



# **An Approach to Mass Appraisal in Power BI**

April 14, 2026

# Agenda

- Overview of Tools
- Architecture
- Hands-on Demonstration
- Reflection
- Related Products

# Mass Appraisal Activities

- Data Collection and Maintenance

- Field Work, PI
- Sales

Identify records for research

- Highlight, filter
- Data

- Valuation

- Model Configuration and
- Mass Adjustment

Iterative Calculations

- As-if Scenarios
- Slice by strata
- Compare against standards

- Measure Valuation Performance: Ratio Study

# Workflow

- Start of Season
  - Update sale date parameters
  - Refresh index spreadsheet
  - Sales review
- Repeat for as-if scenarios
  - Data refresh in Power BI
  - Review ratio statistics
  - Model refinement (PACS)
  - Set adjustment indices (Excel)
- Finalize
  - Enter adjustment indices (PACS Admin)
  - Recalc (PACS)
  - Data refresh in Power BI
  - Review Gain/Loss
  - Export Sales data

# Tools 2025

## Ratio Analysis

The interactive Ratio Analysis project supports data review and statistical analysis of sale ratios using proposed and current values. The statistical analysis, or mass appraisal, value real property.

Property and sale data are retrieved directly from the database. Proposed index values are reviewed in the spreadsheet.

### Annual Setup

Set the date range... and update filter. DR. Reset values in the Excel spreadsheet. Refresh all data in Power BI (and the Power BI Gateway) automated, set up Gateway)

### Tool Tips

Navigation: tabs at the bottom or buttons. Drill-through (filtered based on the filters). Filters are synchronized across Sales Review. Clear Filters button resets all filters to show all data. Hover over buttons for tool-tips; hover over filters for additional detail and drill-through options.



Revised September 2024

### Analysis Steps

Region OLTP

Back Clear Filters Instructions Indices Vertical Equity

Filters based on sale attributes. Sales Review WORKING Gain/Loss

Sale Dates: 1/2/2025 - 3/17/2026

Region Code: All

Neighborhood: Island

DOR Dates: All

County Sale Code

MARKET

NONCONFORM

Use Category

Commercial

Residential

Waterfront

Vacant Land

Multi-Property

Vacation Rental

Neighborhood Category

Condominium

Improvement On...

DOR Category

Sale Type

All

### Current AV Ratios (Indices)

Region	# Sales
1-SJI	1
2-ORC	1
3-LPZ	1
4-SHW	1
5-OSV	1
6-OAP	1
7-ORT	1
<b>Overall</b>	<b>3</b>

### Proposed AV Ratios (Indices)

Region	# Sales
1-SJI	1
2-ORC	1
3-LPZ	1
4-SHW	1
5-OSV	1
6-OAP	1
7-ORT	1
<b>Overall</b>	<b>3</b>

Region OLTP

Back Clear Filters Instructions Indices Vertical Equity

Filters based on sale attributes. Sales Review WORKING Gain/Loss

Sale Dates: 1/10/2025 - 3/17/2026

Region Code: All

Neighborhood: Island

DOR Dates: All

County Sale Code

MARKET

NONCONFORM

Use Category

Commercial

Residential

Waterfront

Vacant Land

Multi-Property

Vacation Rental

Neighborhood Category

Condominium

Mobile Home

DOR Category

Sale Type

All

### Current AV Ratios (Indices from PACS)

Region	# Sales	Min	Q1	WMean	Mean	Median	Q3	Max	Range	COV	COD	PRD
2-ORC	135	0.44	0.83	0.89	1.02	0.96	1.06	7.73	7.29	63.75	24.69	1.152
<b>Overall</b>	<b>135</b>	<b>0.44</b>	<b>0.83</b>	<b>0.89</b>	<b>1.02</b>	<b>0.96</b>	<b>1.06</b>	<b>7.73</b>	<b>7.29</b>	<b>63.75</b>	<b>24.69</b>	<b>1.152</b>

### Proposed AV Ratios (Indices from Excel)

Region	# Sales	Min	Q1	WMean	Mean	Median	Q3	Max	Range	COV	COD	PRD
2-ORC	135	0.44	0.83	0.89	1.02	0.96	1.05	7.73	7.29	63.71	24.75	1.145
<b>Overall</b>	<b>135</b>	<b>0.44</b>	<b>0.83</b>	<b>0.89</b>	<b>1.02</b>	<b>0.96</b>	<b>1.05</b>	<b>7.73</b>	<b>7.29</b>	<b>63.71</b>	<b>24.75</b>	<b>1.145</b>

Alternative Water: No Yes

Legend: Too Low (pale color is closer to target than original), Meets Threshold, Too High

Region OLTP

Back Clear Filters Instructions Indices Vertical Equity

Filters based on sale attributes. Sales Review WORKING Gain/Loss

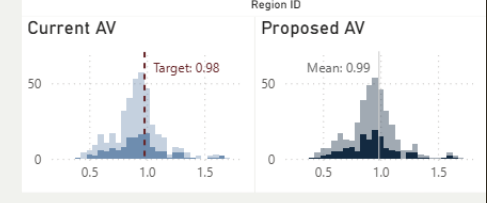
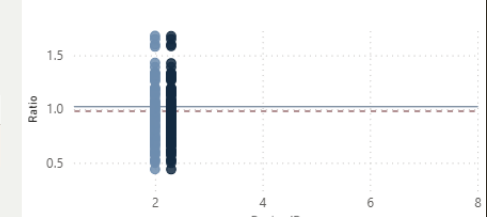
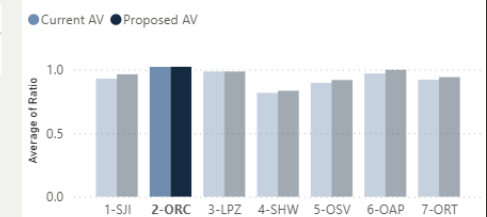
Sale Dates: 1/10/2025 - 3/17/2026

Region Code: All

Neighborhood: Island

DOR Dates: All

### Average of Ratio by Region



# Tools 2025

## Proposed as-if index values in Excel (SharePoint)

Code	Neighborhood	Land Index	Land Index Modifier	Ignore Inherited Land Modifier	Improvement Index	Improvement Index Modifier	Ignore Inherited Improvement Modifier	Property Count	Analysis Status
11011	Friday Harbor- Area -General	105	0		145	0		292	
11012	Friday Harbor-Area -Waterfront	126	0		157	0		116	
11013	Friday Harbor- Area -Condo	105	0		116	0		129	
11014	Friday Harbor- Area -Imp Only	100	0		105	0		10	
11015	Friday Harbor- Area -Land Trust	100	0		100	0		45	
11016	Friday Harbor- Area -Comm	100	0		120	0		22	
11017	Friday Harbor- Area -Comm Condo	100	0		100	0			not active
11021	Friday Harbor Core	105	0		132	0		586	
11022	Friday Harbor-Pear Point-Waterfront	105	0		149	0		123	
11023	Friday Harbor-Low Q Condo	105	0		110	0		104	
11024	Friday Harbor - Harbor Ridge Mobile Home Park	100	0		20	0		73	
11031	Friday Harbor Terra Bella	105	0		151	0		15	
11033	Friday Harbor-Cannery Village	100	0		173	0		38	
11034	Friday Harbor-Imp Only Hangars	100	0		100	0		67	
11041	Friday Harbor-Hillview Terrace	105	0		143	0		146	
11043	Friday Harbor-Marina Slips	100	0		100	0		78	

