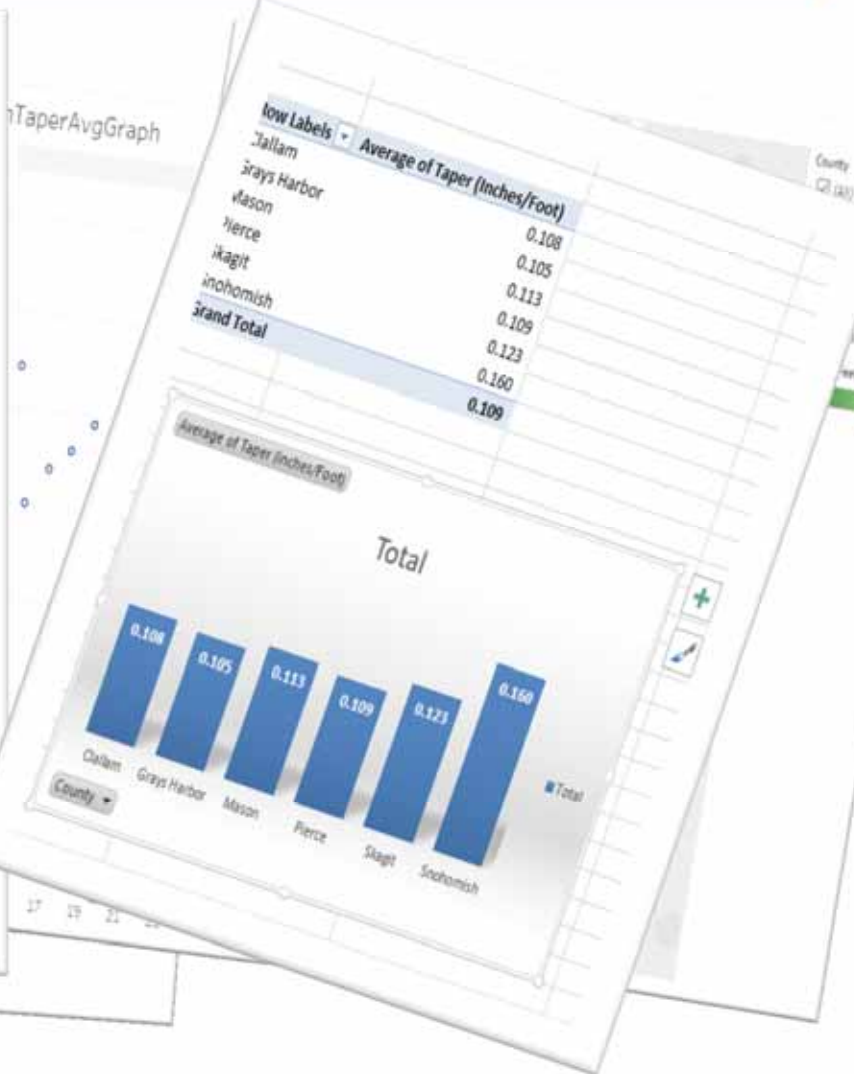
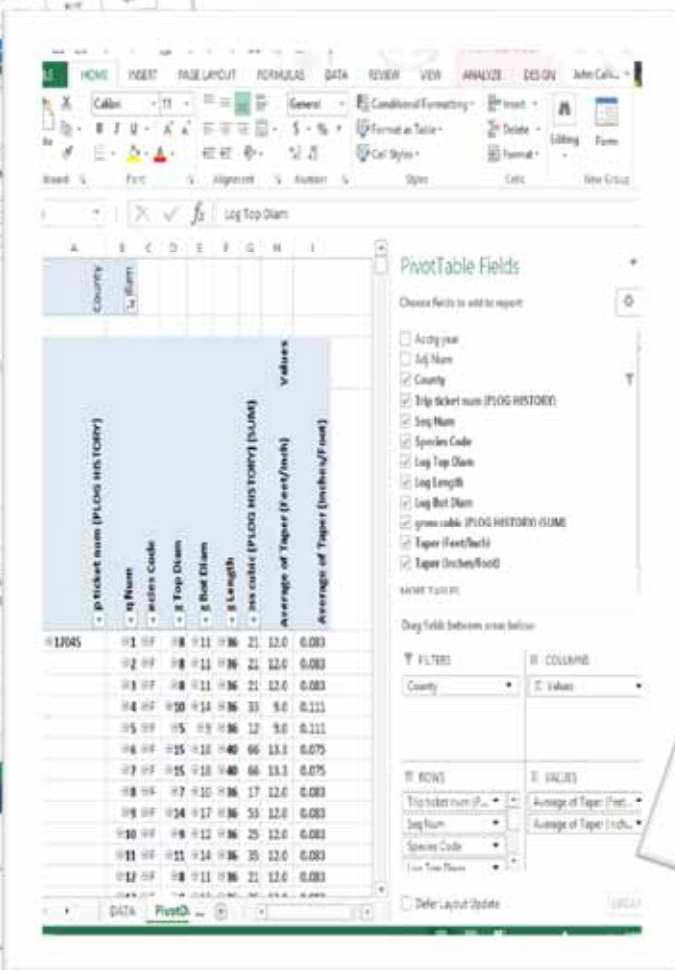
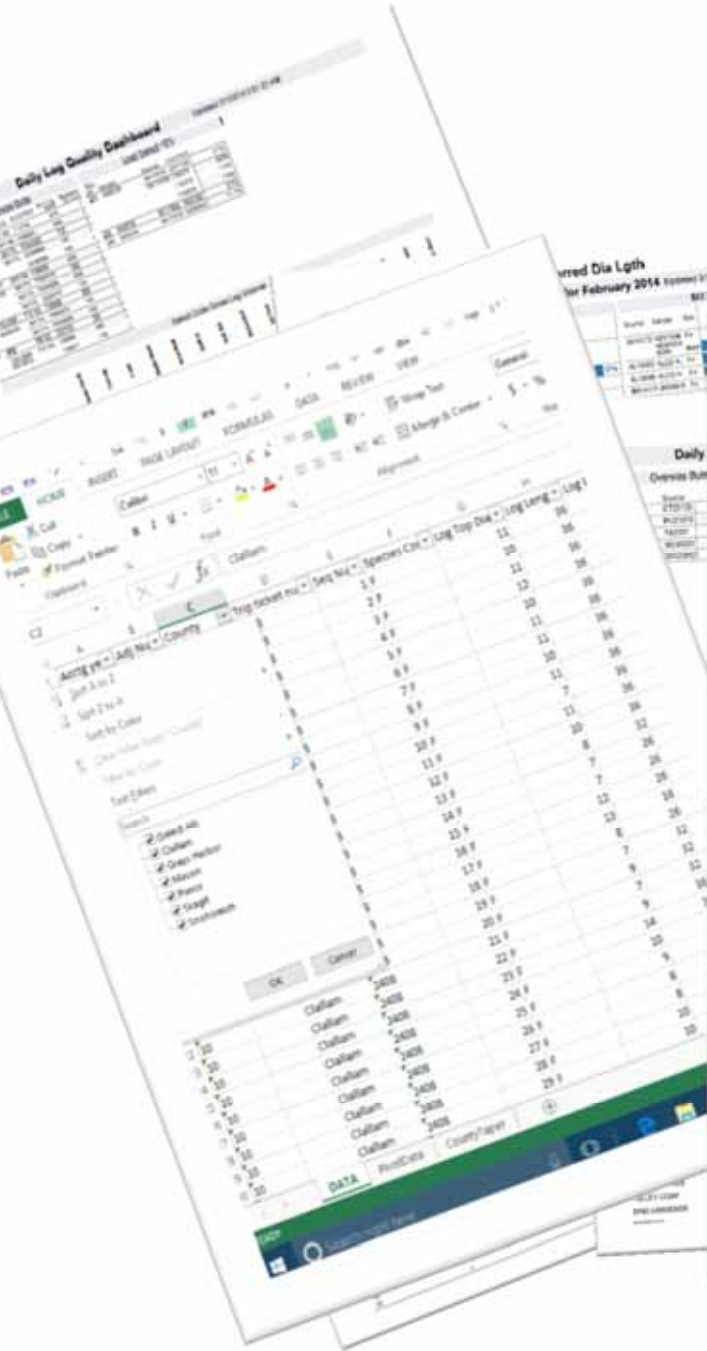
The background of the slide features a collage of two overlapping images. On the left, there is a screenshot of an Excel spreadsheet showing a data table with columns and rows of numbers. On the right, there is a screenshot of a Tableau BI map showing a geographical area with several regions highlighted in green and dark green. The main title is centered in a blue rounded rectangle over the top half of the collage.

