Counting Total Housing Units on the Open Data Portal

This document shows how to answer the question, "**How to count total number of housing units in Cook County with public data?**".

To answer this question, we need to consider **3 types of cards**, including residential properties, livable condo spaces, and large multi-unit properties. Their data sources are **publicly available** on **3 different databases** in the Open Data portal.

The **links** to 3 data sources:

- Single-and-Multi-Unit Characteristics data
- Condo characteristics data
- Commercial valuation data

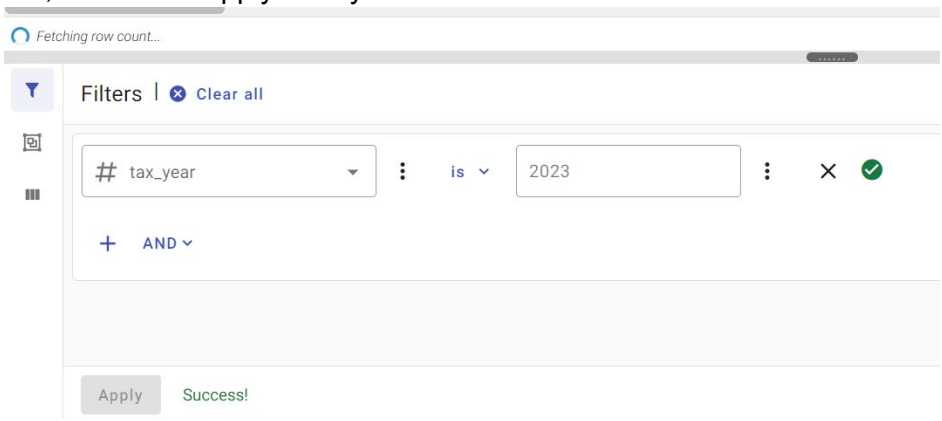
The next section shows how to access properties data, add and apply filters, group data, and count.

Instructions

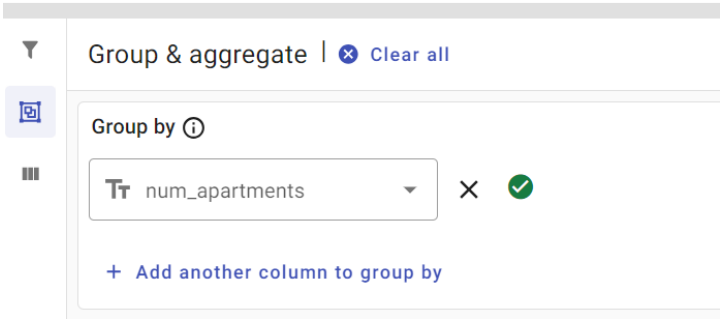
1. Residential Properties Numbers

Single-and-Multi-Unit Characteristics data, where we can find the information for residential properties except condo spaces (Class 299), is unique to each "tax_year", "pin", and "card_num" (the number of cards). A card is a building, because each parcel of land can have multiple buildings on it. Each card that is a residential property class should be counted as a housing unit.

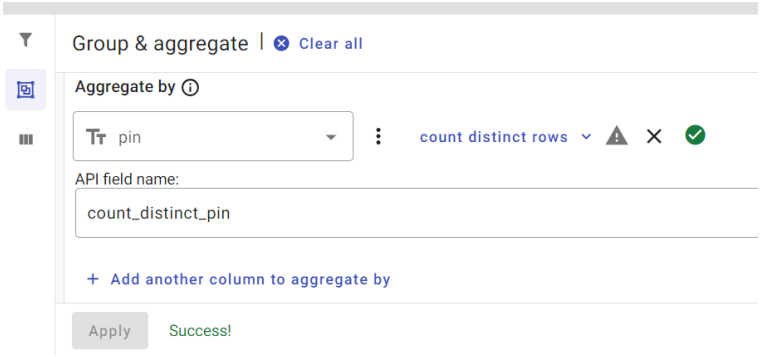
a) Navigate to Single-and-Multi-Unit Characteristics dataset.
b) Click "Action" and then click "Query data".
c) First, **filter data in 2023**:
   - click "Filters" in the left bar, click "Select a column to filter", choose the column named "tax_year", change filter way to "is", input the year number "2023" after "is", then click "Apply" and you can see it works when it shows "Success!".



d) Second, **group and aggregate data** to count the distinct PIN grouped by numbers of apartments:
   - click “Group & aggregate” in the left bar
   - in “Group by” section, click “Select a column”, choose “num_apartments”