# Tools 2026 – Work in Progress

Region
Neighborhood
Subdivision
View
Living Area
Style
Class
Age

Sale Dates: 1/1/2025 - 4/30/2026
**391** **438**

**Current AV Ratios**

Region

- 1-SJI
- 2-ORC
- 3-LPZ
- 4-SHW
- 5-OSV
- 6-OAP
- 7-ORT
- Overall**

**Proposed AV Ratios**

Region

- 1-SJI
- 2-ORC
- 3-LPZ
- 4-SHW
- 5-OSV
- 6-OAP
- 7-ORT
- Overall**

**Sale Filter**

Sort Columns    Reset Columns

Display Sale Attributes

- Select all
- (Blank)
- Sale
- Property
- Land
- Improvement
- Valuation

Clear Filters

Sale Dates: 1/1/2025 - 4/30/2026
**391** **438**

Sale Dates: 1/1/2025 - 4/30/2026
**34** **41**

**Sale Count**

**34**

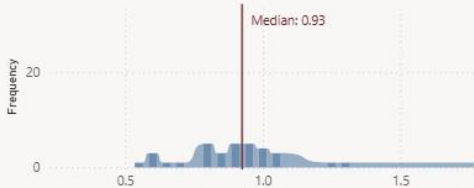
Properties

41	Commercial 3
Residential 38	

Waterfront

No  
Yes

**Current**



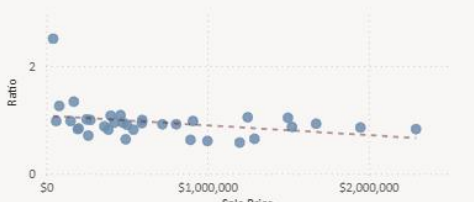
Frequency

Ratio

Median: 0.93

0.95    0.93

Mean    Median



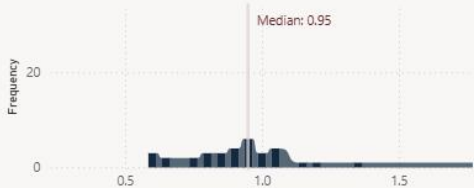