Big Data Collection and Reporting using Excel and Tableau BI (Business Intelligence) Software

John Calkins Consulting

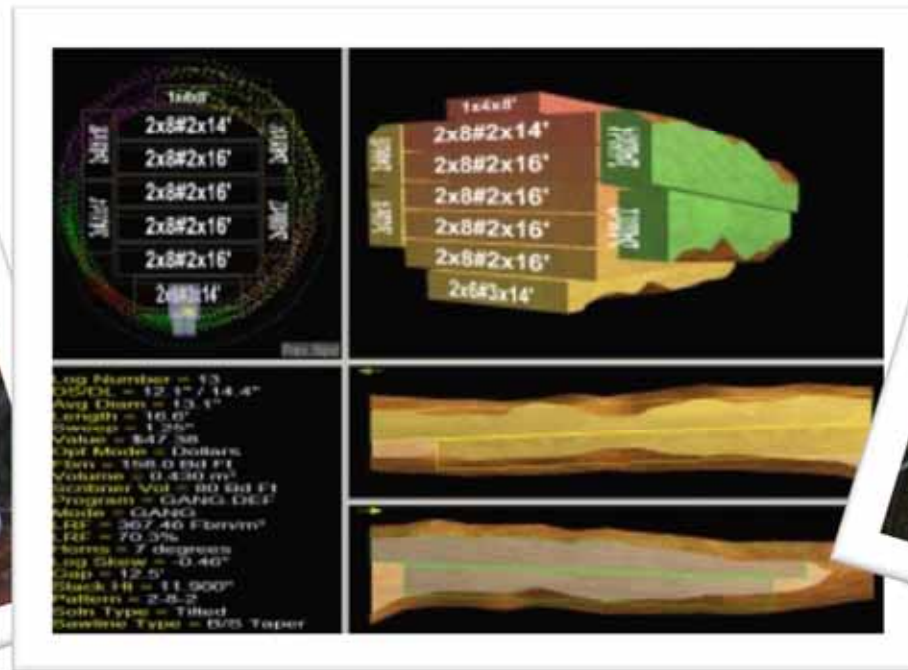
The Goal is to Connect for Discovery



The Connection

- What are “Data Sources”?
- Who is “IT” or “Admin”?
- What is Excel’s roll?
- Connect to Data using Excel.
- What are Excel’s limitations?
- Connect Excel to an Access Data Base.
- What are the Access Data Base limitations?
- Connect to SQL.
- Connect to Big Data using Business Intelligence (BI) Software.

