drop off per ward?

How many drop off per Blue cart area ?
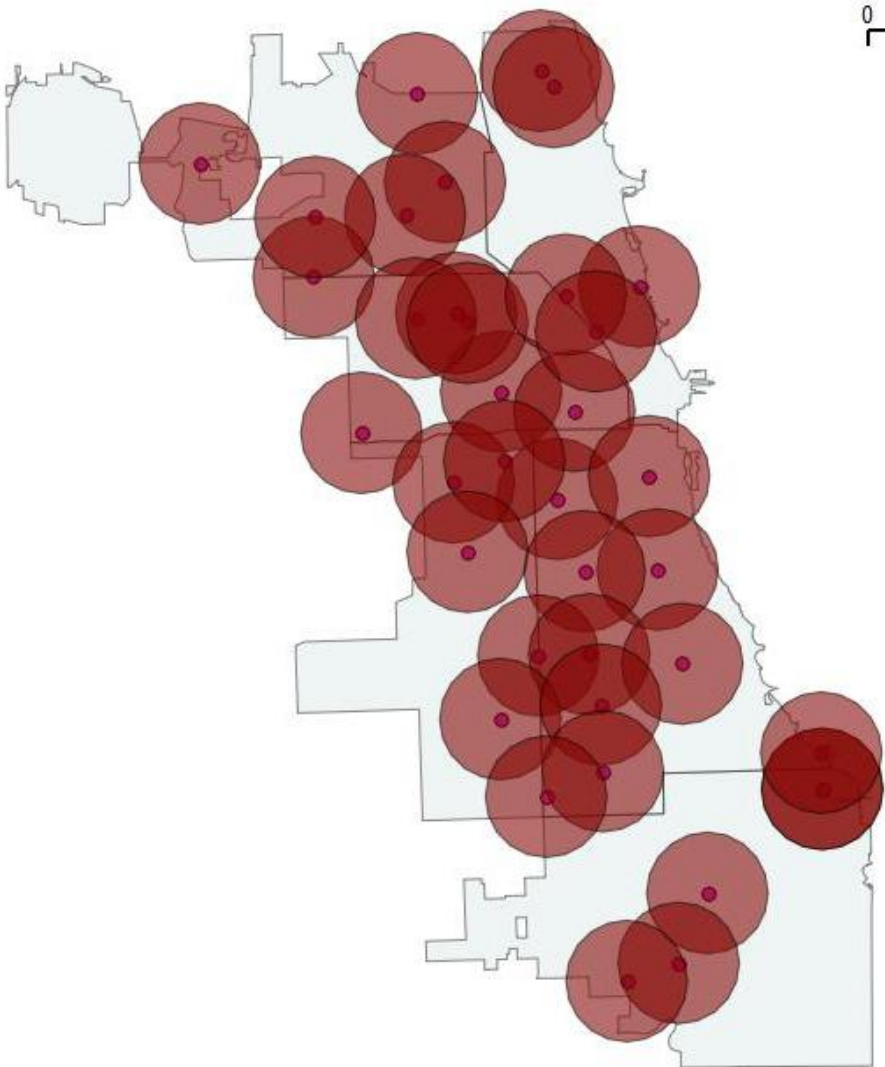
How many drop off per region?

Drop off per ward

- 0
- 1
- 2
- 3

recycling_layer_dropoffperbluecart
- 0
- 1
- 2
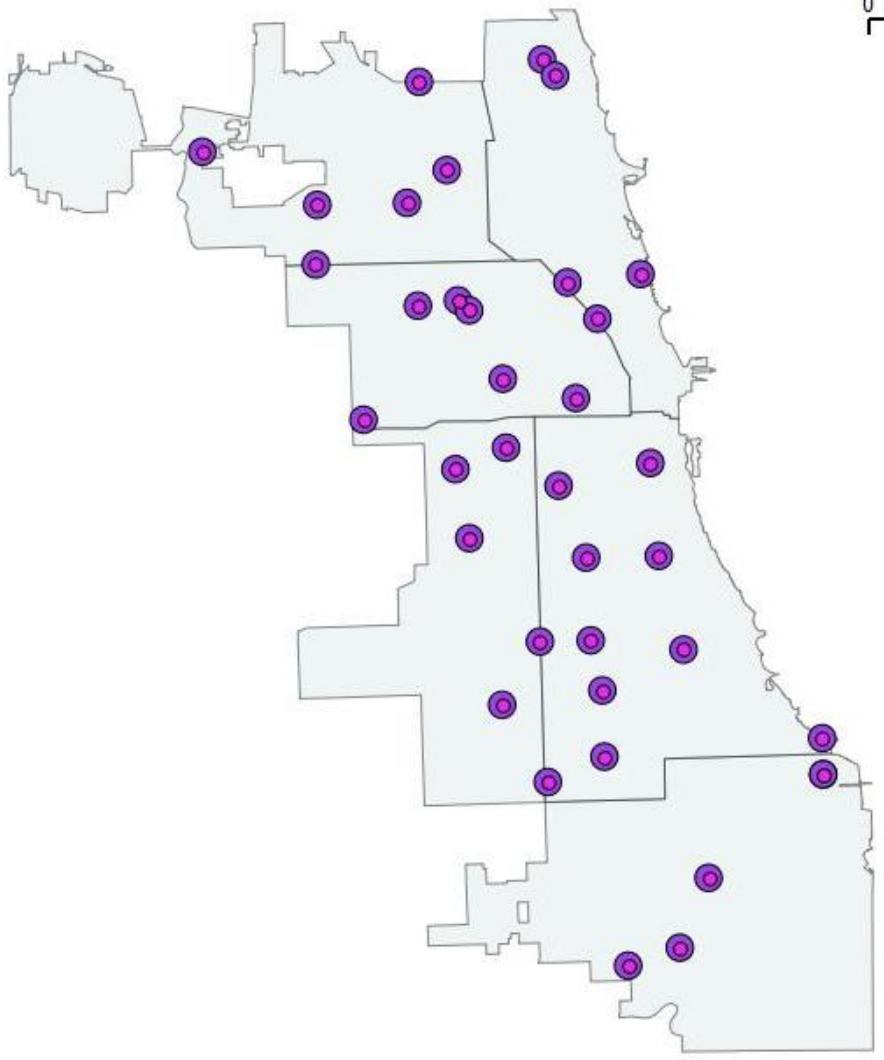- 3