Ratio

Sale Price

18.35    1.10    -0.120    46.54

COD    PRD    PRB    VEI

**Proposed**



Frequency

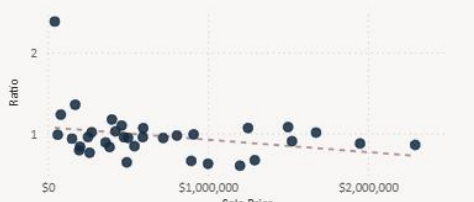
Ratio

Median: 0.95

0.97    0.95

Mean    Median

Ok    Ok



Ratio


Sale Price

17.70    1.08    -0.098    39.42

COD    PRD    PRB    VEI

Ok    High    Regressive    Inequity

Regressive

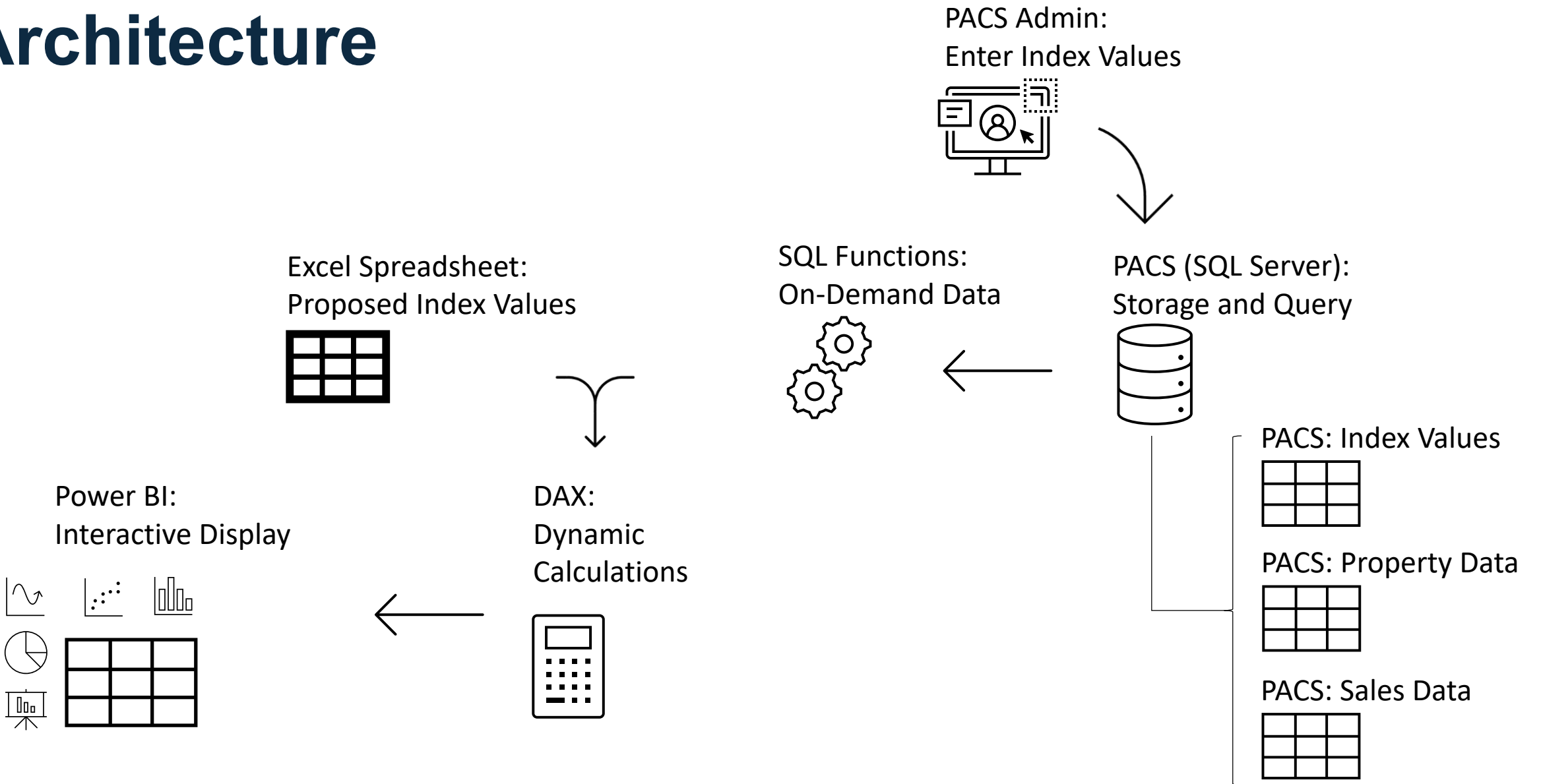
 **SAN JUAN COUNTY**  
WASHINGTON

Overview

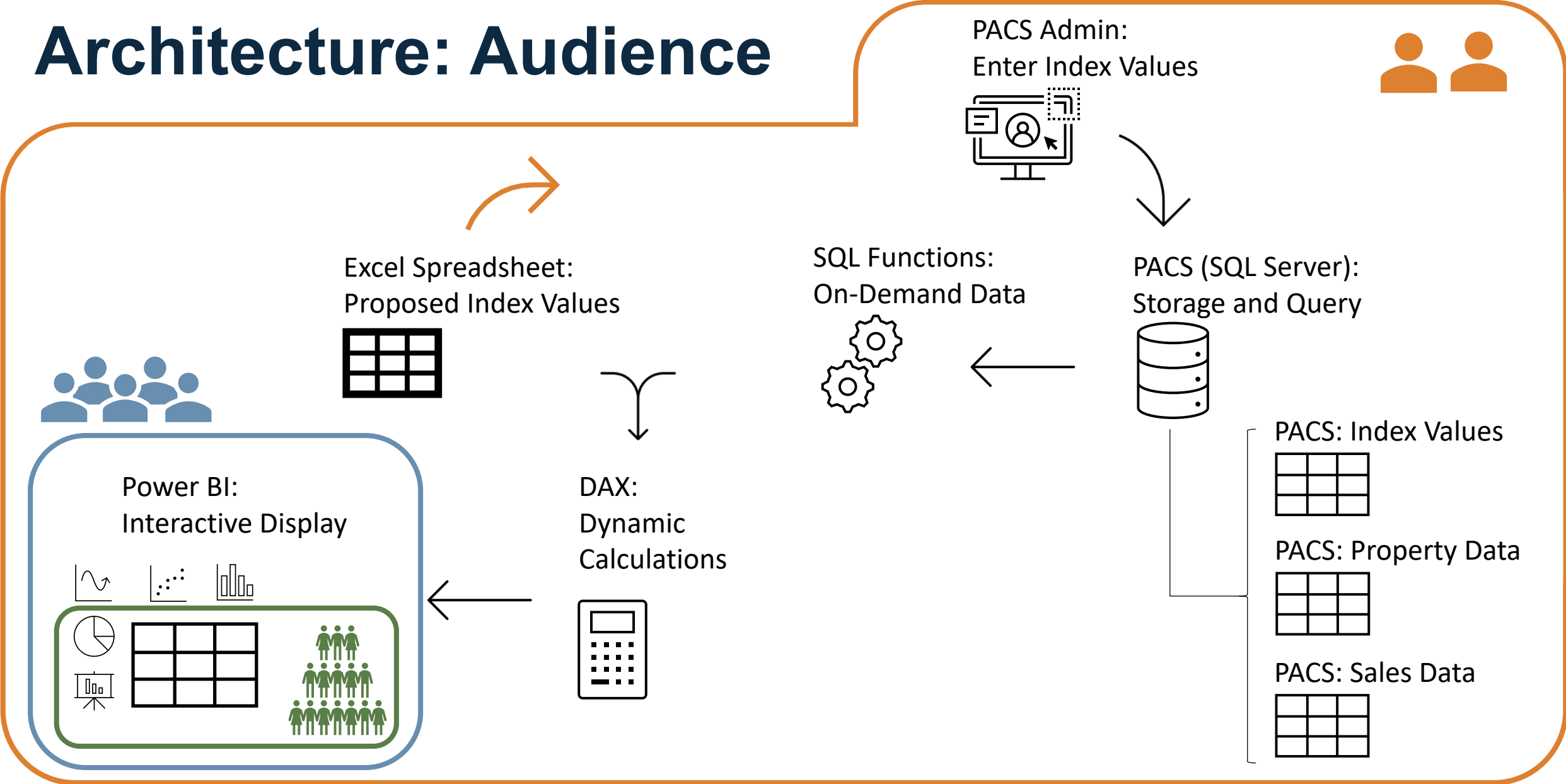
7

# Live Demo!

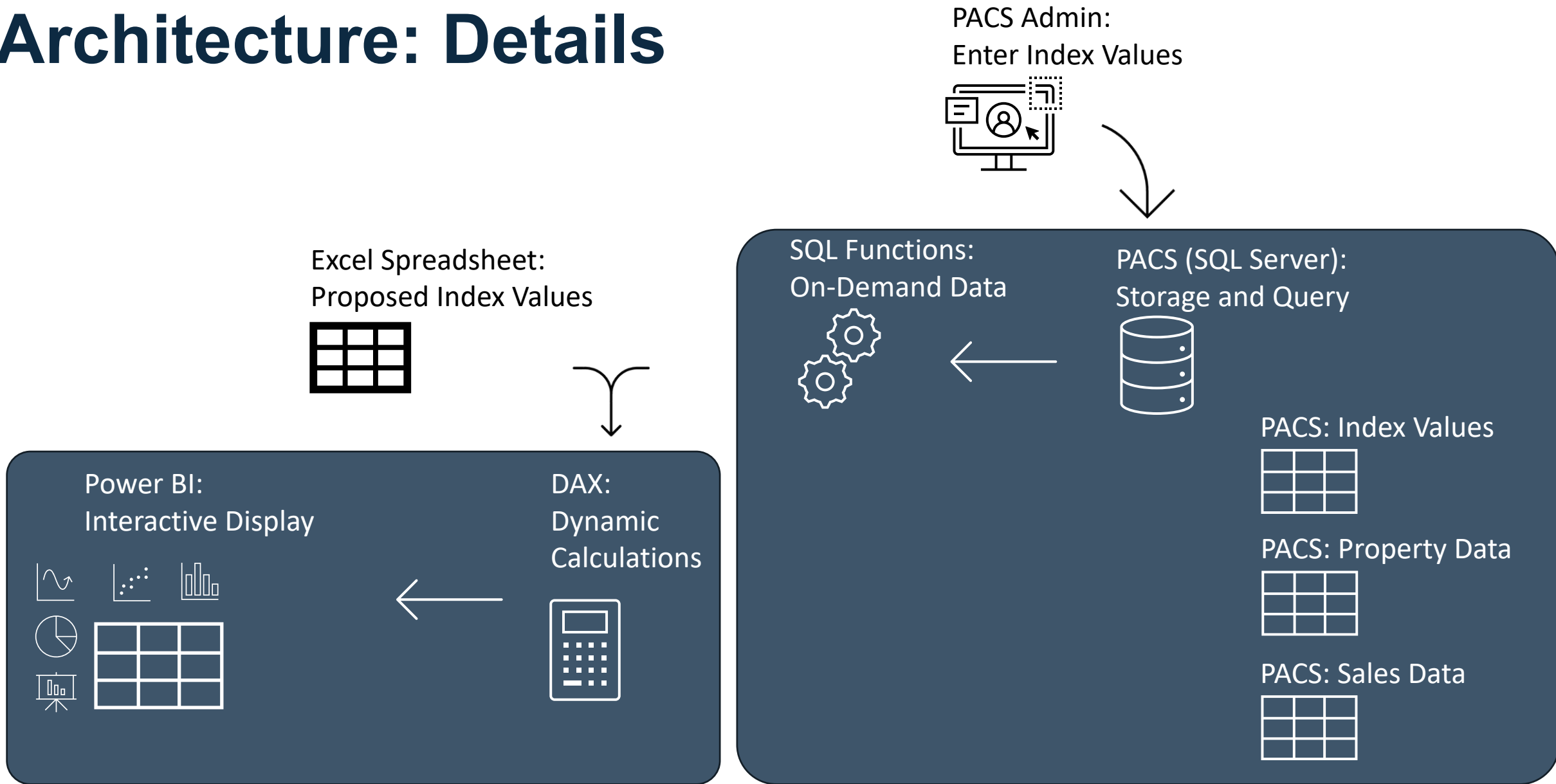
# Architecture



# Architecture: Audience



# Architecture: Details



# Data Needs: Calculations

- Ratio
  - Assessed Value
    - Land Value
    - Improvement Value
  - Sale Price
- Identifiers
  - Strata for mass adjustments
  - Categories that align with the valuation model

# Data Needs: Exploration and Explanation

What data should be displayed?