Data Sources can be from a Data Device, Machine Center or Database Management System (DBMS)



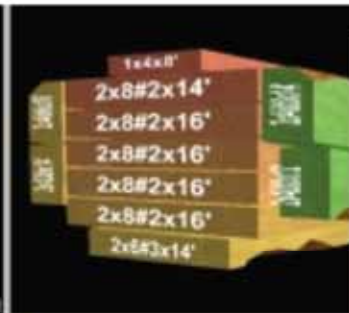
What is an Information Technology (IT) Manager or Administrator?

- Most Businesses have data locked down...so...
- Get your Managers on board.
- Show “IT” examples of what data you need.
- Get a limited data dump or data access permissions.
- Know what your asking for.
- “IT” can be:
 - A. Your best friend
 - B. Worst nightmare
 - C. Choose “A”

A data device like this Allegro can run software to collect Log Scale input and produce printable forms and tables that can be added to a Database Management System (DBMS)

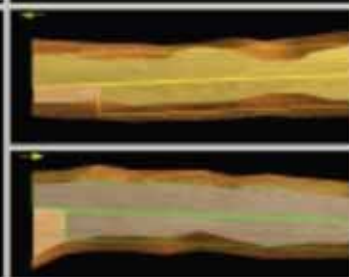
A screenshot of a data collection form or table. It features a header section with various fields for identification and a main table with multiple columns and rows of data. The data appears to be organized in a structured format, possibly representing a log scale or a specific dataset.A screenshot of a large data table with many columns. The columns are labeled with various codes and abbreviations, such as 'Lea', 'Div', 'Op', 'Sou', 'Job', 'Pri', 'Des', 'Sale', 'Hau', 'Stat', 'Trip', 'Ws', 'Dat', 'Pro', 'Spec', 'For', 'Loa', 'Yar', 'Dec', 'Del', 'Dri', 'Hau', 'Loa'. The table contains numerous rows of data, each representing a record in the database. The data is presented in a grid format with alternating row colors for readability.

BIG Data from others sources like this Sawmill Log Scanner Machine Center or Chip Classifier are often added to a (DBMS)



1.0000
 2x8#2x14'
 2x8#2x16'
 2x8#2x16'
 2x8#2x16'
 2x8#2x16'
 2x8#2x14'
 2.0000

1.0000
 2x8#2x14'
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 2x8#2x16'
 2x8#2x14'
 2.0000

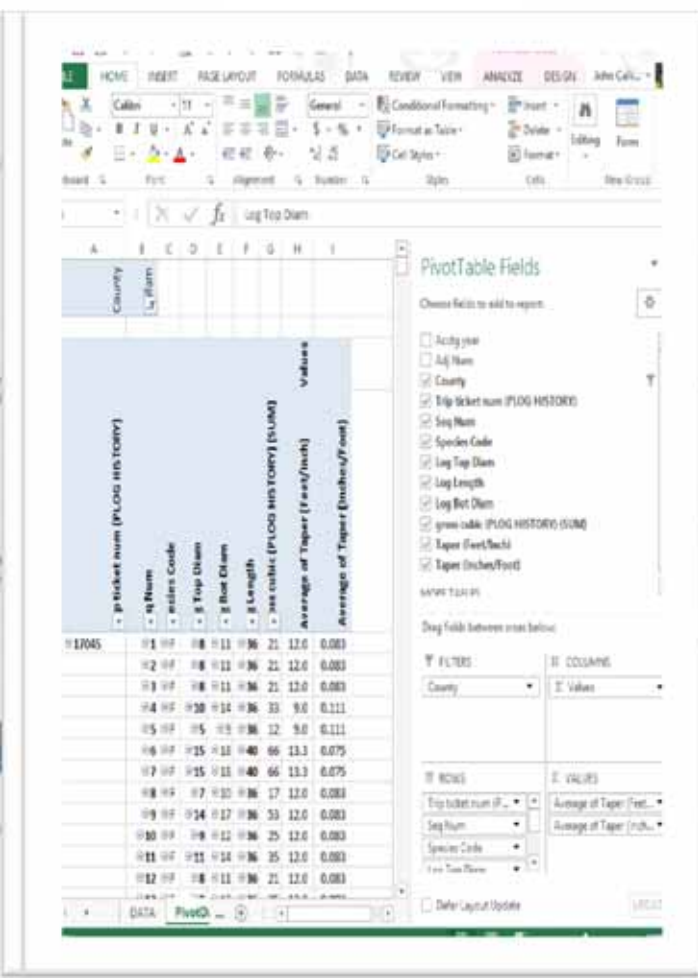
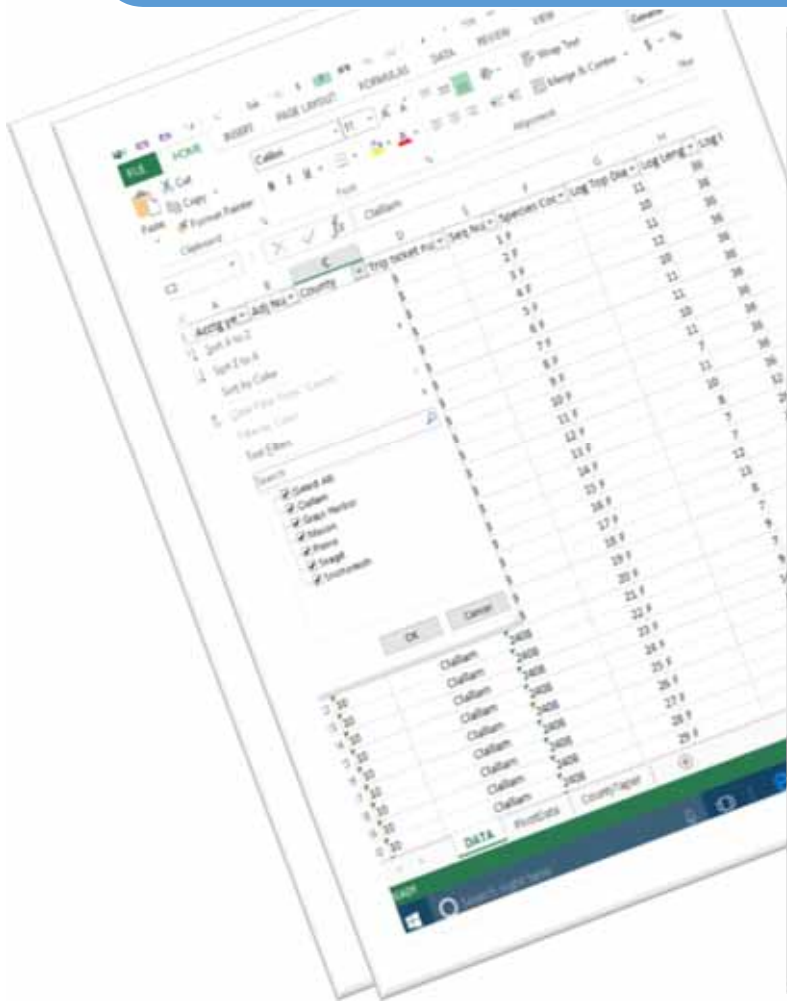