recycling_layer_dropoffperregion
- 5
- 6
- 10

System: Drop off Center Influence Area

Influence: 5 miles = 10' drive

Influence: 1 miles = 15 ' walk
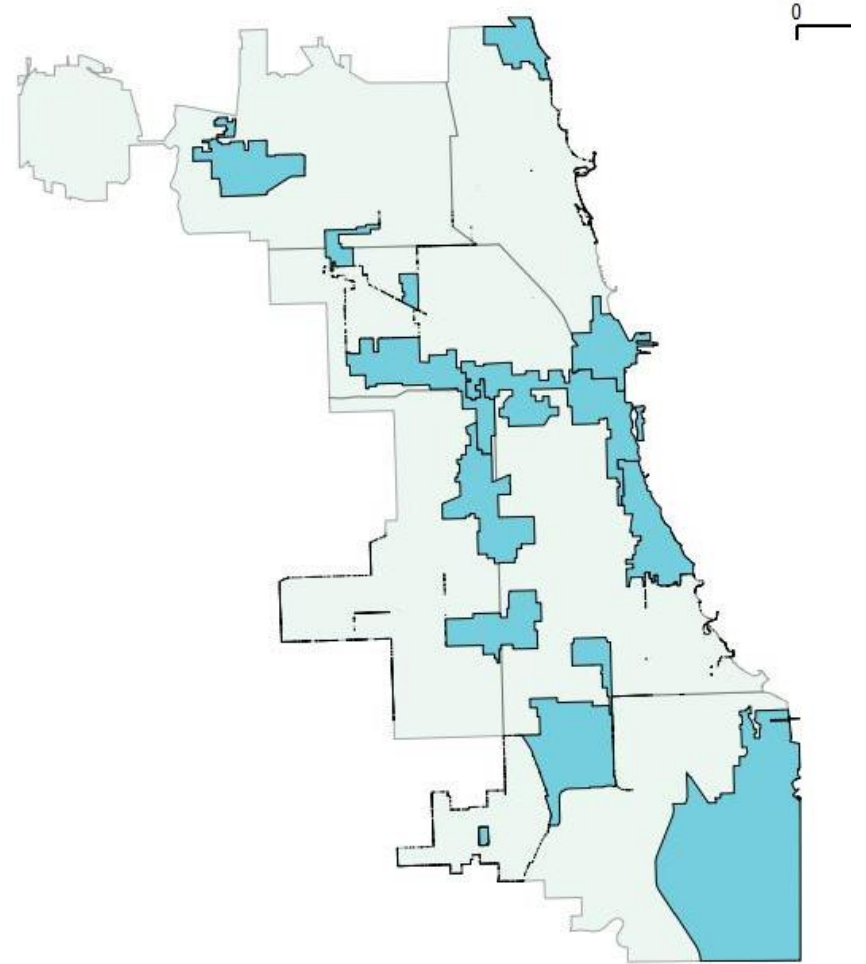
System: Blue cart + Drop off center in Recycling Region