- Property data: value, attributes
- Sale data: attributes, properties
- Mass adjustment index values

# Data Queries: Property Data

Function: SanJuan\_SalesProperties(@startDate,@endDate)

- 1:1
  - Property, property values
  - PACS-computed rollup info
- Pivot
  - Property group codes
  - Land characteristics
- Filter – choose one
  - Land characteristics
  - Improvements
  - Primary property
- Aggregate – exist, sum, string\_agg
  - Improvement records
  - Events
- Annotate
  - Interpret codes
  - Sort order
  - Format

# Data Queries: Property Data

SELECT \* FROM SanJuan\_SalesProperties('01-01-2025', '04-30-2026')

	1:1 property _profile	generalize	1:1 property_val	format	pivot, choose land_detail_ characteristics	annotate	exists event	filter, agg event	
Property ID	Living Area	Living Area Category	Island (Map ID)	Island	View	View Order	Parcel Maint	Event Type(s)	...
1248		No Improvement	LOPEZ ISLAND	Lopez Island	GMV	1	No		...
15308	1,632	1,500-1,999 sq ft	SAN JUAN ISLAND	San Juan Island	NO VIEW	18	No		...
2446	0	None	DECATUR ISLAND	Decatur Island	FTV	16	Yes	BLM, SPLIT	...
2446	0	None	DECATUR ISLAND	Decatur Island	FTV	16	Yes	BLM, SPLIT	...
3133	1,158	1,000-1,499 sq ft	ORCAS ISLAND	Orcas Island	ATV	13	No		...
8840	3,273	3,000 sq ft or more	ORCAS ISLAND	Orcas Island	AMV+	3	Yes	BLA	...

# Data Queries: Sales Data

Function: SanJuan\_SalesSummary(@startDate,@endDate)

- 1:1
  - Price, state | county codes
- Filter – choose one
  - Neighborhood, region
  - Primary use code
- Aggregate – sum, string\_agg
  - Values, land size, living area
  - Flags (set if any, set if all)
- Annotate
  - Living area category
  - Plot X
  - (Mis-)match coding
  - Sort order
  - Color coding

# Data Queries: Sales Data

SELECT \* FROM SanJuan\_SalesSummary('01-01-2025','04-30-2026')

	1:1	1:1	generalize	aggregate	choose	aggregate	choose	annotate	rollup	calculate	annotate	annotate	
	sale	sale											
Sale	Sale Date	Sale Code	Ratio Study	Property Count	Primary Property	Property List	NH	NH Plot X	Multi NH Highlight	Ratio	Ratio Highlight	Ratio Label	...
61095	4/9/2025	REJECTED	Excluded	1	10689	10689	21031	61				OK	...
61099	4/9/2025	MARKET	Ratio Study	1	7189	7189	11022	8		0.96		OK	...
61115	4/11/2025	MARKET	Ratio Study	1	20729	20729	14011	33		0.86		OK	...
61212	4/17/2025	NONCONFORM	Ratio Study	1	3179	3179	23026	81		1.00		OK	...
61275	4/26/2025	NONCONFORM	Ratio Study	2	12826	12826, 12829	21081	68		1.26		OK	...
62288	7/31/2025	MARKET	Ratio Study	4	19194	19193,19197, 19194, 19178	14032	37	#b4c7d8	1.03		OK	...
62699	8/29/2025	MARKET	Ratio Study	1	4614	4614	22021	76		2.75	#ffd1d1	Review	...

# Data Queries: Index Values

- SQL query
- Import into Power BI

### SQL Server database

Server ⓘ  
A<sup>B</sup>C ▾ SERVERNAME

Database  
PACS Environment ▾

▲ Advanced options  
Command timeout in minutes (optional)

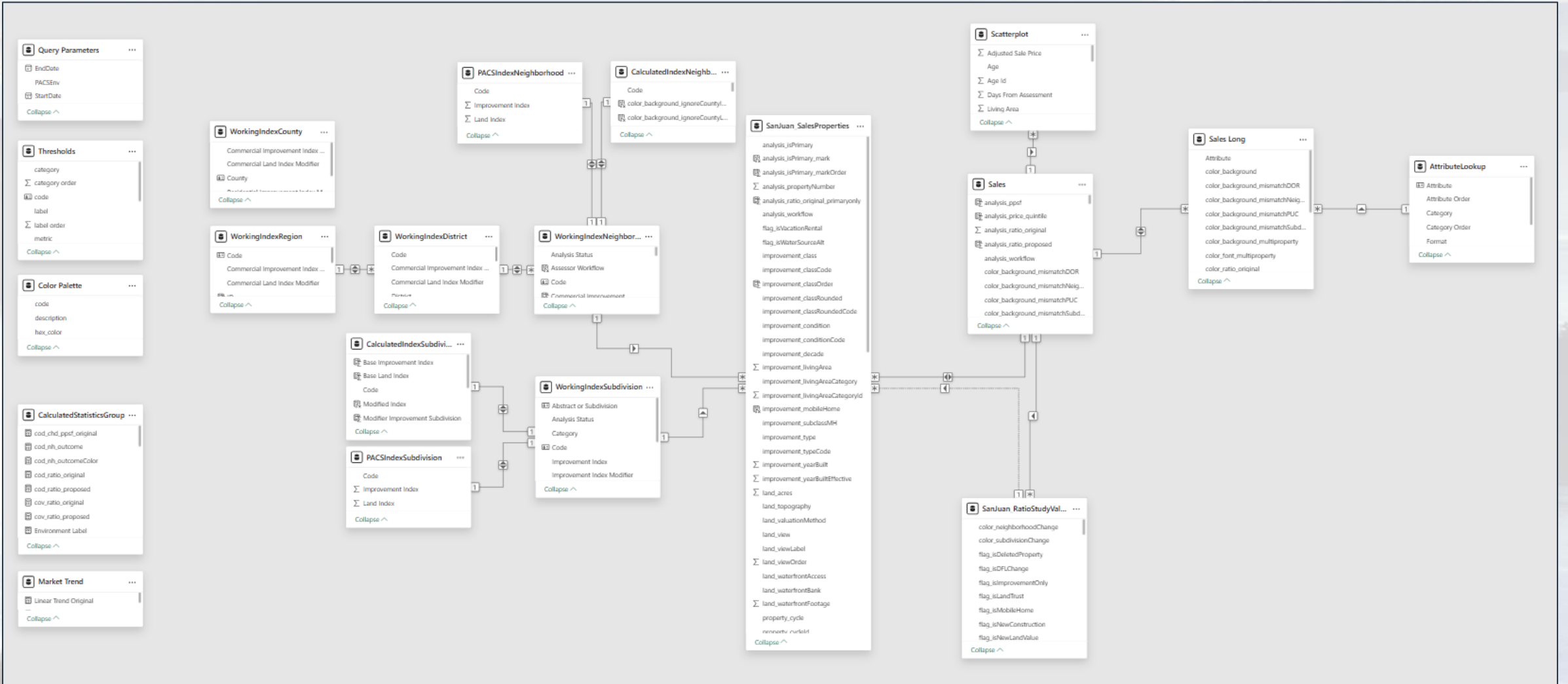
SQL statement (optional, requires database)  

```
SELECT
  neighborhood.hood_cd AS Code
  ,CAST(neighborhood.hood_imprv_pct AS NUMERIC(5,2)) AS [Improvement Index]
  ,CAST(neighborhood.hood_land_pct AS NUMERIC(5,2)) AS [Land Index]
FROM dbo.neighborhood
```

Include relationship columns  
 Navigate using full hierarchy  
 Enable SQL Server Failover support