MLL	TICKET_NO	Month, Day, Year of TICKET_DATE	SPECIE_NAME	Sz1InchVsd	Sz18Vsd	Sz18Vsd	Sz20Vsd	Sz20Vsd	Sz2118V
A	T09558	January 13, 2012	DOUGLAS FR	10	63	609	295	116	1
	T09979	January 18, 2012	DOUGLAS FR	11	41	380	184	83	
	T10127	January 23, 2012	DOUGLAS FR	34	71	692	279	128	
	T10412	January 17, 2012	DOUGLAS FR	28	45	497	315	157	1
	T10652	January 24, 2012	HEMLOCK	24	70	691	100	66	
	T11137	January 30, 2012	HEMLOCK	80	83	503	148	57	
	T11771	January 26, 2012	HEMLOCK	25	107	695	271	74	
	T12260	February 1, 2012	HEMLOCK	37	104	705	174	74	
	T12395	February 1, 2012	HEMLOCK	24	81	627	200	84	
	T12737	February 9, 2012	DOUGLAS FR	15	37	358	205	82	
	T13364	February 13, 2012	DOUGLAS FR	13	49	459	223	88	
	T14169	February 9, 2012	DOUGLAS FR	11	46	417	181	78	
	T14808	February 14, 2012	DOUGLAS FR	14	50	460	228	114	
	T15204	February 16, 2012	DOUGLAS FR	19	55	527	207	98	1
	T17263	March 5, 2012	DOUGLAS FR	403	58	467	289	200	1
	T17589	February 27, 2012	DOUGLAS FR	17	50	619	290	100	1
	T18106	March 6, 2012	DOUGLAS FR	17	80	589	268	117	1
	T18578	March 10, 2012	DOUGLAS FR	25	71	574	252	129	
	T20490	March 20, 2012	DOUGLAS FR	15	57	474	211	72	
	T21113	March 18, 2012	DOUGLAS FR	23	82	758	282	120	
	T21562	March 22, 2012	DOUGLAS FR	14	52	481	212	133	1
	T25329	March 26, 2012	HEMLOCK	17	42	401	265	180	2
	T25819	March 27, 2012	HEMLOCK	9	64	559	190	87	1
	T29172	March 29, 2012	HEMLOCK	10	65	494	163	79	
B	T07342	January 6, 2012	MIXED	5	14	158	176	164	1
	T09487	January 12, 2012	MIXED	23	62	404	306	204	1
	T08819	January 12, 2012	MIXED	19	50	384	263	227	1
	T09095	January 11, 2012	MIXED	19	40	342	327	180	1
	T09481	January 11, 2012	MIXED	26	54	428	348	284	1
	T10130	January 23, 2012	MIXED	22	42	297	243	188	1