How many wards don't have drop off center
R: 26/53

How many wards don't have either drop off nor blue cart

Wards with drop off

Wards without drop off

Wards with drop off center or Blue Cart

Wards without drop off center or blue cart area

System: Blue cart + Drop off center in Recycling Region
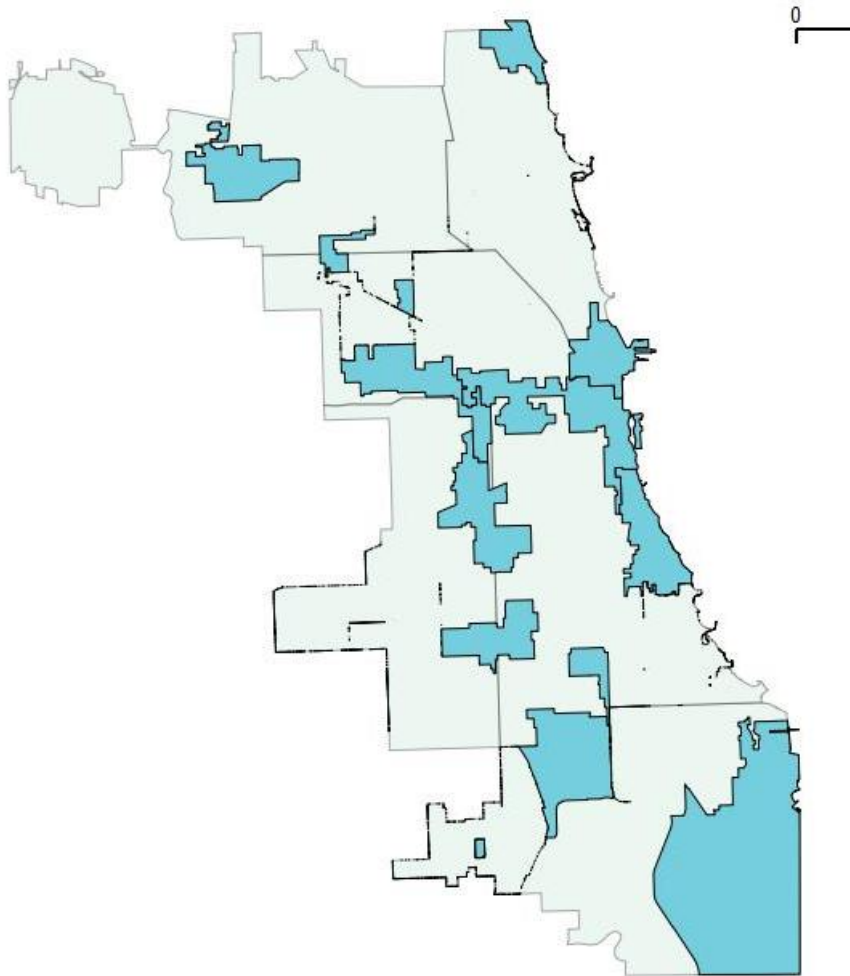
From intersection ward, drop and blue cart area table

	WARD character varying(4)	population character varying(80)
1	OUT	
2	49	55895
3	37	51538
4	4	54589
5	44	56058
6	23	53728
7	5	51455
8	35	55281
9	47	55074
10	28	55199
11	OUT	
12	48	55909
13	19	51525
14	30	55560
15	12	52235
16	1	56149
17	42	55870
18	21	51632
19	13	53722
20	10	51535
21	2	55805
22	15	51501
23	46	53784
24	6	52341
25	OUT	

Number of ward: 22
Number of people without service: 1,186,364
Number of people in Chicago: 3,620,962

Wards with drop off center or Blue Cart

Wards without drop off center or blue cart area

System + Amount: Which system recycling most? According to the tons 2011

Recycling most 2011
Drop off (Over 500 tons- 10 %)& blue cart
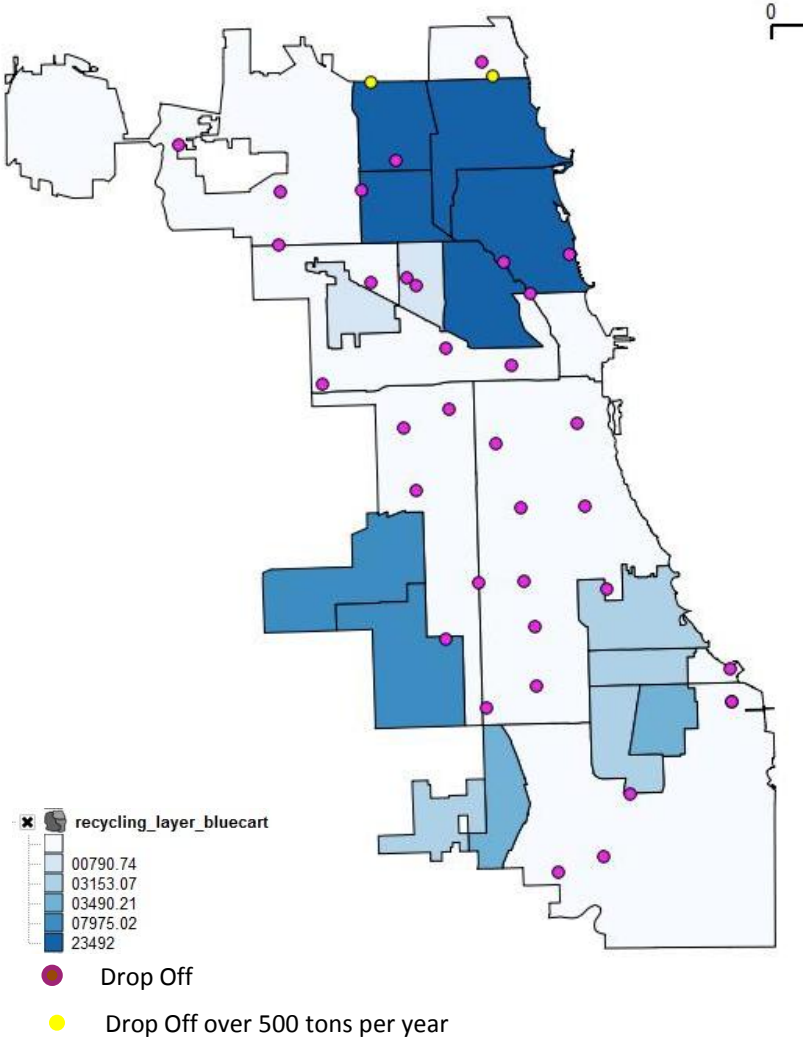
Recycling less 2011
Drop off (less than 5 tons - 5 %) & blue cart