OK Cancel

# Data Organization



# Where logic resides... evolves over time

## SQL Server (PACS, T-SQL)

- Easy to version
- Explicit code statements
- Heavyweight

## Power BI (DAX, configuration)

- Binary file (plus DAX editor)
- Configuration in the UI
- Flexible and dynamic

# Hands-On!

# Demonstration: Hands-on



Software

Power BI desktop  
Excel



Files

Power BI Project (.pbix)  
Demo Data (.xlsx)  
T-SQL Query (.sql)



Knowledge

Ratio statistics  
Computer scripts

## Take-ways

- Impression of the interface
- DAX formula examples
- Visualization examples

*Example for Educational Purposes Only*

# Demonstration File Download

[https://www.sanjuancountywa.gov/DocumentCenter/View/34895/  
PACSUC2026\\_DemoPowerBI](https://www.sanjuancountywa.gov/DocumentCenter/View/34895/PACSUC2026_DemoPowerBI)

- DemoDashboard.pbix      Power BI project file pre-loaded with sample data
- DemoSales.xlsx      Excel spreadsheet with sample data
- SimpleSalesQuery.sql      T-SQL query to fetch minimal data

# DemoDashboard.pb

The screenshot shows the Power BI interface. At the top, the ribbon includes 'File', 'Home', 'Insert', 'Modeling', 'View', 'Optimize', and 'Help'. The 'Home' ribbon is active, showing options like 'Paste', 'Copy', 'Format painter', 'Clipboard', 'Get data', 'Excel workbook', 'OneLake catalog', 'SQL Server data', 'Enter data', 'Dataverse', and 'Recent sources'. Below the ribbon, a report page titled 'An Approach to Mass Appraisal in Power BI' is visible, with a subtitle 'Hands-on demonstration: calculate and visualize ratio study statistics.' The page content is mostly blank. At the bottom, a taskbar shows 'Ratio Statistics' and a '+' button. The status bar at the very bottom indicates 'Page 1 of 1' and a zoom level of '78%'.

The 'Options' dialog box is open, showing settings for 'GLOBAL' and 'CURRENT FILE'. The 'Preview features' section is selected in the left-hand menu. In the 'CURRENT FILE' section, the 'DAX user-defined functions' option is checked and highlighted with an orange oval. Other options include 'Metrics visual', 'On-object interaction', 'Set sensitivity label on exported PDF', 'Save to OneDrive and SharePoint', 'Enhanced publish dialogs', 'Power BI Project (.pbip) save option', 'List slicer visual', 'Summary with Copilot visual', 'Visual calculations', 'Prep data for AI', 'Use user-installed Netezza ODBC driver', 'Connect to SQL databases in Fabric', and 'Export Queries from Power Query'. The 'OK' and 'Cancel' buttons are at the bottom right.

- Metrics visual [Learn more](#)
- On-object interaction [Learn more](#) | [Share feedback](#)
- Set sensitivity label on exported PDF [Learn more](#)
- Save to OneDrive and SharePoint [Learn more](#)
  - Share to OneDrive and SharePoint [Learn more](#)
  - Saving to OneDrive and SharePoint uploads the file in the background [Learn more](#)
  - Show the new file saving and open experience [Learn more](#)
- Enhanced publish dialogs [Learn more](#)
  - Publish dialogs support folder selection [Learn more](#)
- Power BI Project (.pbip) save option [Learn more](#)
  - Store semantic model using TMDL format [Learn more](#)
  - Store reports using enhanced metadata format (PBIR) [Learn more](#)
  - Store PBIX reports using enhanced metadata format (PBIR) [Learn more](#)
- List slicer visual
- Summary with Copilot visual [Learn more](#)
- Improve Q&A with Copilot [Learn more](#)
- Visual calculations [Learn more](#) | [Share feedback](#)
- Enhanced DAX Time Intelligence [Learn more](#)
- Prep data for AI [Learn more](#)
- Use user-installed Netezza ODBC driver [Learn more](#)
- Enable using Bundled Oracle Managed ODP Provider for Import Mode [Learn more](#)
- Connect to SQL databases in Fabric [Learn more](#)
- DAX user-defined functions [Learn more](#)
- Modern visual defaults and customizing theme improvements [Learn more](#) | [Share feedback](#)
- Export Queries from Power Query [Learn more](#)

# Data Source

## Option 1:

- Excel: DemoSales.xlsx
- Pre-loaded in DemoDashboard.pbix

## Option 2:

- SQL Query (PACS)
- Import

### *Demo assumptions:*

- *arm's length transactions*
- *only residential real property*
- *sold on the assessment date*

# Data Source: Schema

DemoDashboard-Start • Last saved: 4/1/2026 at 5:01 PM

File Home Help **Table tools** Share

Name: Sales

Structure: Manage relationships, Calculations: New measure, Quick measure, New column, New table, Calendars: Mark as date table

Sale ID	Sale Price	Land Value	Improvement Value	Total Value	NH
1	\$437,600	\$137,590	\$274,310	\$411,900	B
2	\$500,200	\$172,460	\$271,460	\$443,920	B
3	\$597,700	\$186,100	\$347,100	\$533,200	B
5	\$866,000	\$188,340	\$507,970	\$696,310	B
6	\$567,200	\$198,460	\$352,060	\$550,520	B
9	\$692,000	\$211,340	\$334,140	\$545,480	B
11	\$481,600	\$115,430	\$345,650	\$461,080	B
12	\$376,800	\$96,200	\$261,080	\$357,280	B
13	\$283,800	\$62,790	\$166,300	\$229,090	B
15	\$369,200	\$127,160	\$209,780	\$336,940	B
16	\$633,200	\$156,260	\$233,600	\$450,060	B

Table: Sales (150 rows)

Data: Search, NH A Improvement, NH A Land, NH B Improvement, NH B Land, NH C Improvement, NH C Land, Sales

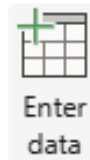
# DAX Examples



Ratio = Sales[Total Value]/Sales[Sale Price]

Histogram Bin = ROUND(FLOOR(Sales[Ratio],0.05),2)

Is Land Only = IF(Sales[Improvement Value]=0,  
"Vacant", "Improved")



Measure group "Group Statistics"

Sale Count = COUNT(Sales[Sales ID])



Delete from model "Column1"

Data

Search

- Group Statistics
  - Sale Count
  - NH A Improvement
  - NH A Land
  - NH B Improvement
  - NH B Land
  - NH C Improvement
  - NH C Land
- Sales
  - Histogram Bin
  - Improvement V...
  - Is Land Only
  - Land Value
  - NH
  - Ratio
  - Sale ID
  - Sale Price
  - Total Value

# DAX Query Editor



The screenshot displays the DAX Query Editor interface. At the top, there is a 'Run' button and a status indicator 'Update model with changes (0)'. The main area contains a DAX script with the following content:

```
1  /* These definitions assume that the data model has
2  - a "Sales" table with a "Ratio" column
3  - a "Group Statistics" calculation group
4  */
5  DEFINE
6  /* Descriptive: Sales */
7  MEASURE 'Group Statistics'[Sale Count] = COUNT(Sales[Sales ID])
8  MEASURE 'Group Statistics'[Median Sale Price] = MEDIAN(Sales[Sales Price])
9
10 /* Assessment Level */
11 MEASURE 'Group Statistics'[Min Ratio] = MIN(Sales[Ratio])
12 MEASURE 'Group Statistics'[Mean Ratio] = AVERAGE(Sales[Ratio])
13 MEASURE 'Group Statistics'[Mean Ratio Color] = SWITCH(TRUE(),
14     [Mean Ratio]<=0.93,"#c3d2df",
15     [Mean Ratio]>=1.03,"#f1ccac",
16     BLANK())
17 )
18 MEASURE 'Group Statistics'[Weighted Mean Ratio] = SUM(Sales[Total Value])/SUM(Sales[Sales Price])
19 MEASURE 'Group Statistics'[Median Ratio] = MEDIAN(Sales[Ratio])
20 MEASURE 'Group Statistics'[Median Ratio Color] = SWITCH(TRUE(),
21     [Median Ratio]<=0.93,"#c3d2df",
22     [Median Ratio]>=1.03,"#f1ccac",
23     BLANK())
24 )
25 MEASURE 'Group Statistics'[Max Ratio] = MAX(Sales[Ratio])
```

Below the script, the 'Results' pane is visible, showing a tabbed interface with the following tabs: 'Ratio Statistics - Original Values', 'Proposed Value Ratios', 'Ratio Statistics - Proposed Values', 'Vertical Equity', and a '+' button to add more tabs.

