Using Community Data Program data in Tableau

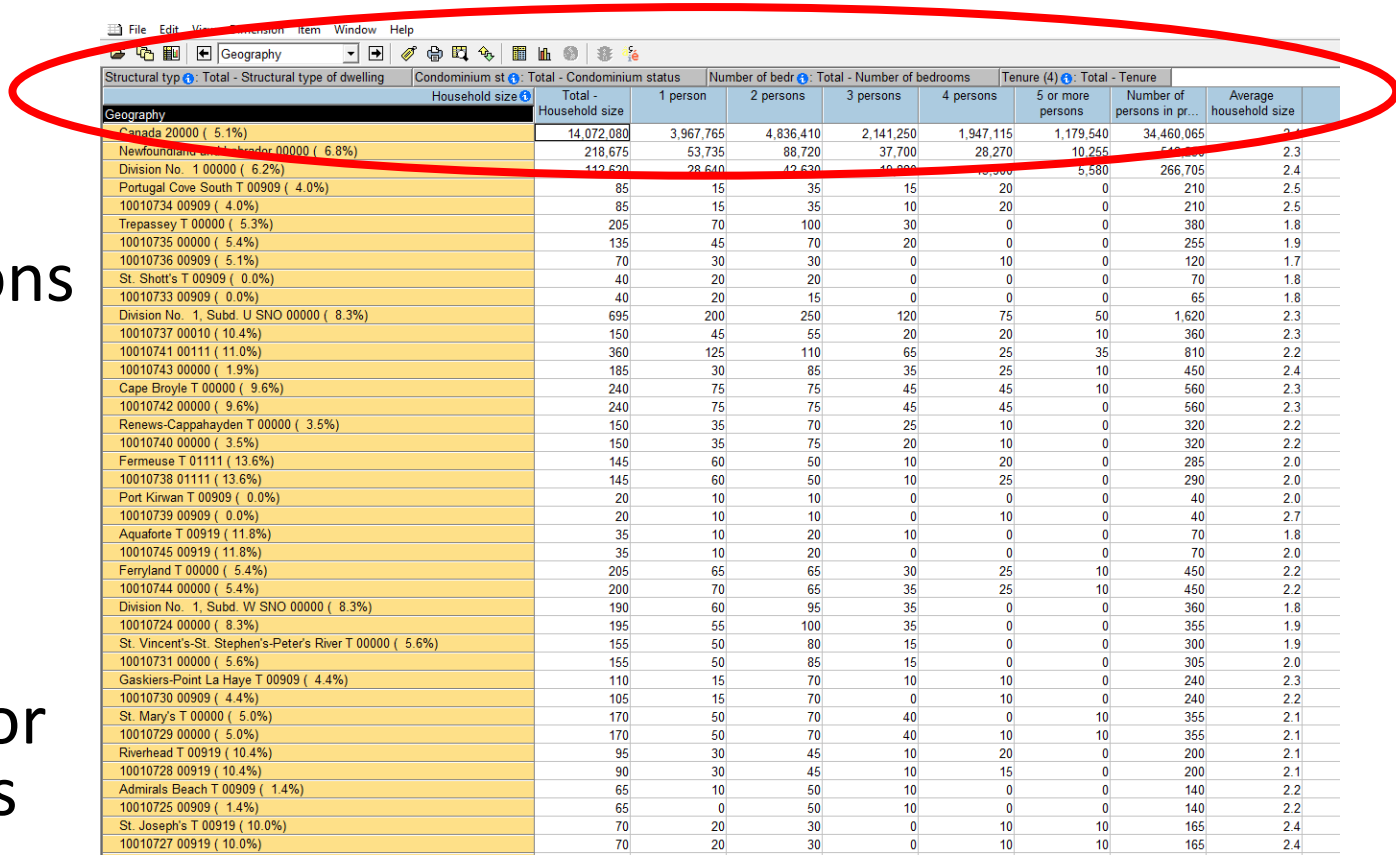
By Jamie Carrick

From Beyond 2020 to Tableau

- Most CDP data is in IVT format, openable only in Beyond 2020
- Tableau cannot read IVT tables – extraction is required
- Beyond 2020 can export to CSV, a Tableau friendly format
- The exact process will depend on the data and the needs of the project

Challenge: Preserving the multidimensionality of IVT tables

- IVT tables often contain >2 dimensions
- Limiting extracts to 2 dimensions is an option
  - 1 geography dimension and 1 variable dimension
  - Or 2 variable dimensions for a single geography
- It is possible to capture many or all combinations of dimensions in a single export



File Edit Item Window Help

Geography

Structural typ: Total - Structural type of dwelling	Condominium st: Total - Condominium status				Number of bedr: Total - Number of bedrooms		Tenure (4): Total - Tenure	
Household size / Geography	Total - Household size	1 person	2 persons	3 persons	4 persons	5 or more persons	Number of persons in pr...	Average household size
Canada 20000 (5.1%)	14,072,080	3,967,765	4,836,410	2,141,250	1,947,115	1,179,540	34,460,065	
Newfoundland [illegible] Labrador 00000 (6.8%)	218,675	53,735	88,720	37,700	28,270	10,255		2.3
Division No. 1 00000 (6.2%)	112,630	28,640	42,630			5,580	266,705	2.4
Portugal Cove South T 00909 (4.0%)	85	15	35	15	20	0	210	2.5
10010734 00909 (4.0%)	85	15	35	10	20	0	210	2.5
Trepassey T 00000 (5.3%)	205	70	100	30	0	0	380	1.8
10010735 00000 (5.4%)	135	45	70	20	0	0	255	1.9
10010736 00909 (5.1%)	70	30	30	0	10	0	120	1.7
St. Shott's T 00909 (0.0%)	40	20	20	0	0	0	70	1.8
10010733 00909 (0.0%)	40	20	15	0	0	0	65	1.8
Division No. 1, Subd. U SNO 00000 (8.3%)	695	200	250	120	75	50	1,620	2.3
10010737 00010 (10.4%)	150	45	55	20	20	10	360	2.3
10010741 00111 (11.0%)	360	125	110	65	25	35	810	2.2
10010743 00000 (1.9%)	185	30	85	35	25	10	450	2.4
Cape Broyle T 00000 (9.6%)	240	75	75	45	45	10	560	2.3
10010742 00000 (9.6%)	240	75	75	45	45	0	560	2.3
Renews-Cappahayden T 00000 (3.5%)	150	35	70	25	10	0	320	2.2
10010740 00000 (3.5%)	150	35	75	20	10	0	320	2.2
Fermeuse T 01111 (13.6%)	145	60	50	10	20	0	285	2.0
10010738 01111 (13.6%)	145	60	50	10	25	0	290	2.0
Port Kirwan T 00909 (0.0%)	20	10	10	0	0	0	40	2.0
10010739 00909 (0.0%)	20	10	10	0	10	0	40	2.7
Aquaforte T 00919 (11.8%)	35	10	20	10	0	0	70	1.8
10010745 00919 (11.8%)	35	10	20	0	0	0	70	2.0
Ferryland T 00000 (5.4%)	205	65	65	30	25	10	450	2.2
10010744 00000 (5.4%)	200	70	65	35	25	10	450	2.2
Division No. 1, Subd. W SNO 00000 (8.3%)	190	60	95	35	0	0	360	1.8
10010724 00000 (8.3%)	195	55	100	35	0	0	355	1.9
St. Vincent's-St. Stephen's-Peter's River T 00000 (5.6%)	155	50	80	15	0	0	300	1.9
10010731 00000 (5.6%)	155	50	85	15	0	0	305	2.0
Gaskiers-Point La Haye T 00909 (4.4%)	110	15	70	10	10	0	240	2.3
10010730 00909 (4.4%)	105	15	70	0	10	0	240	2.2
St. Mary's T 00000 (5.0%)	170	50	70	40	0	10	355	2.1
10010729 00000 (5.0%)	170	50	70	40	10	10	355	2.1
Riverhead T 00919 (10.4%)	95	30	45	10	20	0	200	2.1
10010728 00919 (10.4%)	90	30	45	10	15	0	200	2.1
Admirals Beach T 00909 (1.4%)	65	10	50	10	0	0	140	2.2
10010725 00909 (1.4%)	65	0	50	10	0	0	140	2.2
St. Joseph's T 00919 (10.0%)	70	20	30	0	10	10	165	2.4
10010727 00919 (10.0%)	70	20	30	0	10	10	165	2.4