recycling_layer_bluecart

00790.74
03153.07
03490.21
07975.02
23492

● Drop Off

● Drop Off over 500 tons per year

recycling_layer_bluecart

00790.74
03153.07
03490.21
07975.02
23492

● Drop Off

● Drop Off less 5 tons per year

System + Amount

Drop off - less than 5 tons per year- 2011

DropOff

Drop Off less 5 tons per year
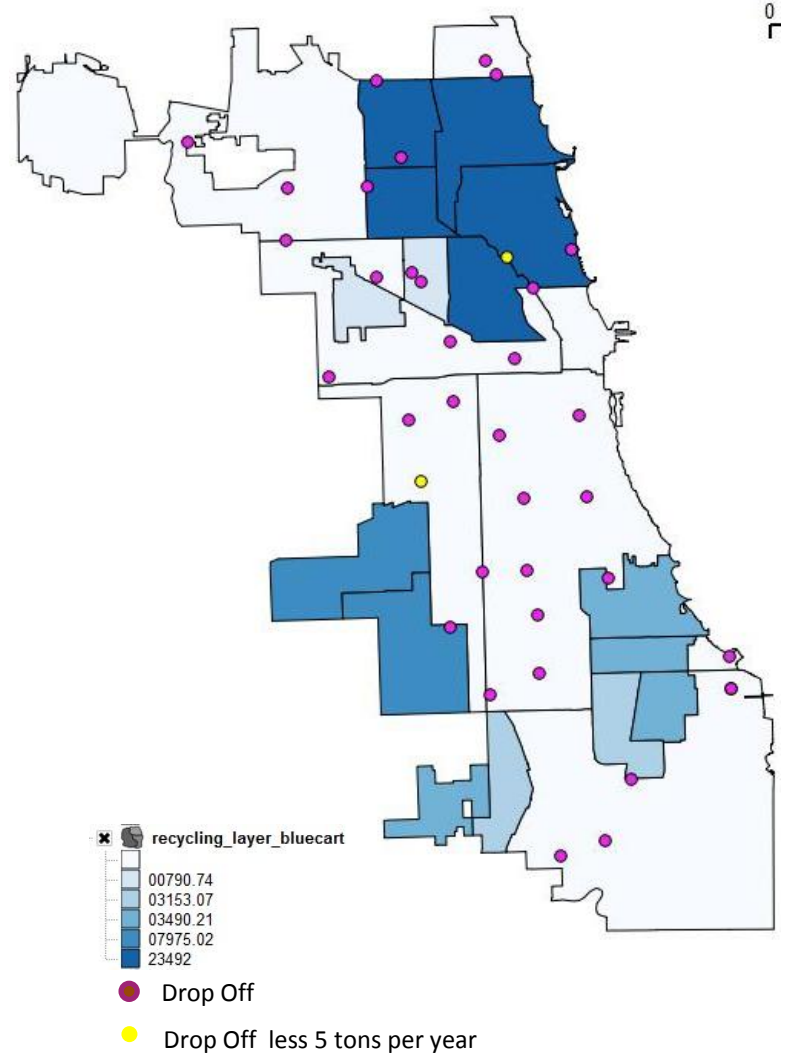
System + Amount