# Visualizations

The screenshot displays a data visualization tool interface. On the left, a table titled "Original Value Ratios" shows data for three categories (A, B, C) and a total. The table has columns for "NH", "Sale Count", and "Mean Ratio".

NH	Sale Count	Mean Ratio
A	25	0.88
Improved	22	0.87
Vacant	3	0.89
B	113	0.89
Improved	108	0.89
Vacant	5	0.93
C	12	1.30
Improved	12	1.30
Total	150	0.92

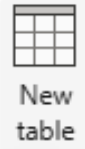
In the center, a histogram titled "Original Histogram" shows the distribution of "Ratio" values. The x-axis is labeled "Ratio" and ranges from 0.5 to 1.5. The y-axis is labeled "# Sales" and ranges from 0 to 40. The histogram shows a distribution of bars with a median line at 0.90 and a mean line at 0.92.

On the right, the "Visualizations" panel shows various visualization options. A red box highlights the "Matrix" option, and a red arrow points to it. Below the histogram, a filter panel titled "Is Land Only" shows two options: "Improved" and "Vacant", both with checkboxes.

Optional Enhancements:

- Matrix: Conditional color coding
- Barchart: Add trend lines
- Slicer: Filter for vacant land
- Sort: 1=Vacant, 2=Improved

# DAX Examples



Proposed Histogram = `GENERATESERIES(0.25,1.8,0.05)`



Bin Count Proposed =

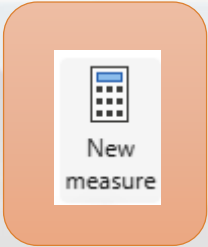
```
VAR _proposed_values = ProposedAssessedValue()
VAR _this_bin = MIN('Proposed Histogram'[Value])
VAR _filtered = FILTER(_proposed_values,
    ABS([histogram bin] - _this_bin) < 0.025)
VAR _count = COUNTROWS(_filtered)
RETURN IF(_count > 0, _count, 0)
```

Data

Search

- Group Statistics
  - Sale Count
  - NH A Improvement
  - NH A Land
  - NH B Improvement
  - NH B Land
  - NH C Improvement
  - NH C Land
- Sales
  - Histogram Bin
  - Improvement V...
  - Is Land Only
  - Land Value
  - NH
  - Ratio
  - Sale ID
  - Sale Price
  - Total Value



# DAX Query Editor



Run Update model with changes (1)

```
1 DEFINE
21 MEASURE 'Group Statistics'[VEI] =
22     RETURN_RESULT
31
32 MEASURE 'Group Statistics'[VEI Proposed] =
33     VAR _proposed_ratios = SELECTCOLUMNS(
34         ProposedAssessedValue(),
35         "ratio", [ratio],
36         "sale price", [sale price]
37     )
38
39     VAR _break1 = PERCENTILEX.INC(_proposed_ratios,[sale price],0.2)
40     VAR _break2 = PERCENTILEX.INC(_proposed_ratios,[sale price],0.4)
41     VAR _break3 = PERCENTILEX.INC(_proposed_ratios,[sale price],0.6)
42     VAR _break4 = PERCENTILEX.INC(_proposed_ratios,[sale price],0.8)
43
44     VAR _quintile1_ratios = FILTER(
45         SELECTCOLUMNS(
46             _proposed_ratios, "ratio", [ratio],
47             "is_quintile", IF([sale price] <= _break1, 1, 0)
48         ),
49         [is_quintile] = 1
50     )
51     VAR _qmr1 = AVERAGEX(_quintile1_ratios,[ratio])
52
53     VAR _quintile2_ratios = FILTER(
54         SELECTCOLUMNS(
55             _proposed_ratios, "ratio", [ratio],
56             "is_quintile", IF([sale price] > _break1 && [sale price] <= _break2, 1, 0)
```

Results

Ratio Statistics - Original Values	Proposed Value Ratios	Ratio Statistics - Proposed Values	Vertical Equity 	
------------------------------------	-----------------------	------------------------------------	-------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

# Demo Dashboard

## An Approach to Mass Appraisal in Power BI

Hands-on demonstration: calculate and visualize ratio study statistics.

### Original Value Ratios

NH	Sale Count	Mean Ratio	Median Ratio	VEI
<b>A</b>	<b>25</b>	<b>0.88</b>	<b>0.87</b>	<b>7.53</b>
Vacant	3	0.89	0.92	8.71
Improved	22	0.87	0.87	12.44
<b>B</b>	<b>113</b>	<b>0.89</b>	<b>0.89</b>	<b>7.17</b>
Vacant	5	0.93	0.94	12.61
Improved	108	0.89	0.89	5.77
<b>C</b>	<b>12</b>	<b>1.30</b>	<b>1.28</b>	<b>14.12</b>
Improved	12	1.30	1.28	14.12
<b>Total</b>	<b>150</b>	<b>0.92</b>	<b>0.90</b>	<b>11.47</b>

### Proposed Value Ratios

NH	Sale Count	Mean Ratio	Median Ratio	VEI
<b>A</b>	<b>25</b>	<b>0.97</b>	<b>0.97</b>	<b>7.60</b>
Vacant	3	0.94	0.96	8.71
Improved	22	0.98	0.97	12.42
<b>B</b>	<b>113</b>	<b>0.96</b>	<b>0.97</b>	<b>6.40</b>
Vacant	5	0.98	0.99	12.61
Improved	108	0.96	0.97	5.70
<b>C</b>	<b>12</b>	<b>0.99</b>	<b>0.96</b>	<b>14.25</b>
Improved	12	0.99	0.96	14.25
<b>Total</b>	<b>150</b>	<b>0.97</b>	<b>0.97</b>	<b>6.04</b>