Horizontal vs vertical table structures

Horizontal

- Numerical data stored in multiple columns
- Each column is a variable

Geography	Variable 1	Variable 2	Variable 3
Geo 1	x	x	x
Geo 2	x	x	x
Geo 3	x	x	x
Geo 4	x	x	x
Geo 5	x	x	x
…			

Vertical

- Data values are stored in a single column
- Each row is a single variable or combination of variables/ geographies
  - Non-numerical columns are dimensions
  - There is a row for each combination of variables in those dimensions
- Preferable in Tableau (in most cases)

Geography	Variable	Value
Geo 1	Variable 1	x
Geo 1	Variable 2	x
Geo 1	Variable 3	x
Geo 2	Variable 1	x
Geo 2	Variable 2	x
Geo 2	Variable 3	x
Geo 3	Variable 1	x
Geo 3	Variable 2	x
Geo 3	Variable 3	x
Geo 4	Variable 1	x
…		

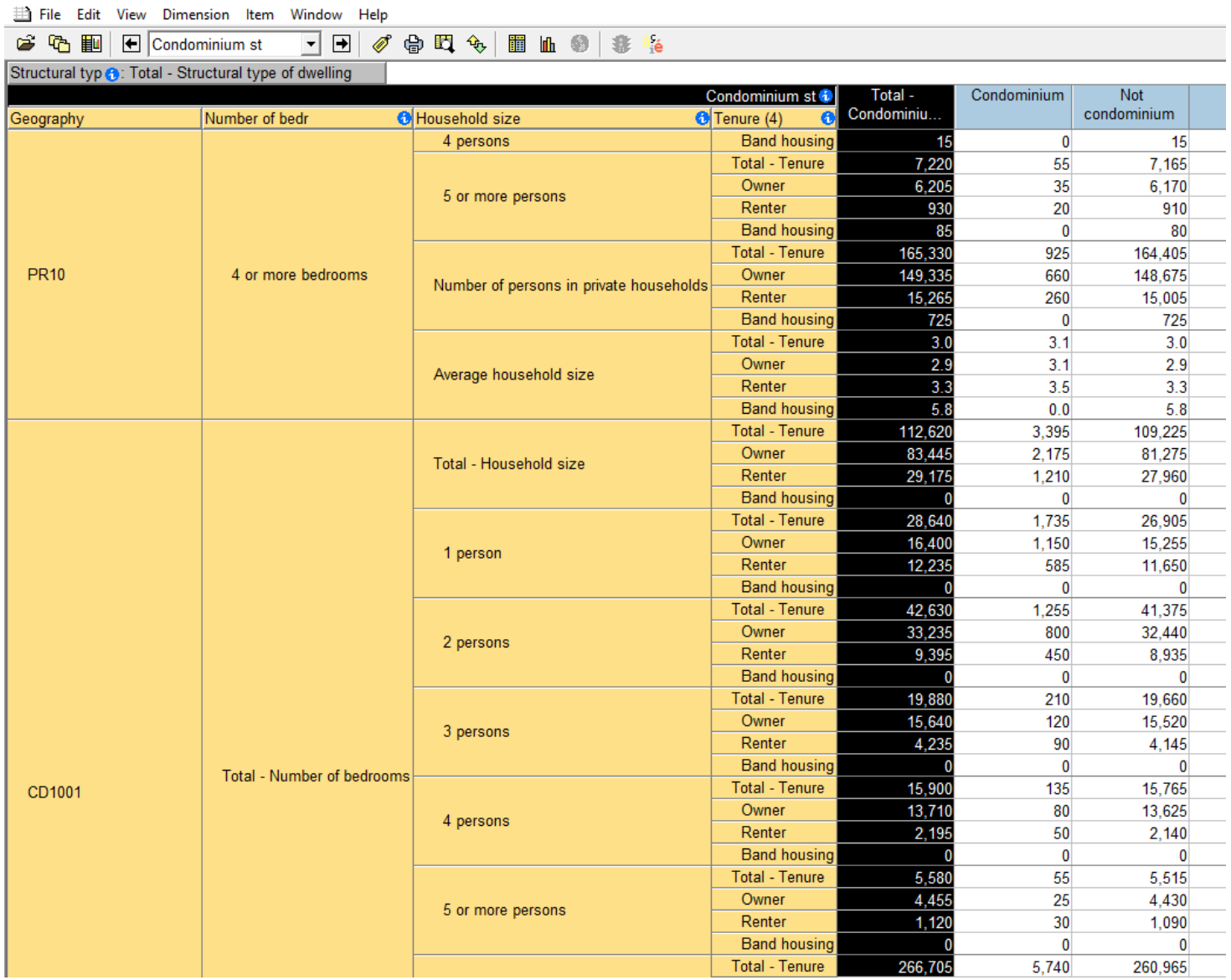
Including more dimensions

Geography	Dimension 1	Dimension 2	Value
Geo 1	Variable 1	Variable A	x
Geo 1	Variable 1	Variable B	x
Geo 1	Variable 1	Variable C	x
Geo 1	Variable 2	Variable A	x
Geo 1	Variable 2	Variable B	x
Geo 1	Variable 2	Variable C	x
…			