Drop off - less than 100 tons (20 %) per year- 2011

22/37

recycling_layer_bluecart

- 00790.74
- 03153.07
- 03490.21
- 07975.02
- 23492
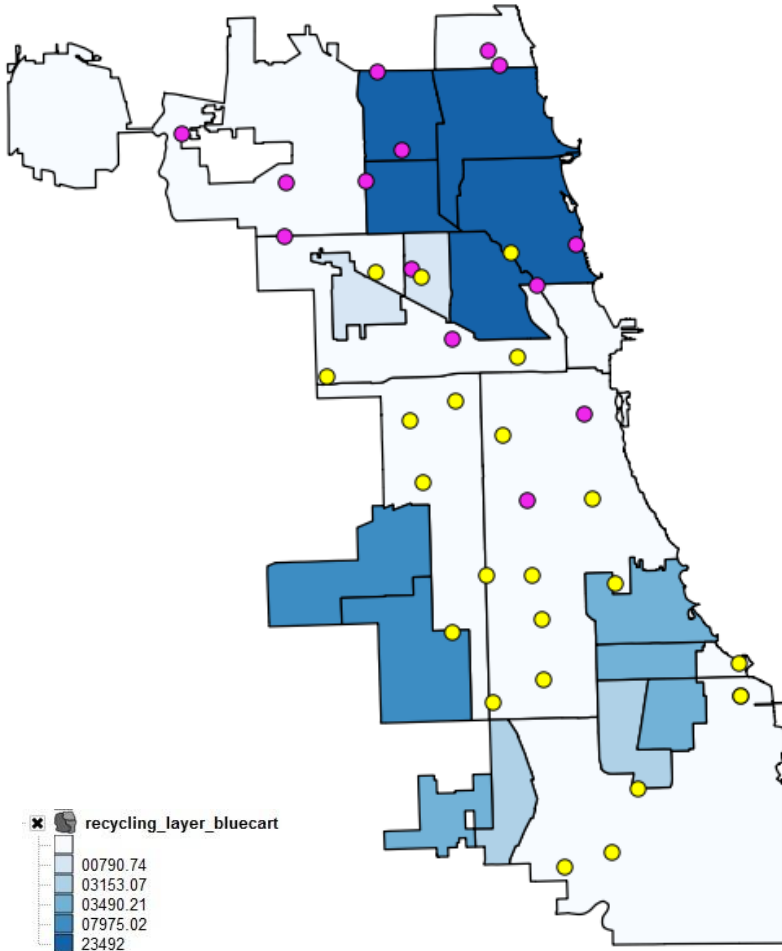
● DropOff

● Drop Off less 100 tons per year

Drop off - more than 300 (50%) tons per year- 2011

5/37

recycling_layer_bluecart

- 00790.74
- 03153.07
- 03490.21
- 07975.02
- 23492
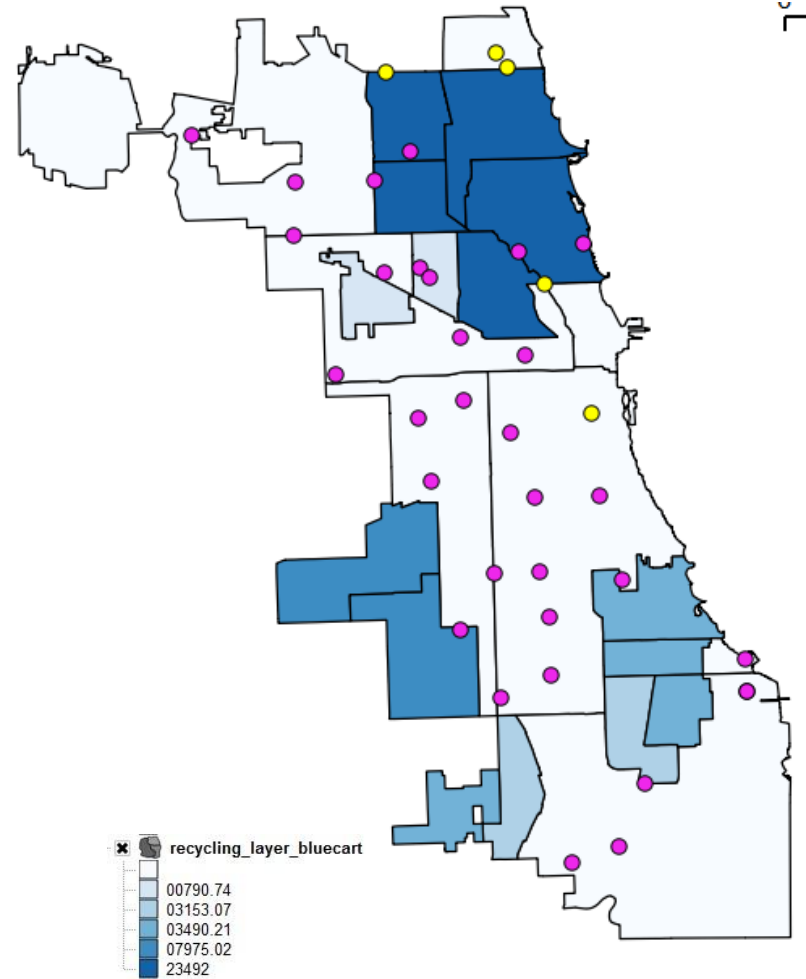
● DropOff