Is Land Only

- Vacant
- Improved

Proposed Index Values

Neighborhood A

Land

Improvement

Neighborhood B

Land

Improvement

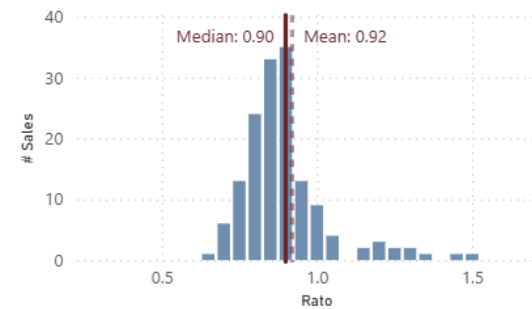
Neighborhood C

Land

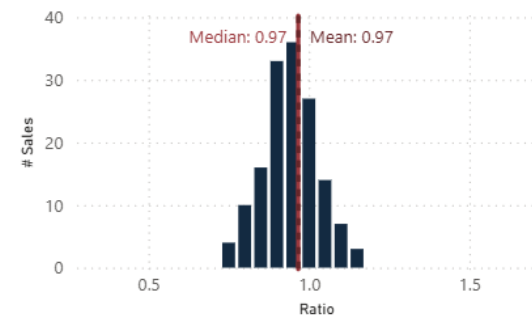
Improvement

Clear

### Original Histogram



### Histogram of Ratio Values



Example for Educational Purposes Only

# Set Index Adjustments

Neighborhood Code Maintenance

**General**

**General**

Year: 2025 - 2026  
Code: 11011  
Description: Friday Harbor- Area -General  
Land %: 105.00  
Imprv %: 145.00  
Land Table:  Land Table:   
Reappraisal Status:   
Life Cycle Status:   
Appraiser: UNKNOWN  
Comments:   
Change Log

**Adjustment Factor Comments**

Physical:   
Economic:   
Governmental:   
Social:   
Details... Link... OK Apply Cancel

- Store index values in PACS Admin
- Recalc property values in PACS

# Reflection

# Reflection

- Organic evolution, phases of analysis
- Multi-property sales
- Maintenance
- Automate data refresh (or use parameters)
- Persistent static (snapshot) reports

# The “Right” Tool?

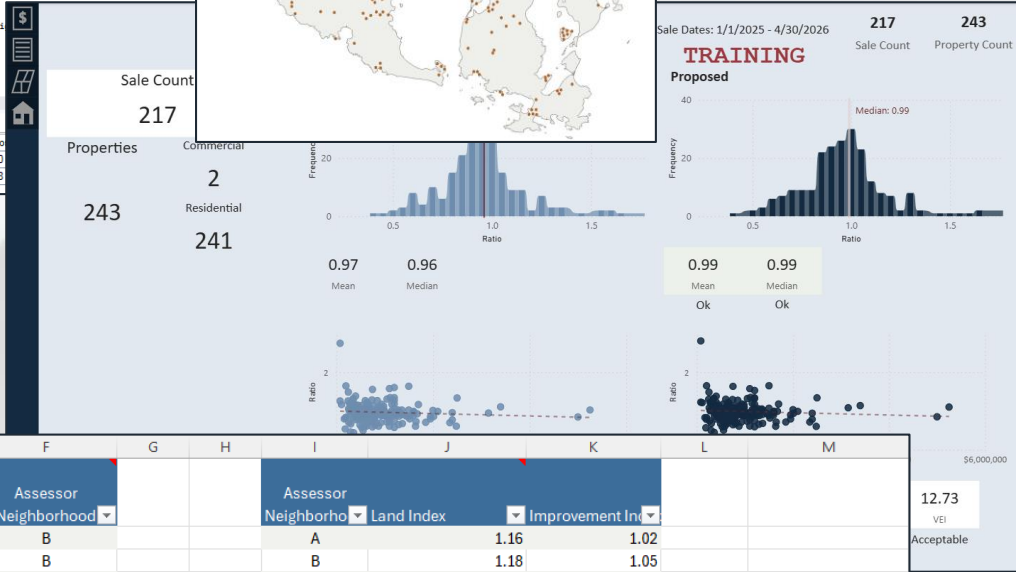
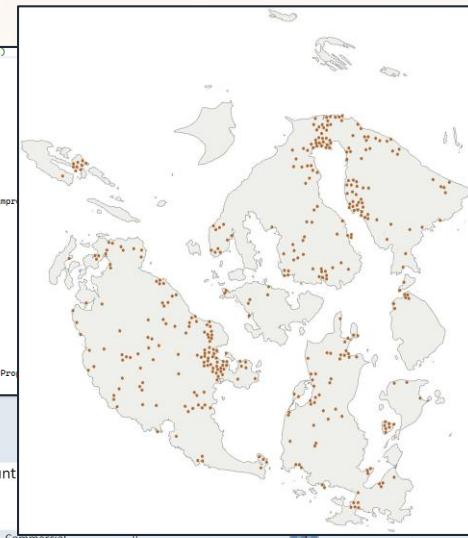
- You have access (install permission, license, etc.)
- You will use it
- Sustainable (usability, reuse, maintenance, integration, etc.)

```

1  /* Fetch a copy of sales data (fetch once into temp table, then reuse for as-if calculations)
2
3  SELECT
4    sale_id, sale_priceAdjusted
5    ,IIF(sale_priceAdjusted=0,value_total/sale_priceAdjusted,NULL) AS ratio_original
6    ,value_land_noIndex, value_improvement_noIndex
7    ,property_neighborhoodCode
8  INTO #Sales
9  FROM SanJuan_SalesSummary('01-01-2025','04-30-2026')
10 WHERE sale_ratioStudy = 'Ratio Study'
11 -- DROP TABLE #Sales
12 */
13
14 DECLARE @ProposedIndex TABLE (neighborhoodCode VARCHAR(10), index_land NUMERIC(3,2), index_imp
15 INSERT INTO @ProposedIndex
16 VALUES
17 /* Working file: exploratory values, and fill in all others... */
18 ('11011', 0.95, 1.15)
19 ('11012', 1.45, 1.65)
20
21 SELECT
22   property_neighborhoodCode
23   ,COUNT(*) AS sale_count
24   ,AVG(ratio_original) AS mean_ratio
25   ,AVG(ratio_proposed) AS mean_ratio_proposed
26 FROM (
27   SELECT
28     Sales.sale_id
29     ,Sales.ratio_original
30     ,(Sales.value_land_noIndex*ProposedIndex.index_land*Sales.value_improvement_noIndex*Prop
31   FROM #Sales AS Sales
32   JOIN @ProposedIndex AS ProposedIndex
33     ON ProposedIndex.neighborhoodCode = Sales.property_nei
34 ) RatioPopulation
35 GROUP BY property_neighborhoodCode

```

property_neighborhoodCode	sale_count	mean_ratio	mean_ratio_propo
11011	5	1.143923	0.982927293150
11012	6	0.882495	0.960091554358



	A	B	C	D	E	F	G	H	I	J	K	L	M
	Sale ID	Sale Price	Land Value	Improvement Value	Total Value	Assessor Neighborhood	Assessor Neighborhood	Land Index	Improvement Index				
1	1	\$ 496,000.00	\$ 170,900.00	\$ 350,220.00	\$ 521,120.00	B	A	1.16	1.02				
2	2	\$ 620,000.00	\$ 208,400.00	\$ 379,190.00	\$ 587,590.00	B	B	1.18	1.05				
3	3	\$ 507,000.00	\$ 120,490.00	\$ 360,150.00	\$ 480,640.00	B	C	1.10	1.35				
4	4	\$ 953,000.00	\$ 442,760.00	\$ 344,610.00	\$ 787,370.00	C							
5	5	\$ 552,000.00	\$ 141,400.00	\$ 355,070.00	\$ 496,470.00	B							
6	6	\$ 703,000.00	\$ 163,170.00	\$ 410,230.00	\$ 573,400.00	B							
7	7	\$ 1,296,000.00	\$ 402,300.00	\$ 525,270.00	\$ 927,570.00	C							
8	8	\$ 799,000.00	\$ 162,600.00	\$ 437,060.00	\$ 599,660.00	A							
9	9	\$ 784,000.00	\$ 209,160.00	\$ 406,000.00	\$ 615,160.00	B							
10	10	\$ 397,000.00	\$ 46,650.00	\$ 310,970.00	\$ 357,620.00	A							
11	11	\$ 686,000.00	\$ 153,950.00	\$ 415,590.00	\$ 569,540.00	B							
12	12	\$ 305,000.00	\$ 88,290.00	\$ 264,540.00	\$ 352,830.00	B							
13	13	\$ 661,000.00	\$ 168,310.00	\$ 392,570.00	\$ 560,880.00	B							
14	14	\$ 625,000.00	\$ 167,050.00	\$ 284,870.00	\$ 510,820.00	A							
							Row Labels	Average of Sale Price	Median Sale Price	Mean Ratio	Mean Ratio Proposed		
							A	\$562,960	\$577,000	0.907	0.973		
							B	\$480,142	\$481,000	0.880	0.960		
							C	\$949,500	\$995,000	0.774	0.968		
							Grand Total	\$531,493	\$499,000	0.876	0.963		