Geography	Dimension 1	Dimension 2	Dimension 3	Value
Geo 1	Variable 1	Variable A	Variable i	x
Geo 1	Variable 1	Variable A	Variable ii	x
Geo 1	Variable 1	Variable A	Variable iii	x
Geo 1	Variable 1	Variable B	Variable i	x
Geo 1	Variable 1	Variable B	Variable ii	x
Geo 1	Variable 1	Variable B	Variable iii	x
Geo 1	Variable 1	Variable C	Variable i	x
…				

Vertical Tables in Beyond 2020

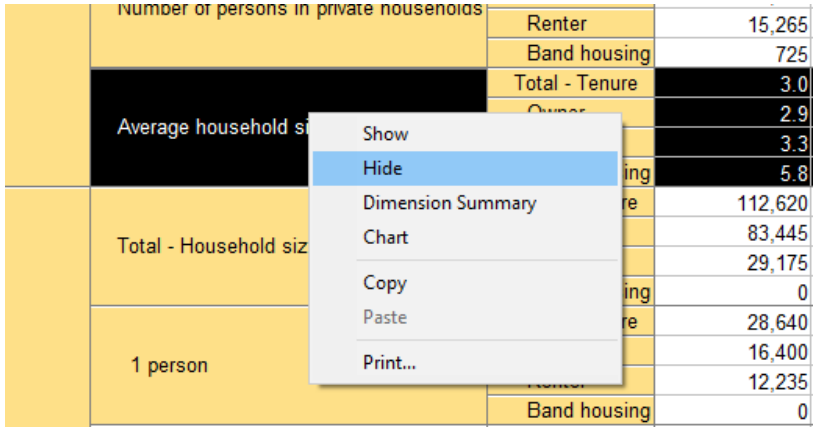
- Drag dimensions you wish to include next to geography
- One dimension will need to be on the x-axis
  - Can be a dimension you don't need (just highlight the total and export only that)
  - Otherwise can be pivoted later or left as columns
- Save as a CSV
  - Export can take a while (but it will work)



Geography	Number of bedr	Household size	Condominium st / Tenure (4)	Total - Condominiu...	Condominium	Not condominium
PR10	4 or more bedrooms	4 persons	Band housing	15	0	15
		5 or more persons	Total - Tenure	7,220	55	7,165
			Owner	6,205	35	6,170
			Renter	930	20	910
			Band housing	85	0	80
		Number of persons in private households	Total - Tenure	165,330	925	164,405
			Owner	149,335	660	148,675
			Renter	15,265	260	15,005
			Band housing	725	0	725
		Average household size	Total - Tenure	3.0	3.1	3.0
			Owner	2.9	3.1	2.9
			Renter	3.3	3.5	3.3
			Band housing	5.8	0.0	5.8
CD1001	Total - Number of bedrooms	Total - Household size	Total - Tenure	112,620	3,395	109,225
			Owner	83,445	2,175	81,275
			Renter	29,175	1,210	27,960
			Band housing	0	0	0
		1 person	Total - Tenure	28,640	1,735	26,905
			Owner	16,400	1,150	15,255
			Renter	12,235	585	11,650
			Band housing	0	0	0
		2 persons	Total - Tenure	42,630	1,255	41,375
			Owner	33,235	800	32,440
			Renter	9,395	450	8,935
			Band housing	0	0	0
		3 persons	Total - Tenure	19,880	210	19,660
			Owner	15,640	120	15,520
			Renter	4,235	90	4,145
			Band housing	0	0	0
		4 persons	Total - Tenure	15,900	135	15,765
			Owner	13,710	80	13,625
			Renter	2,195	50	2,140
			Band housing	0	0	0
		5 or more persons	Total - Tenure	5,580	55	5,515
			Owner	4,455	25	4,430
			Renter	1,120	30	1,090
			Band housing	0	0	0
			Total - Tenure	266,705	5,740	260,965

Vertical Tables in Beyond 2020

- Dimensions not included can be used as filters
- Variables that are not needed can be hidden to exclude from export
  - Reduces size of export