● Drop Off more than 300 tons per year

More than 50 % of the Drop off center recollect less than 20 % of tons (100 tons) per year- 2011

System + Amount + Demographic: Who is recycling most? Recycling range according to the race

Drop off + blue cart + **White** People
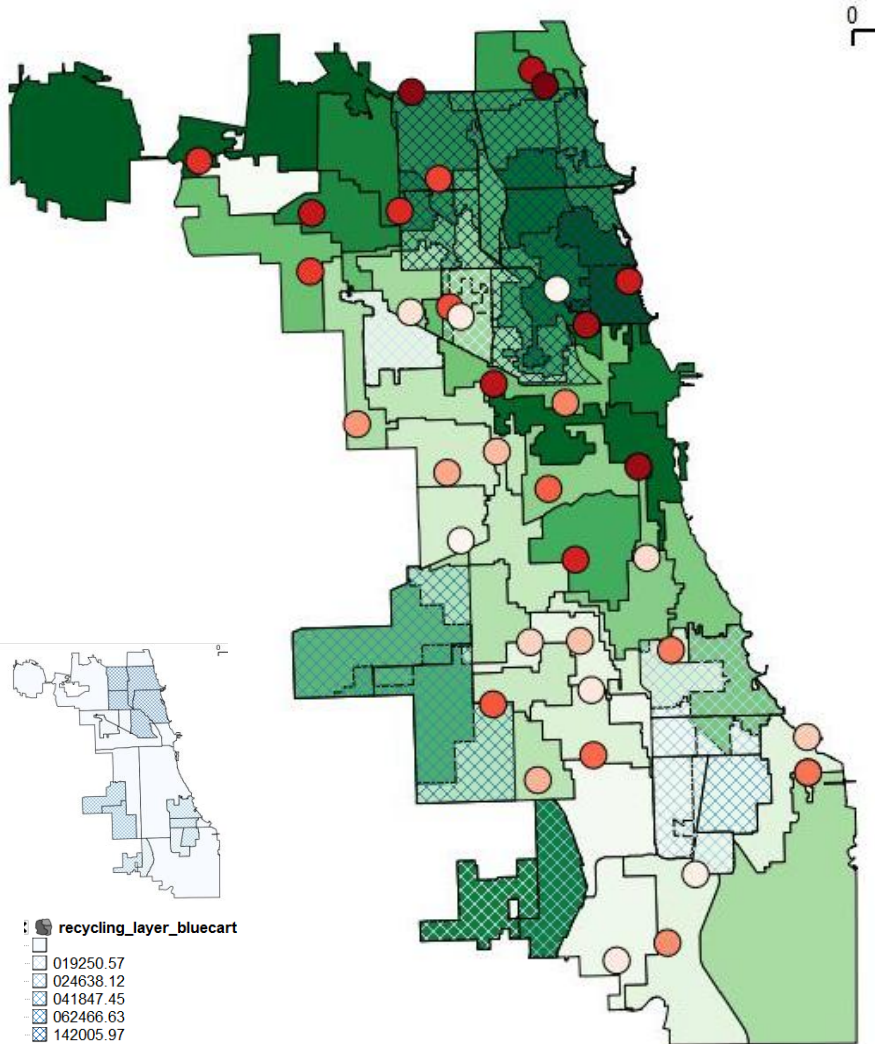
Drop off + blue cart + **Asian** People
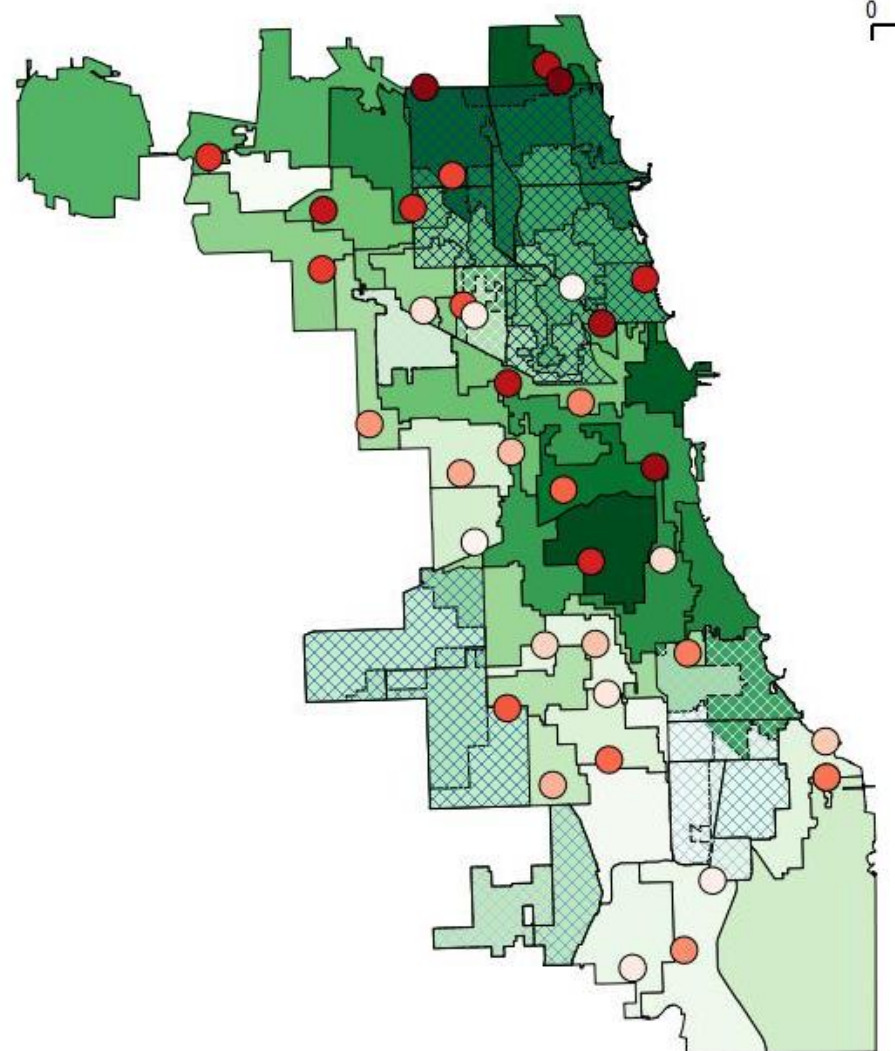
recycling_layer_bluecart