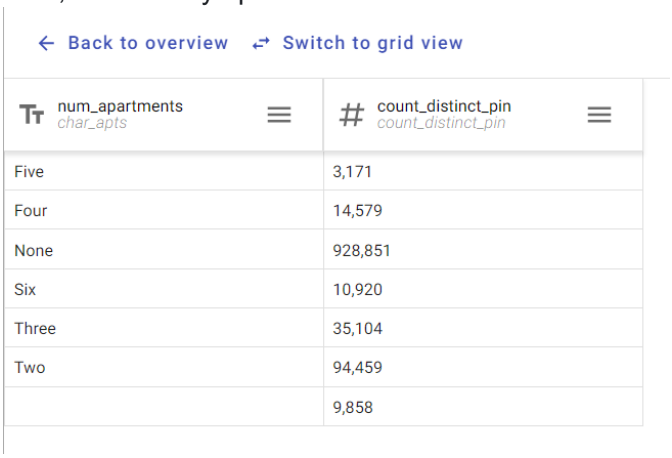


   - in Aggregate by section, click “Select a column”, choose “pin”; click “Select calculation”, and select “count distinct rows”.



   - click “Apply” and wait for “completing fetching the data”.

e) Then you could get **a summary** of distinct properties (pin) for each number of apartments. For The blank cell and “None” value in “num_apartments”, let”s assume them as “One”, or this property has 1 living unit, because it”s probably a condo or single-family home, without any apartments.



num_apartments *char_apts*	count_distinct_pin *count_distinct_pin*
Five	3,171
Four	14,579
None	928,851
Six	10,920
Three	35,104
Two	94,459
	9,858

f) To get the counts of properties for different numbers of apartments, we need to multiply the "num_apartments" by "count_distinct_pin" and get 5 numbers for 5 types, and we aggregate the five numbers to get the total counts for residential properties except condo ones. You can do it in excel, google sheet or by yourself.

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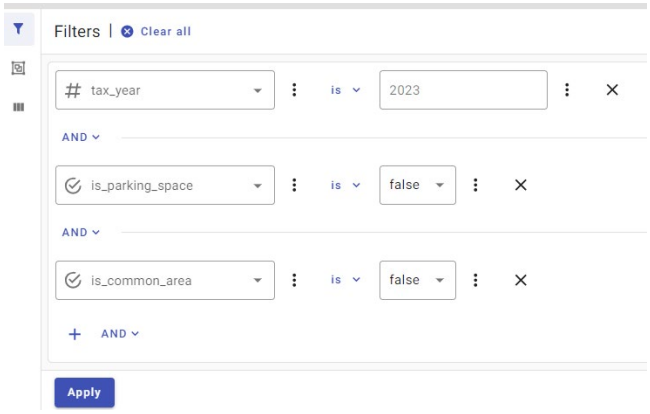
	A	B	C
1	num_apartments	count_distiinct_pin	units
2	5	3,171.0	15,855.0
3	4	14,579.0	58,316.0
4	None	928,851.0	928,851.0
5	6	10,920.0	65,520.0
6	3	35,104.0	105,312.0
7	2	94,459.0	188,918.0
8	Null	9,843.0	9,843.0
9	sum		1,372,615.0

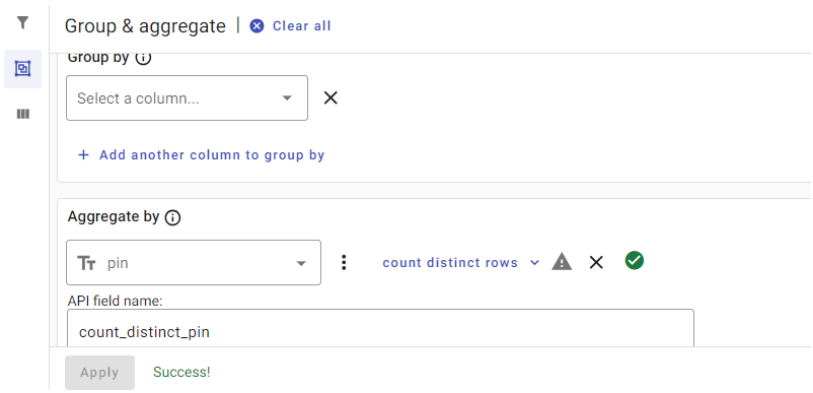
2. Condon Counts

Condo characteristics data, where we can find information of condo spaces, is unique to each Tax Year and PIN, for PINs that are class 299. However, not all class 299s are livable. If "is_parking_space" or "is_common_area" is true, then that PIN isn't a housing unit.

a) Navigate to Condo characteristics dataset
b) Click Action and then click Query data.
c) First **filter data of livable ones** (not for parking space and common area) in 2023:
   - click Filters in the left bar, click "Select a column to filter", choose the column named "tax_year", change filter way to "is", and input the year number "2023" after "is"
   - click "+" and keep logic "AND"; click "Select a column to filter", choose the column named "is_parking_space", change filter way to "is", and choose "false" after "is"
   - click "+" and keep logic "AND"; click "Select a column to filter", choose the column named "is_common_area", change filter way to "is", and choose "false" after "is"
   - click "Apply" and you can see it works when it shows "Success!"



d) Second **aggregate data to count the distinct PIN**:
   - click “Group and Aggregate”, and in “Aggregate by” section, click “Select a column to filter”, choose the column named “pin”, change aggregate way to “count distinct rows”
   - click “Apply” and you can see it works when it shows “Success!”