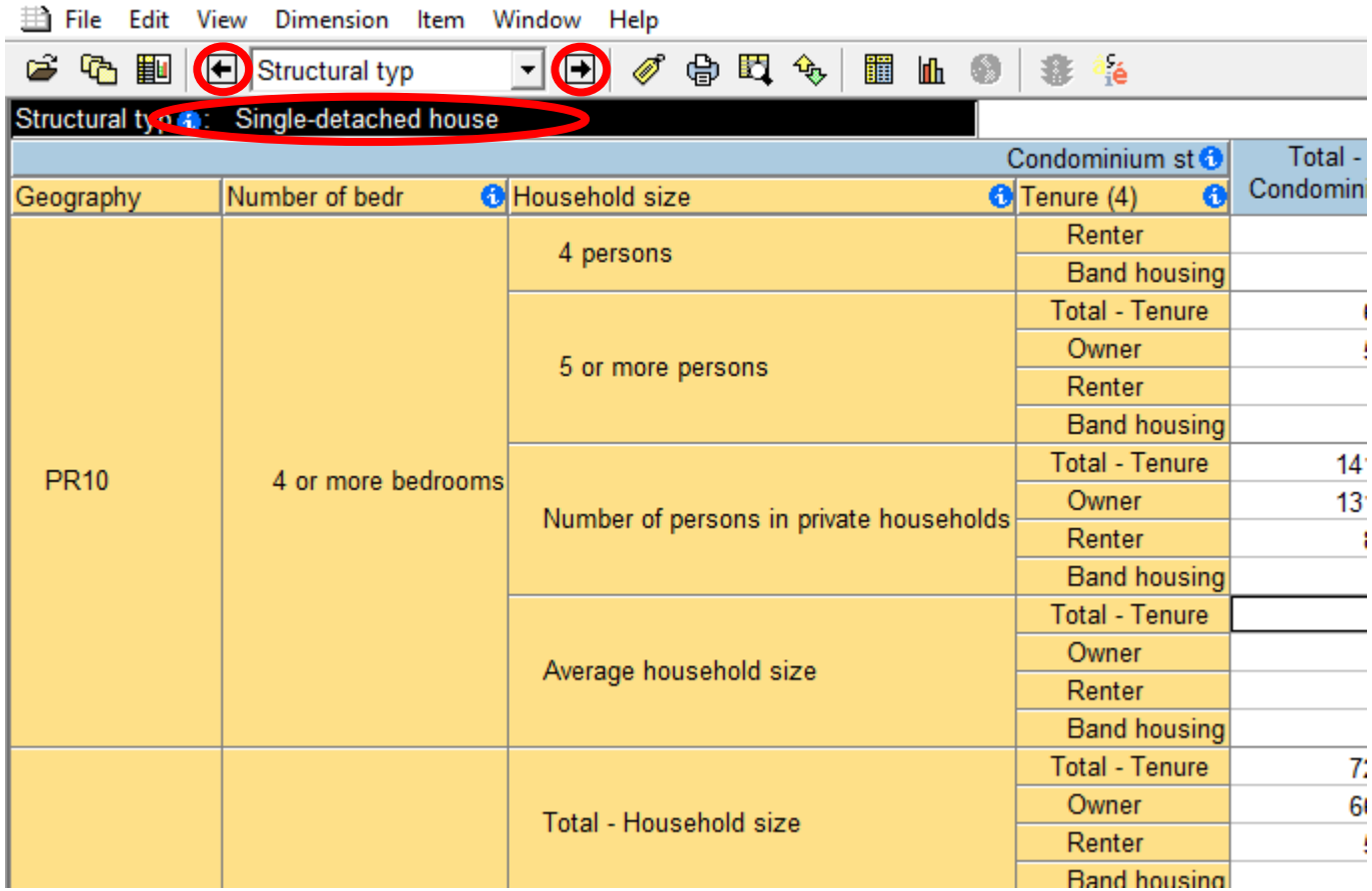
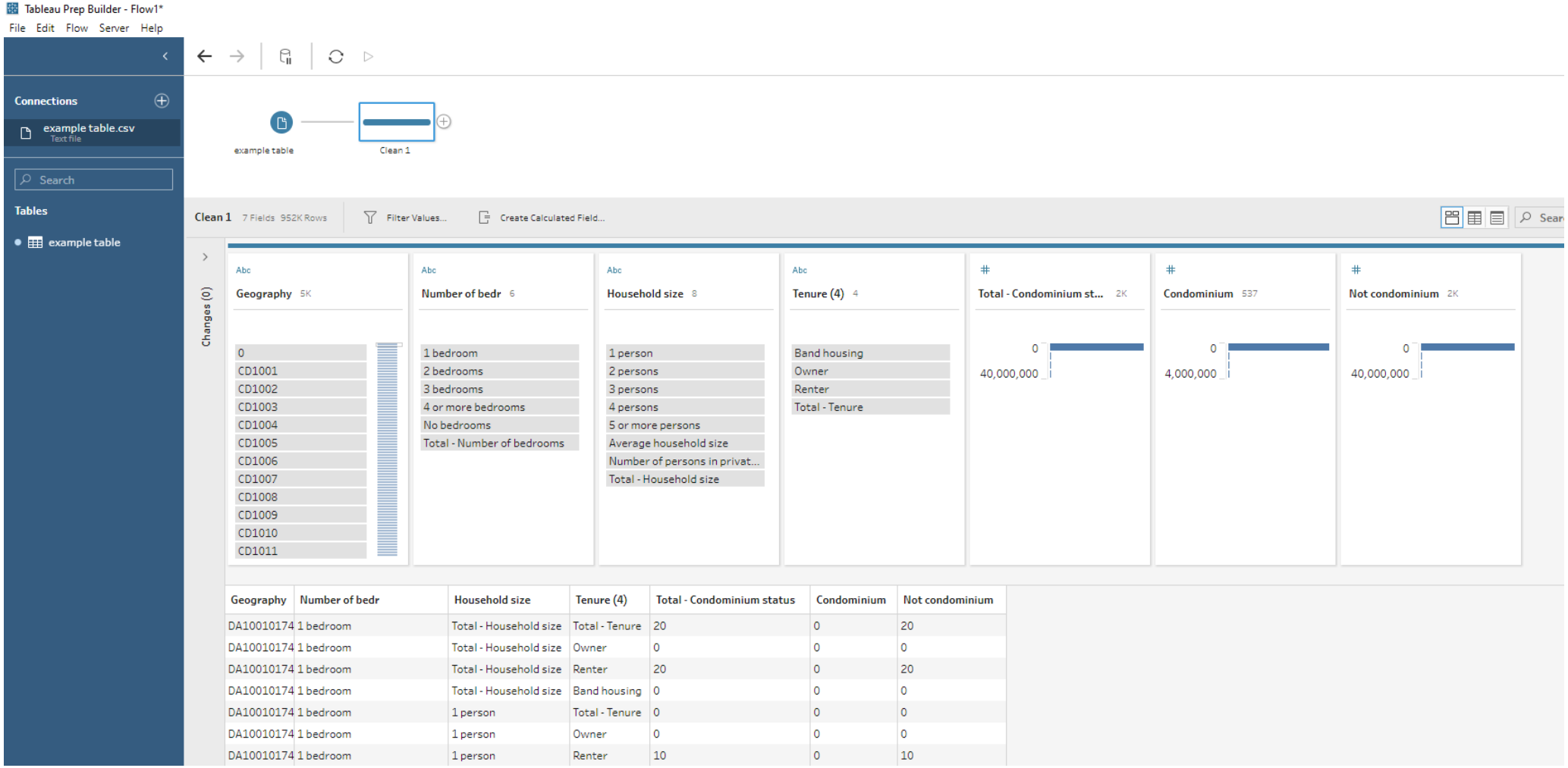


Tableau Prep Builder

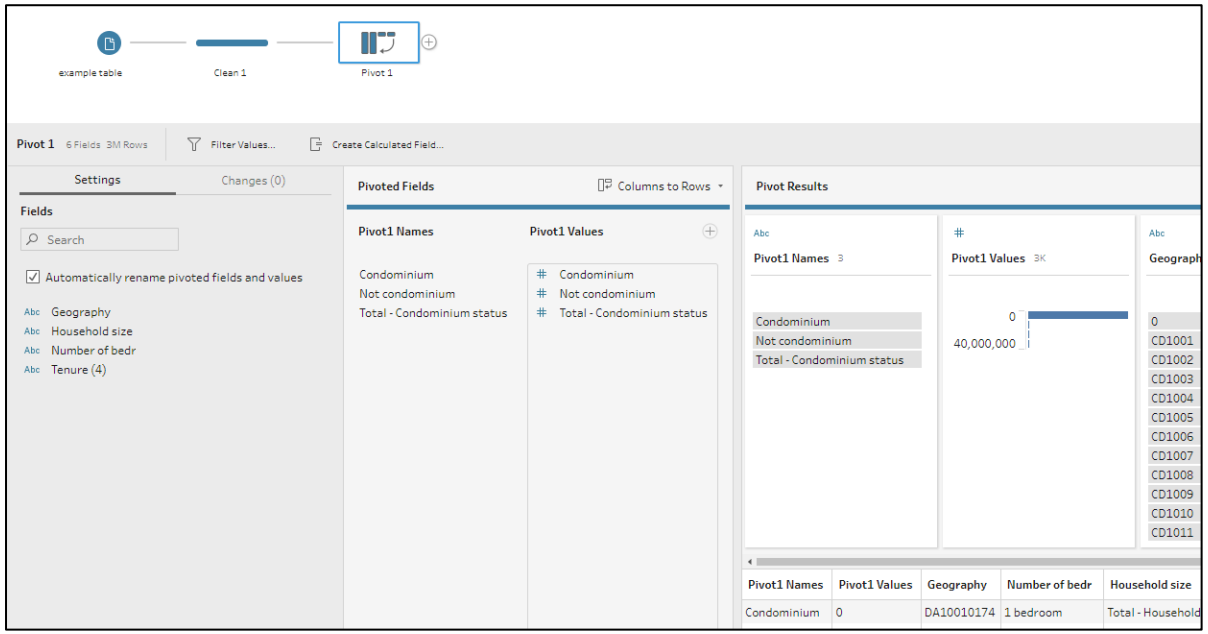
- Can be used to prep tables for Tableau (when necessary)
- Allows data processing on tables too large for Excel