- 019250.57
- 024638.12
- 041847.45
- 062466.63
- 142005.97

Demographic

System + Amount + Demographic: Who is recycling most? Recycling range according to the race

Drop off + blue cart + **Hispanic** People
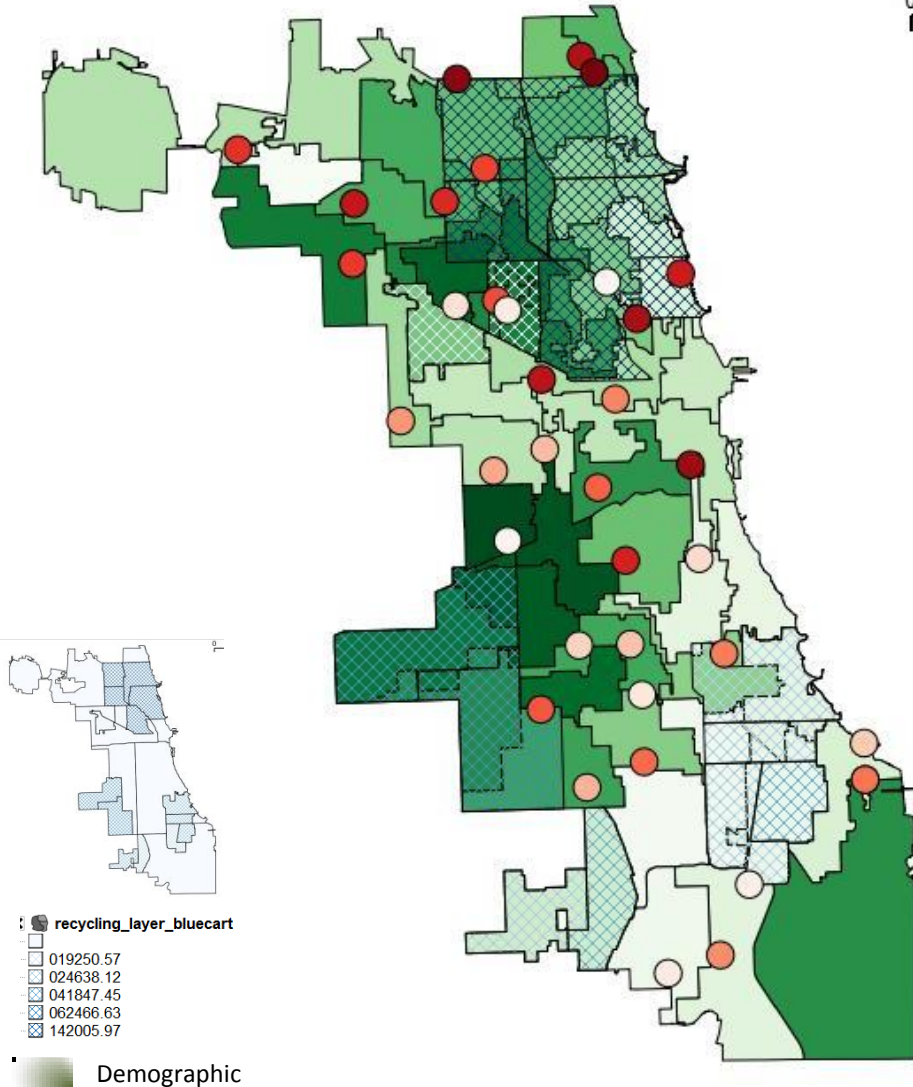
Drop off + blue cart + **Black** People