Some road blocks to consider

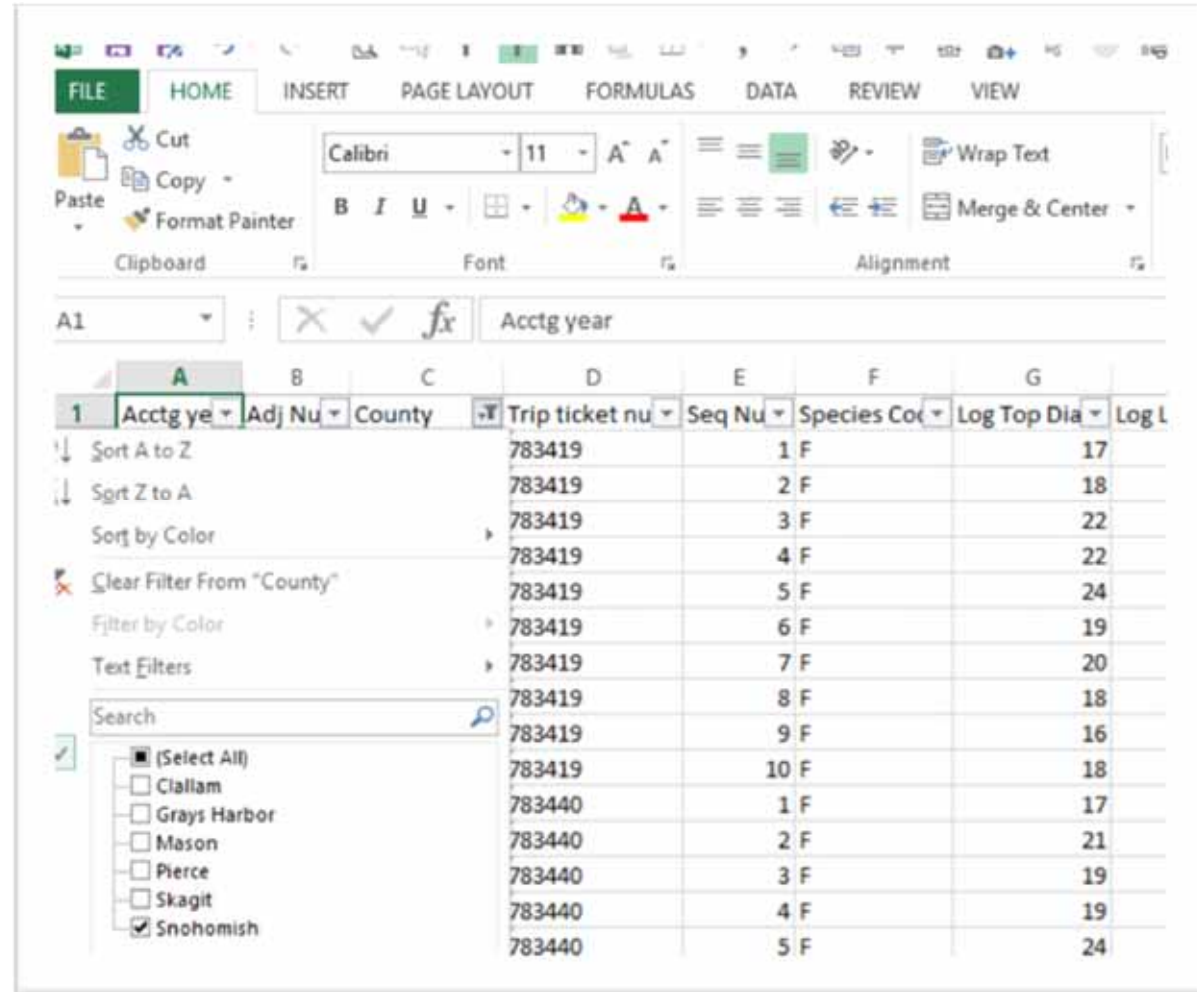
- Spreadsheets like Excel may not be allowed to connect directly on networked drives because of bandwidth.
- “IT” may not support your software.
- “IT” may have their own Report Writing Team.
- “IT” may not understand your requests or logic.
- Best solution: Ask for limited data access and data dumps to be contained on your PC for exploration with the understanding that you will bring the knowledge gained back to the IT Reporting Team.

Spreadsheets like Excel do a pretty good job on limited amounts of data...



Excel Sheet Filtering vs Pivot Tables

Most Managers are handed a Spreadsheet then Filter, Sort and Summarize directly onto the sheet breaking the table and limiting the data's usefulness. Others will create linking sheets that are easily broken.



The screenshot shows the Microsoft Excel interface with the 'DATA' ribbon selected. The spreadsheet has columns A through G. Column A is 'Acctg ye', B is 'Adj Nu', C is 'County', D is 'Trip ticket nu', E is 'Seq Nu', F is 'Species Co', and G is 'Log Top Dia'. The 'County' column is filtered, and a dropdown menu is open showing a search box and a list of counties: Clallam, Grays Harbor, Mason, Pierce, Skagit, and Snohomish (which is selected). The data rows show trip ticket numbers, sequence numbers, species codes, and log top diameters for various counties.

	A	B	C	D	E	F	G
1	Acctg ye	Adj Nu	County	Trip ticket nu	Seq Nu	Species Co	Log Top Dia
			Sort A to Z	783419	1	F	17
			Sort Z to A	783419	2	F	18
			Sort by Color	783419	3	F	22
			Clear Filter From "County"	783419	4	F	22
			Filter by Color	783419	5	F	24
			Text Filters	783419	6	F	19
			Search	783419	7	F	20
			(Select All)	783419	8	F	18
			Clallam	783419	9	F	16
			Grays Harbor	783419	10	F	18
			Mason	783440	1	F	17
			Pierce	783440	2	F	21
			Skagit	783440	3	F	19
			Snohomish	783440	4	F	19
				783440	5	F	24