Geography	Number of bedr	Household size	Tenure (4)	Total - Condominium status	Condominium	Not condominium
DA10010174	1 bedroom	Total - Household size	Total - Tenure	20	0	20
DA10010174	1 bedroom	Total - Household size	Owner	0	0	0
DA10010174	1 bedroom	Total - Household size	Renter	20	0	20
DA10010174	1 bedroom	Total - Household size	Band housing	0	0	0
DA10010174	1 bedroom	1 person	Total - Tenure	0	0	0
DA10010174	1 bedroom	1 person	Owner	0	0	0
DA10010174	1 bedroom	1 person	Renter	10	0	10

Tableau Prep

- Pivot columns into rows
- Pivot rows into columns
- Perform calculations on columns
  - i.e. calculate inverses or percentages
- Join tables
  - i.e. joining geographic information
- Union tables
  - i.e. combine tables with same fields covering different regions or themes
- Export as Tableau Data Extract (.hyper)
  - Preferable format for working in Tableau
- Many of these functions are available in Tableau Desktop, but Prep directly edits the table



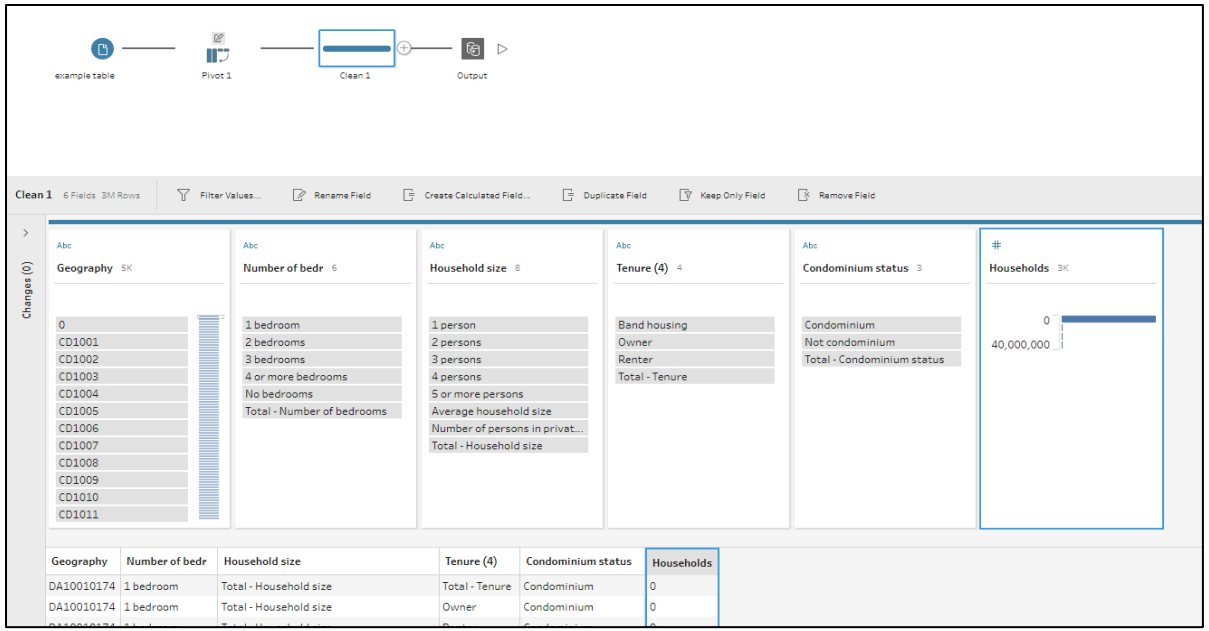


Tableau Desktop

- Columns with variable names will be recognized as dimensions in Tableau
- Filter dimensions to choose a variable to display
  - When selecting variables, all dimensions should be filtered
  - Variable values are the measure fields
- Drag dimensions to rows/columns to create charts

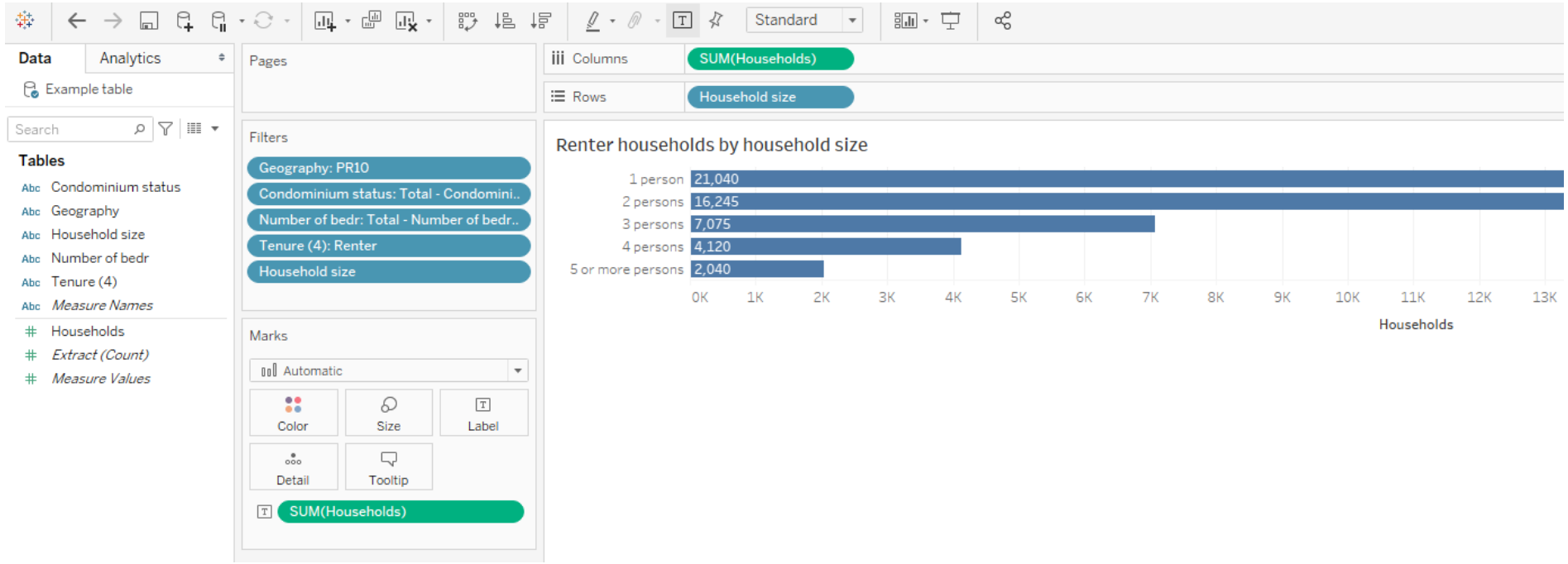


Tableau Desktop

- Dimensions can be used to provide filter options for users
  - Note: avoid selecting “(All)” when dimension contains a total