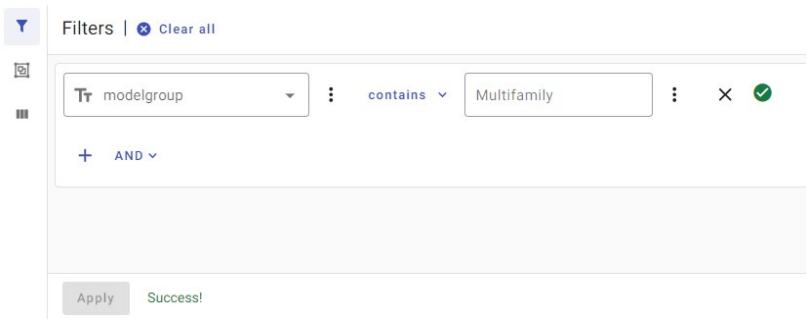


e) In the output table, you can get counts of livable condo in the column named “count_distinct_pin”

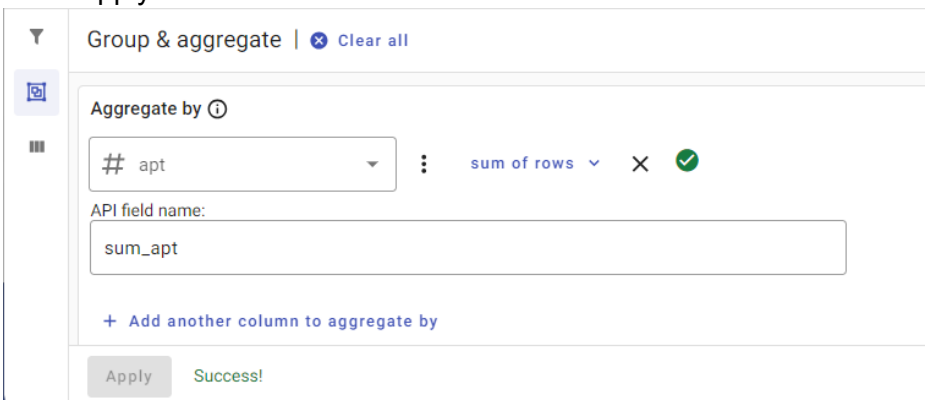
3. Large multi-unit properties

Commercial valuation dataset at the time of writing currently contains data from each tri: City Tri in 2021, North Tri in 2022, and South Tri in 2023, so we **don’t** need to filter data in 2023. And it contains many property types, from gas stations, to hotels, to multi-family. You only need to look at properties where “modelgroup” or the “property_type/use” indicates some kind of **multifamily property**. Then, for those properties, you can count the “apt”

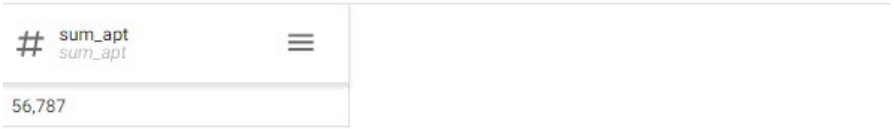
a) Navigate to Commercial valuation dataset
b) Click “Action” and then click “Query data”
c) First filter data of multifamily property (the ones where “modelgroup” contains “Multifamily”):
   - click “Filters” in the left bar, click “Select a column to filter”, choose the column named “modelgroup”, change filter way to “contains”, and input the “Multifamily” to filter
   - click “Apply” and you can see it works when it shows “Success!”



d) Second aggregate data to count the sum of apartments:
   - click Group & aggregate in the left bar,
   - in “Aggregate by” section, click “Select a column”, choose “apt”, change aggregation way to “sum of rows”
   - click “Apply”



e) In the output table, we get the total number of multifamily properties in the column of “sum_apt”



4. Total Count of Housing Units in Cook County with Public Data

To get the **total count of housing units** in Cook County, you could add the total counts of residential properties, condo and multifamily properties together. You can do it in excel or by yourself. And you can get the counts.

	A	B	C	D
1	res_unit	condo_uint	multi_unit	sum_unit_2023
2	1,372,615.0	373,235.0	56,787.0	1,802,637.0
3				