Excel Pivot Tables and Charts

To Analyze an
Excel Spreadsheet
or Table Select
INSERT

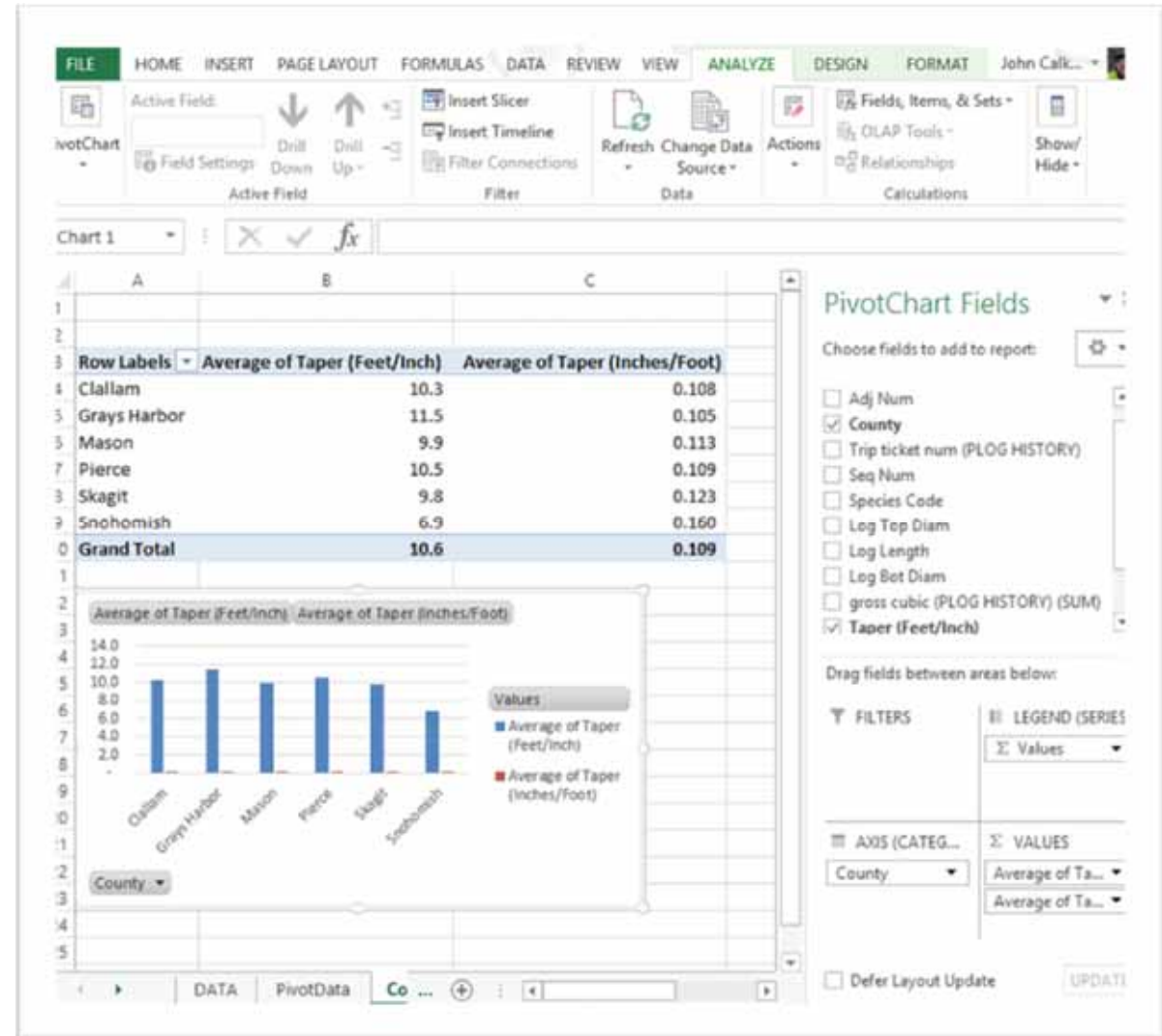
PivotTable or
PivotChart

The screenshot shows the Microsoft Excel interface with the 'INSERT' tab selected. The ribbon includes options for 'PivotTable', 'Recommended PivotTables', 'Table', 'Illustrations', 'Add-ins', 'Recommended Charts', and 'PivotChart'. The 'PivotChart' icon is highlighted with an orange arrow. Below the ribbon, a spreadsheet is visible with columns labeled 'Acctg year', 'Adj Num', 'County', 'Trip ticket num', 'Seq Num', 'Species Code', and 'Log Top Dia'. The 'Acctg year' column contains values from 1 to 14, and the 'County' column contains 'Clallam'. A 'Create PivotTable' dialog box is open, showing the 'Table/Range' as 'DATA!\$A\$1:\$L\$295953' and the 'New Worksheet' option selected.

Acctg year	Adj Num	County	Trip ticket num	Seq Num	Species Code	Log Top Dia
1		Clallam	2408	1	F	
2	10	Clallam				
3	10	Clallam				
4	10	Clallam				
5	10	Clallam				
6	10	Clallam				
7	10	Clallam				
8	10	Clallam				
9	10	Clallam				
10	10	Clallam				
11	10	Clallam				
12	10	Clallam				
13	10	Clallam				
14	10	Clallam				