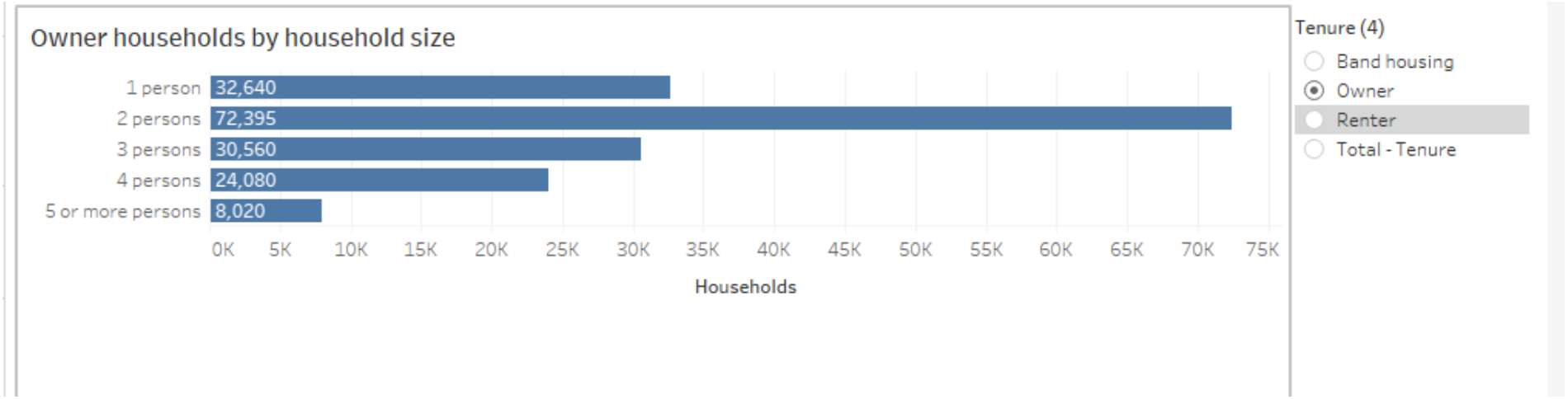


Tableau Desktop – mapping CDP data

- Census data can be mapped using shapefiles from Statistics Canada
- Connect data table to shapefile using relationships (instead of joins)

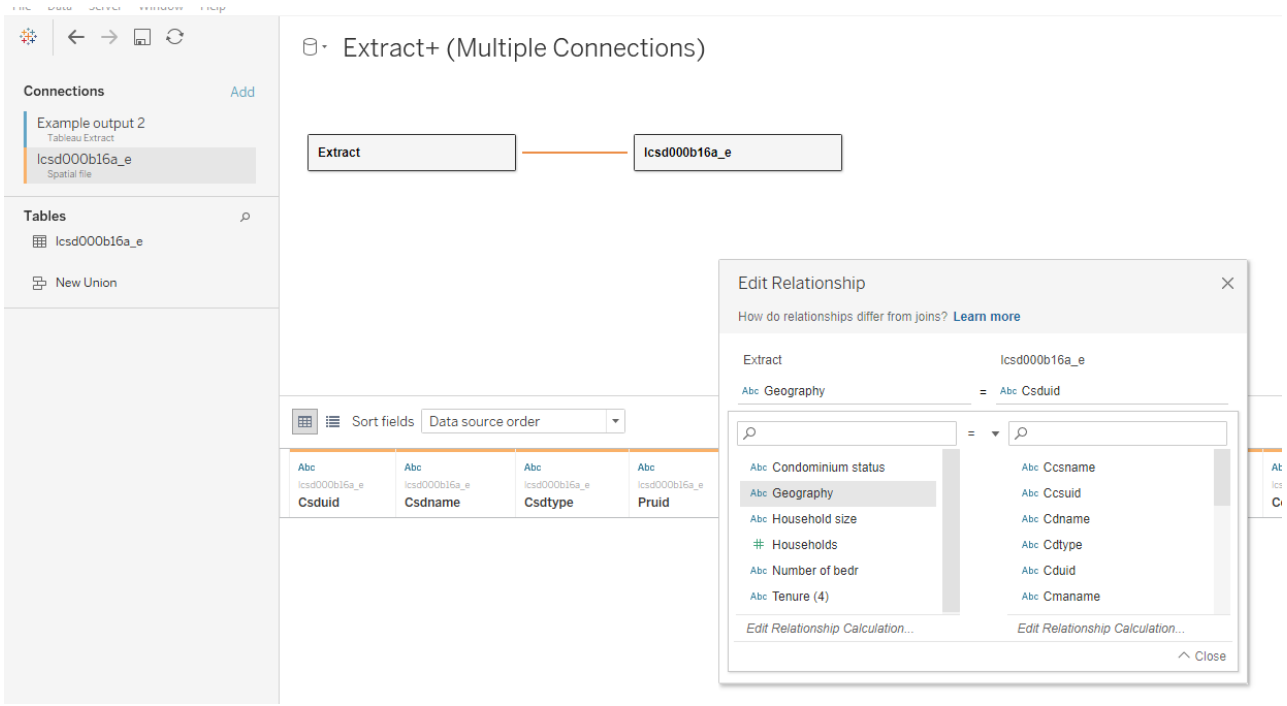
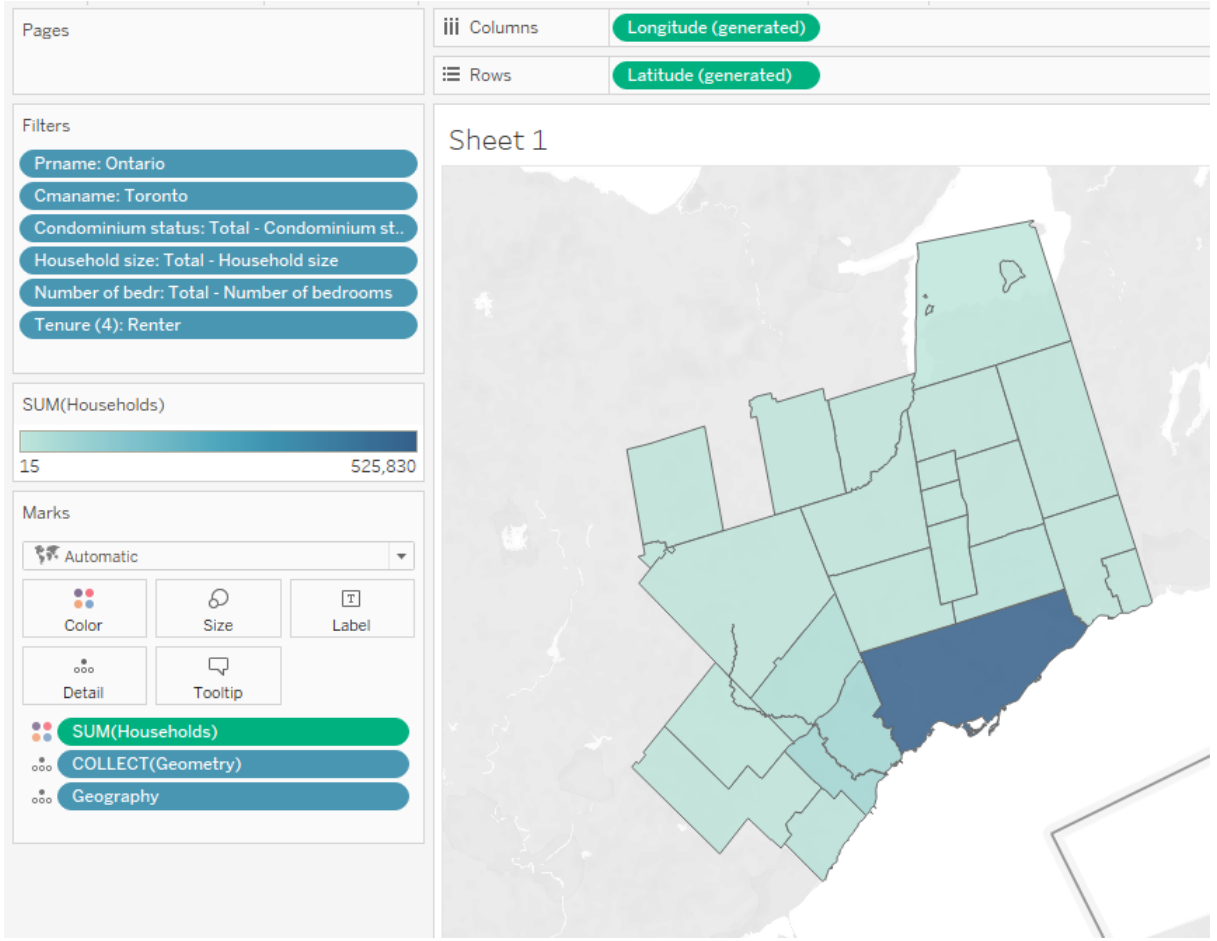