# Resources

- Jason Davidson's [Effective Dashboards \(YouTube\)](#)
- Greg Deckler's DAX for Humans ([YouTube](#), [book](#))
- Adam Saxton and Patrick LeBlanc's [Guy in a Cube \(YouTube\)](#)
- SQLBI's [Filter](#) and [Row](#) Contexts explained visually
- Microsoft's [Field Parameters](#) ... among other docs
- [Fabric Community](#) (Microsoft contributors)
- [StackOverflow](#) (community contributors)

# Related Products

# Sales Data

## Sales Data Website

- Download Excel spreadsheet
- Interactive Power BI display
- Embedded tables with median sale price

The screenshot displays the San Juan County website's 'Sales Data' page. The page features a navigation menu on the left with options like 'Assessor Home Page', 'Address Change', and 'Sales Data'. The main content area is titled 'Sales Data' and includes a 'Median Sale Price of Real Property' report for January 2024 through April 2025. The report shows a total of 324 sales with a median sale price of \$698,250. A table below the report lists various sale types and their corresponding counts and median prices. The report is presented as an interactive Power BI display with filters for 'By Sale Type' and 'By Island'.

**San Juan County**  
WASHINGTON

Your Government | County Services | Community | How Do I... | Search...

Assessor Home Page  
Address Change  
Parcel Search and Maps  
Meet our Appraisers  
2025 Levy Highlights  
Levies & Taxing Districts  
How to Calculate Property Tax  
Change of Value Notices  
Go Paperless with eNotices  
Sales Data  
Appealing Your Value  
Final Property Appraisal  
Forest Fire Protection

### Sales Data

Home > Your Government > Finance & Records > Assessor > Sales Data

As part of the annual valuation of properties, the Assessor's Office reviews sales between an unobligated buyer and seller to be used for the 2025 assessment. For the 2025 assessment, the Assessor's Office analyzed single parcel market sales for the 2025 valuation year.

**Tools to Search for Sales Data**

- [Jan 2024 through April 2025 Sales List](#) (Excel spreadsheet)
- [San Juan Median Sale Price](#) (Power BI - Interactive Display)
- [How to Perform a Sales Search on the San Juan County Assessor's Website](#)

### Median Sale Price of Real Property

January 2024 through April 2025

324  
Sale Count

[View Sales](#)  
[Choose Filters](#)

#### Median Sale Price

Sale Type	Sale Count	Median Sale Price
Residential Inland Vacant	41	\$302,500
Residential Inland Improved	198	\$750,000
Residential Waterfront Vacant	4	\$557,500
Residential Waterfront Improved	40	\$1,462,500
Residential Condominium	34	\$544,750
Commercial/Industrial Improved	7	\$575,000
<b>Total</b>	<b>324</b>	<b>\$698,250</b>

Property values vary by use category and location. The breakdown by type shows differences between residential and commercial uses, waterfront and inland locations, or vacant and improved status. The breakdown by island shows further variability from one island to another.

Read more on the Assessor's website:  
• [Sales Data](#)  
• [Change of Value Notices](#)

#### Display Options

Breakdown the metrics by either sale type or island. The display shows only those islands with at least one single-property sale.

Use the "Choose Filters" button to isolate sales with the specific characteristics, or to clear all filters.

[By Sale Type](#) [By Island](#)

Microsoft Power BI | 1 of 3

# Levy Data

Levies and Taxing Districts Website with interactive displays of tax distributions and levy data

The screenshot displays the San Juan County website's 'Levies and Taxing Districts' page. The page features a navigation menu with options like 'Assessor Home Page', 'Address Change', 'Parcel Search and Maps', 'Meet our Appraisers', 'Levy Highlights', 'Levies & Taxing Districts', 'How to Calculate Property Tax', 'Change of Value Notices', 'Go Paperless with eNotices', 'Sales Data', 'Appealing Your Value', 'Real Property Appraisal', 'Forest Fire Protection Assessment', 'Current Use & DFL Programs', 'Exemptions & Tax Relief', 'Business Personal Property', and 'Assessor's Data'.

The main content area is titled 'Tax Distribution' and includes the following sections:

- Tax Distribution:** An overview of levy amounts for the current tax year and the two most recent past years.
- Levy Rates by Tax Code Area:** Presents tax rates and levies for the current tax year and the two most recent past years.
- Levy Amounts by Taxing District:** Presents levy amounts by taxing district for the current tax year and the two most recent past years.
- Tax Code Area Map:** Illustrates the location of each taxing district.

A table titled 'Tax Distribution' shows the following data:

Category	Color	Levy Amount	% of Total
State School Levy - Part 1	Blue	\$21,778,057	23.00%
State School Levy - Part 2	Dark Blue	\$11,664,271	12.32%
Local Schools	Light Blue	\$13,226,796	13.97%
Fire Protection Districts	Orange	\$10,963,658	11.58%
County General	Green	\$8,076,770	8.53%
Public Hospital Districts	Light Green	\$9,849,103	10.40%
County Roads	Yellow	\$5,449,177	5.76%
Library Districts	Light Yellow	\$5,689,521	6.01%
EMIS Districts	Light Orange	\$3,445,257	3.64%
Park & Rec District	Light Purple	\$2,247,723	2.37%
Port Districts	Light Blue	\$973,226	1.03%
Town	Light Green	\$597,767	0.63%
Land Conservation Futures	Light Green	\$371,492	0.39%
Lopez Solid Waste	Light Green	\$210,000	0.22%
Cemetery Districts	Light Green	\$128,663	0.14%
<b>Total</b>		<b>\$94,671,479</b>	<b>100.00%</b>

A pie chart below the table visualizes this data, with the largest slice being State School Levy - Part 1 (23.00%).

The 'Contact Us' section provides the following information:

- Assessor:** Email the Assessor Office
- Physical Address:** 350 Court Street, Friday Harbor, WA 98250
- Mailing Address:** P.O. Box 1519, Friday Harbor, WA 98250
- Phone:** 360-378-2172

The 'Quick Links' section includes:

- 6-Year Inspection Cycle (2025-2030)
- Homeowner's Guide to Property Tax
- Watch "Understanding Property Tax" video
- Homeowner's Guide to Mass Appraisal
- Property Tax Assessment of Mobile and Manufactured Homes
- How the 1% Property Tax Levy Limit Works
- Appealing Your Property Assessment to the County BOE
- Tax Definitions & Terminology (PDF)

# Thank You!



Megen Brittell | Statistical Analyst

San Juan County Assessor's Office

PO Box 1519 | Friday Harbor, WA 98250-1519

360-378-2172 | [megenb@sanjuancountywa.gov](mailto:megenb@sanjuancountywa.gov)

Public Hours: 10:00am-4:00pm, Monday – Thursday