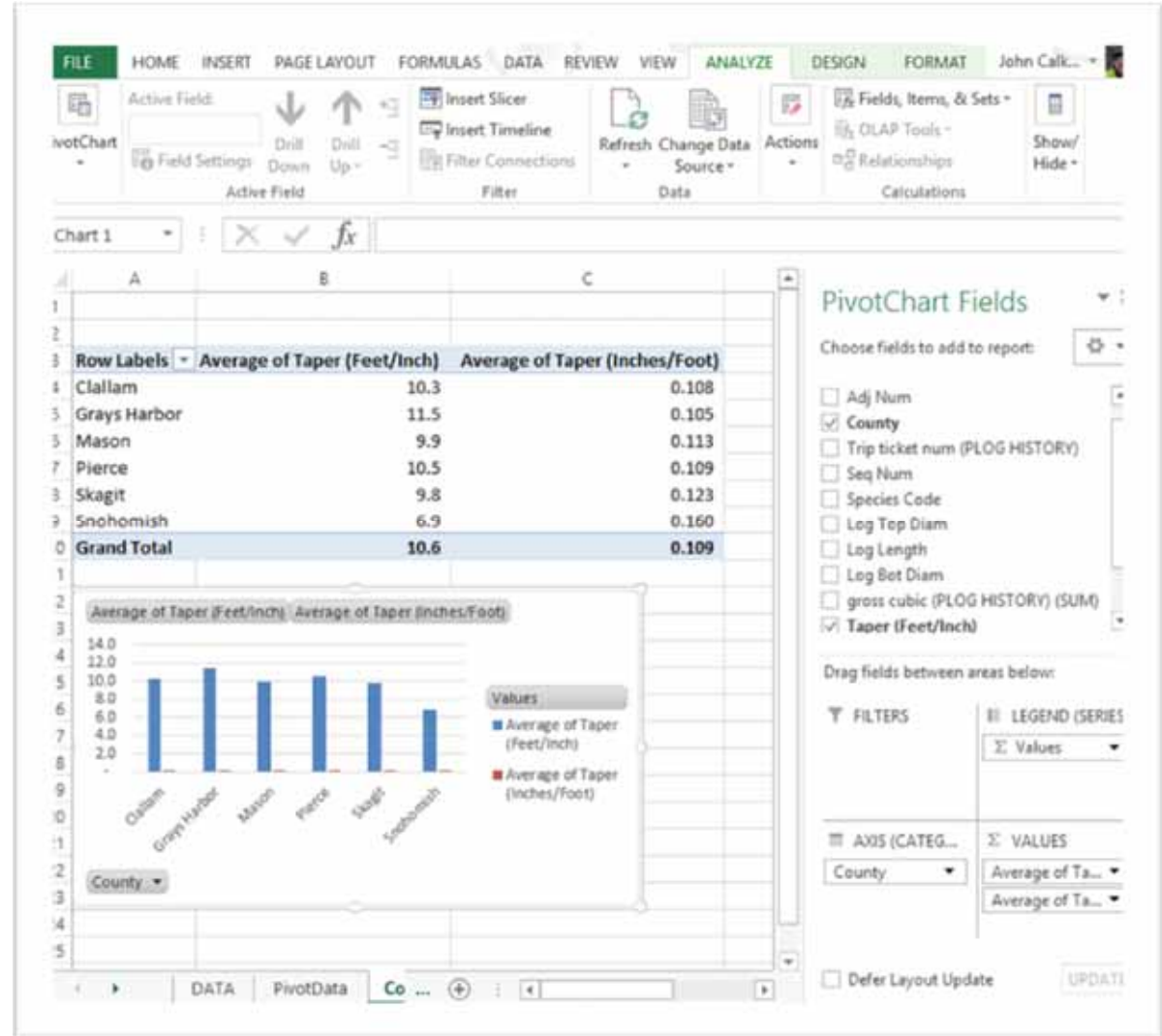
Excel Pivot Table Advantage

Pivot Tables allow the users to select just the needed info while leaving the original data untouched.



Excel's Data Limitation's 1,048,000 Rows

With Excel's 1 Million record limitation, consider asking for an Access Database dump.



Overcome Excel's Data Limitation with a direct data connection

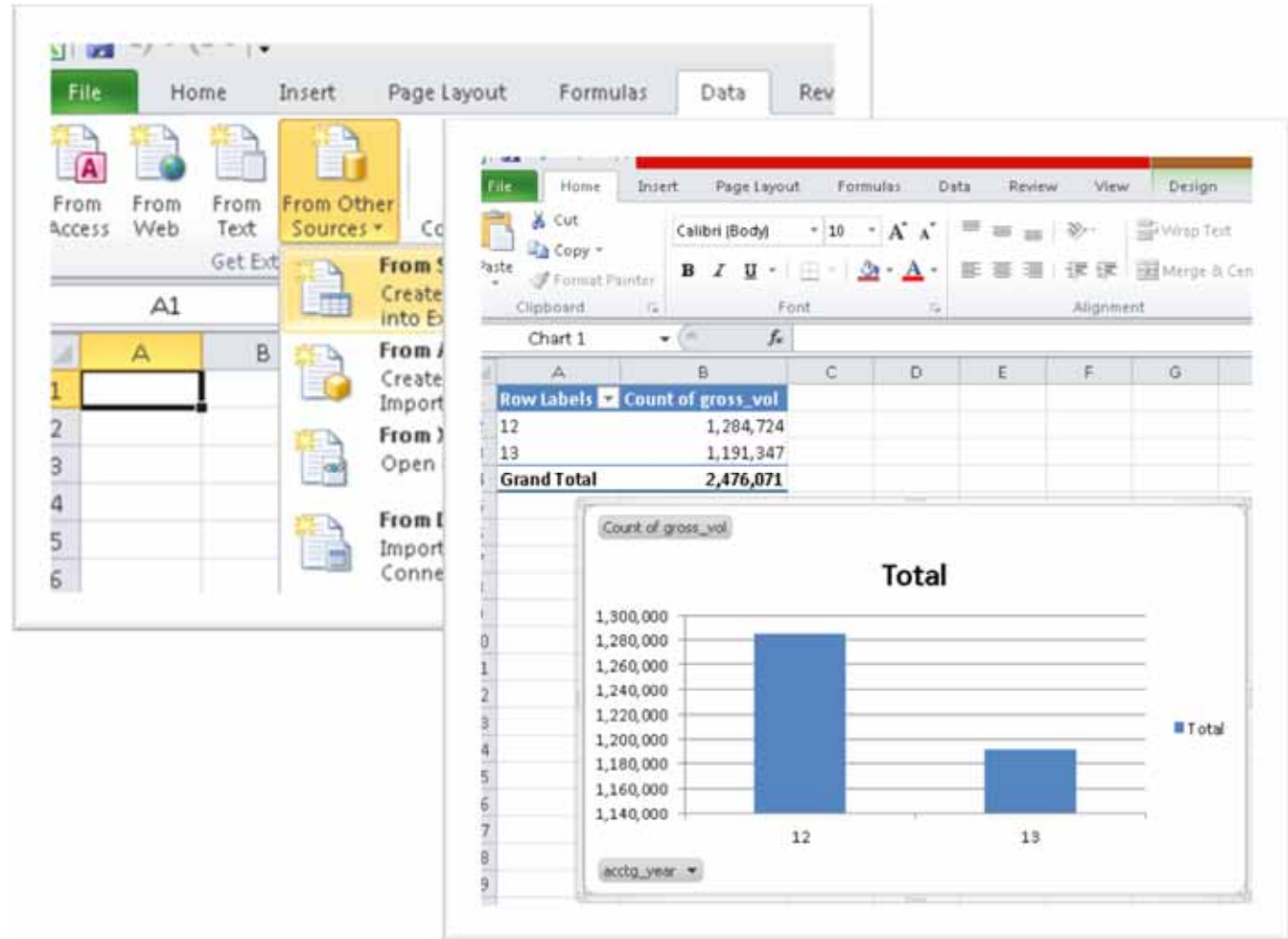
Filter and control an Access DB using Excel's Pivot Table Tools.