Tableau Desktop – mapping CDP data

- Use filters from shapefile to choose which geographies to show
- Use filters from data table to choose which variable to map
- Maps in dashboards can be used with filter actions to select a geography to filter for
  - Note: data can be aggregated across multiple geographies, but only when they are counts
  - See Community Recovery Dashboard for example



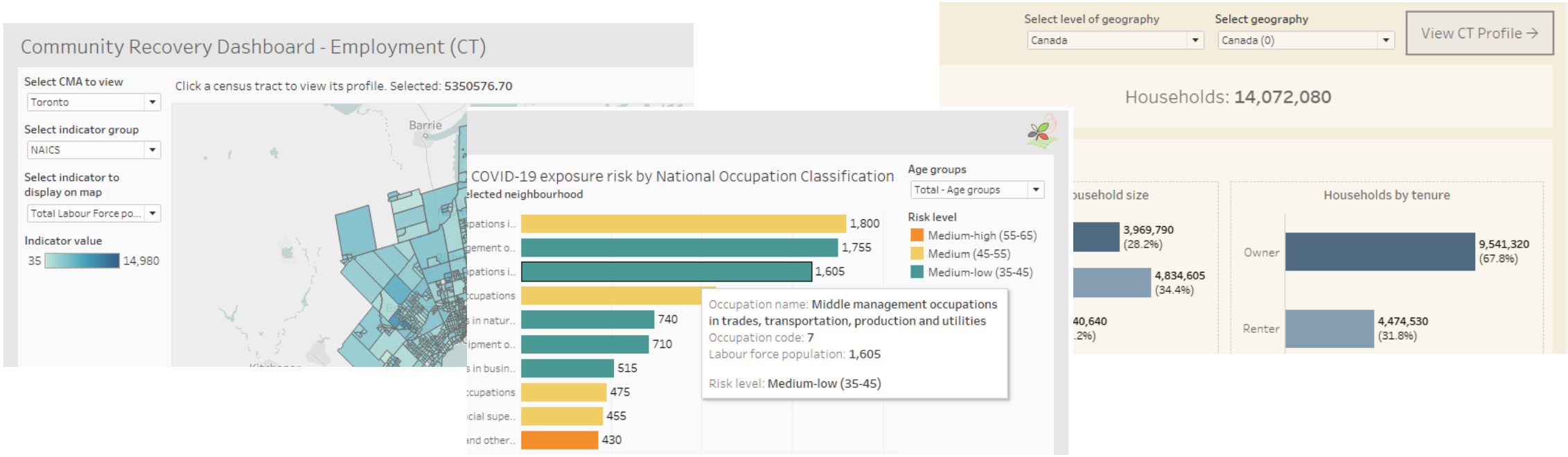
Answering your questions

Learning the basics

- Resources
  - Tableau Free Training Videos
    - Dozens of free training videos offered by Tableau
    - Helpful for getting started, learning the basics
  - The Tableau Community Forums
    - Ask questions and see answers to questions by other users
  - Tableau Public Viz of the Day
    - See how others use Tableau
    - Download workbooks to see how they work
  - Google!