recycling_layer_bluecart

- 0 19250.57
- 0 24638.12
- 0 41847.45
- 0 62466.63
- 0 142005.97

Demographic
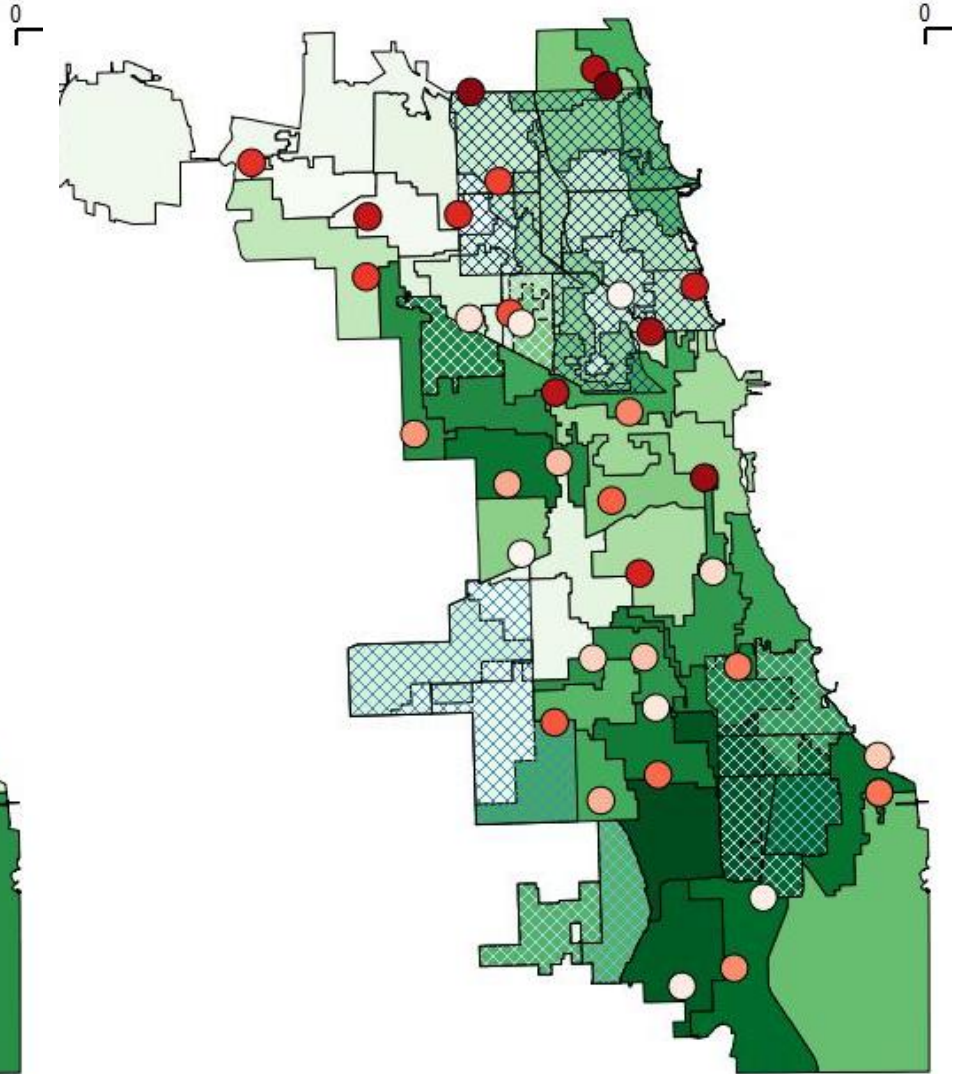
Conclusion

Recycling most according to the race:
1. White
2. Asian
3. Hispanic
4. Black

Recycling most according to the region:
North area of Chicago
1. Region 1 and 2
2. Region 4
3. Region 3
4. Region 5
5. Region 6

System per region
Blue cart per region : all region
Drop off per region:
Region 1: 5
Region 2: 5
Region 3: 6
Region 4: 5
Region 5: 10
Region 6: 5

System per ward
Number of ward :50
Ward Without Blue cart:26
Ward Without blue cart & drop off service :22
Number of people without service: 1,186,364
Number of people in Chicago: 3,620,962

Total amount 2011
Drop off   : 4,624.9
Blue cart : 38,901. 04

- Total amount of Drop off center recollection is equal to 11 % of the total Blue card recollection area.
- More than 50 % of the Drop off center recollect less than 20 % of total tons (100 tons) per year- 2011
- Total amount of blue cart region1 and 2 recollect more than all drop of center