Making an infographic interactive

- Add filter options to dashboard for selecting
  - Geography
  - Variables to display/chart
  - Filters to add to charts
- Interactive maps
  - Select which geographies to view and which data to view on map
- Tooltips can show additional information



Embedding Tableau Dashboards in webpages

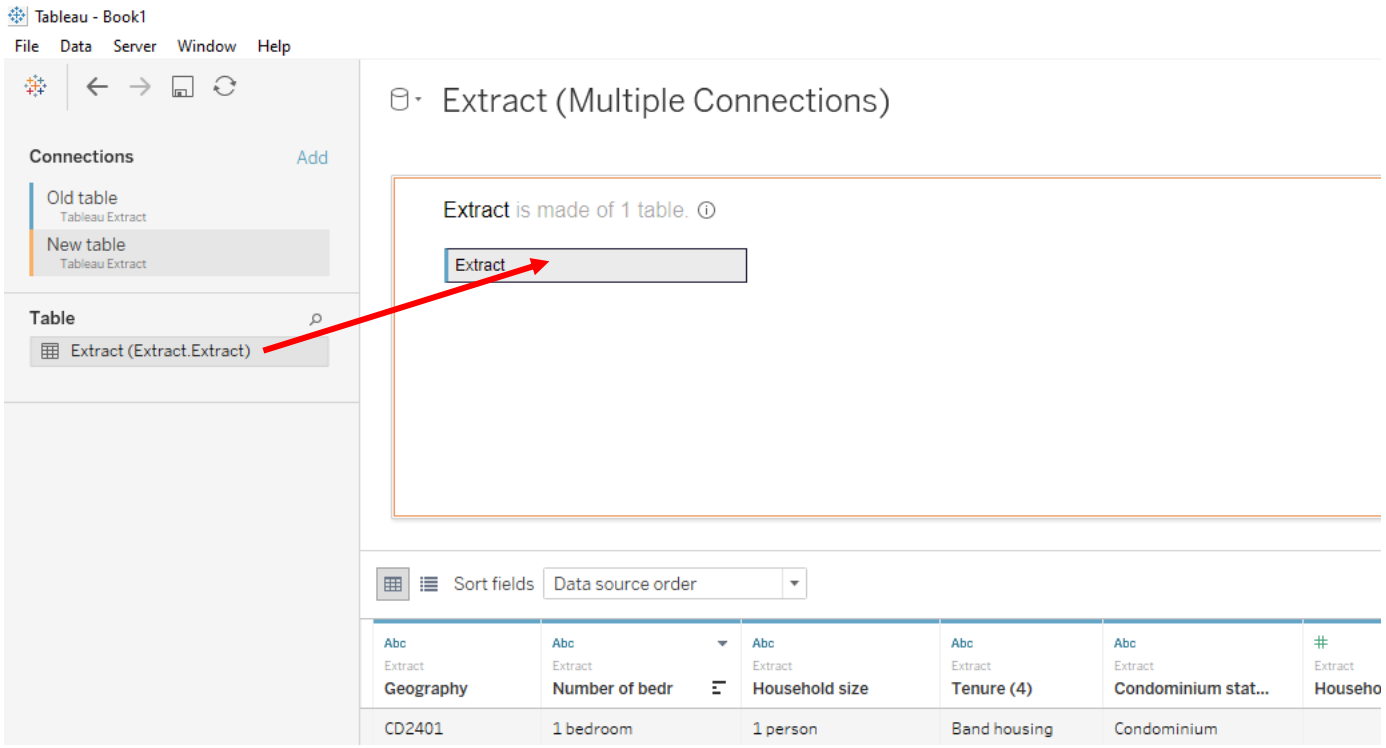
- Tableau Public
  - Free
  - Embedded dashboard becomes publicly available – anybody who sees it can download it, share it and access its data
- Tableau online or server
  - Monthly or annual fee
  - Only registered users under your organization can view
- Tableau Embedded Analytics
  - Significant cost, dependant on factors such as number of users
  - Secure, customizable embedding with support from Tableau

What can be done for free or for a reasonable cost?

- For free
  - Tableau Public
    - Offers most or all the functionality of Tableau desktop
    - Dashboards can’t be saved locally, only to Tableau Public where anybody who sees it can download it, share it and access its data
  - Tableau Desktop 14-day free trial
- For reasonable cost
  - Techsoup offers discounted Tableau desktop licenses for non-profit organizations
    - 2-year license, includes Tableau prep builder

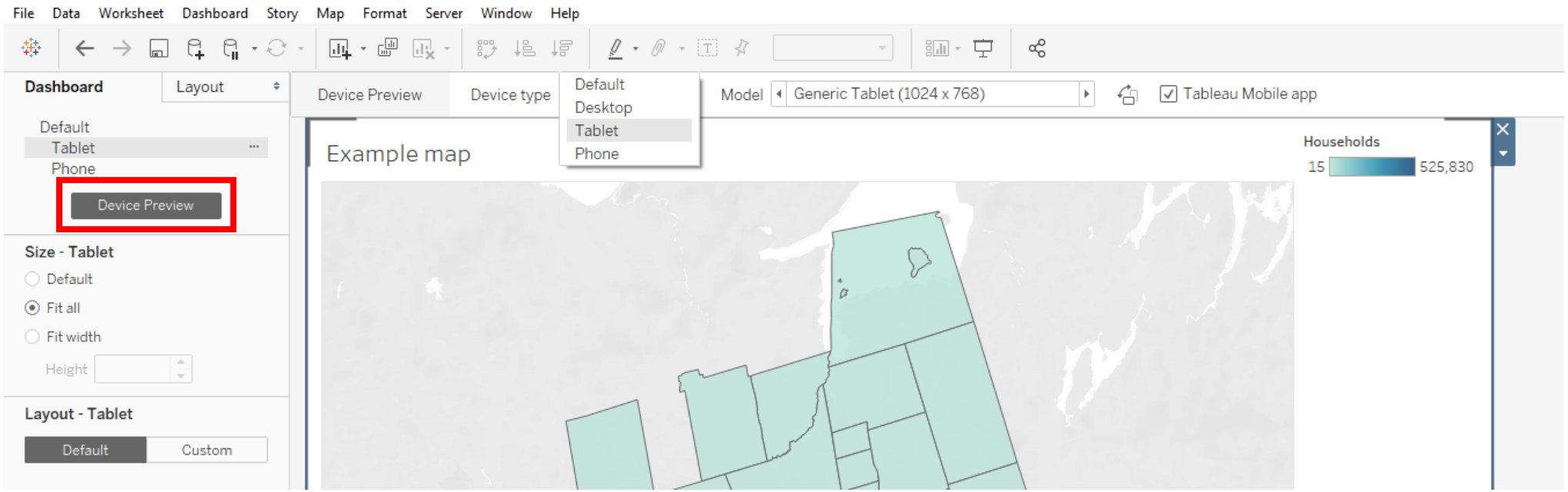
Changing the data source tables for a live dashboard without having it explode

- Add the new table as a new connection to the existing data source
- Double click the old table in the data source pane, then drag the new table onto the old one
- Make sure field formats are correct and everything updated correctly, then old table connection can be removed
- Keep a backup of your workbook in case anything goes wrong



Formatting dashboards for different screens and devices

- Use “Device preview” to preview your dashboard on different screens/devices and create separate layouts for those devices



Thank you!

Questions?