The screenshot displays the Microsoft Excel interface with the 'DATA' ribbon selected. A PivotTable is visible, showing a list of 'Acctg' values (10) in column A. A PivotChart is displayed to the right, showing a bar chart titled 'Average of Taper (inches/foot)' with the x-axis labeled 'County' and the y-axis labeled 'Average of Taper (inches/foot)'. The chart shows data for Clallam, Grays Harbor, Mason, Pierce, Skagit, and Snohomish counties. The PivotTable data is as follows:

Row Labels	Average of Taper (inches/foot)
Clallam	0.108439545
Grays Harbor	0.104895725
Mason	
Pierce	
Skagit	
Snohomish	
Grand Total	

Access's Data Limitation's 2 Gigabyte

Consider connecting to SQL to get around Access's 2 Gig data size.



Consider
Dedicated
BI
Software
like
Tableau

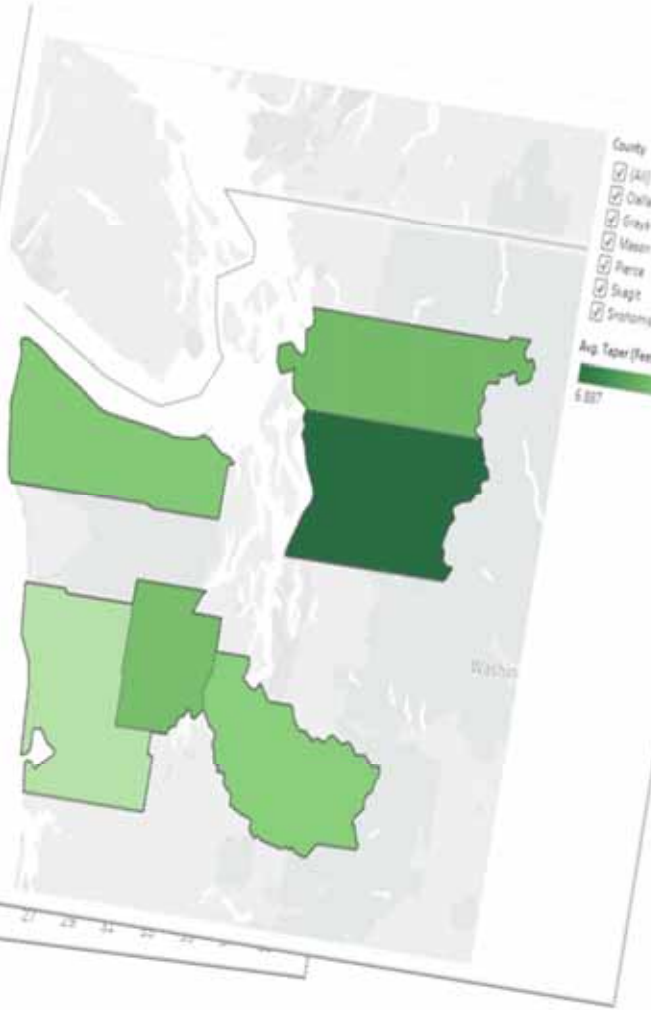
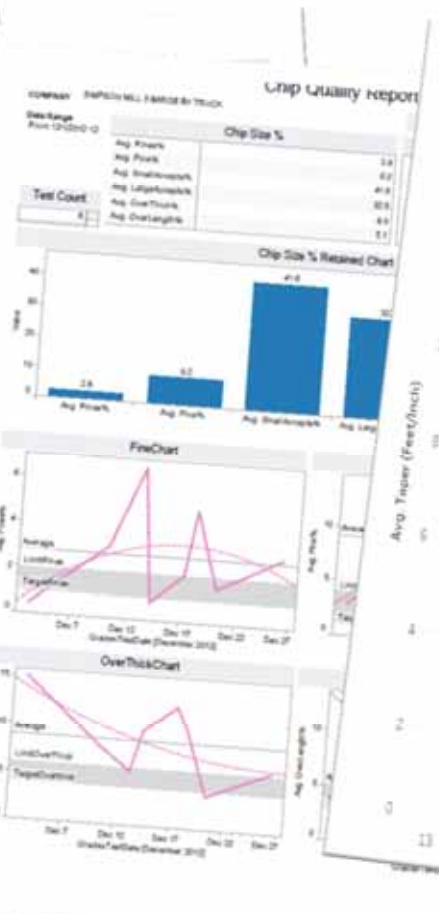
Figure 1. Magic Quadrant for Business Intelligence and Analytics Platforms



Source: Gartner (February 2017)

As of February 2017

Tableau Analytical Reporting



“Since Tableau visualizations are designed for human consumption ~ the amount of data in a query resultset is small relative to the size of the underlying data~ The small resultsets require little network bandwidth, so Tableau is able to fetch and render the resultset very quickly”

~Tableau~

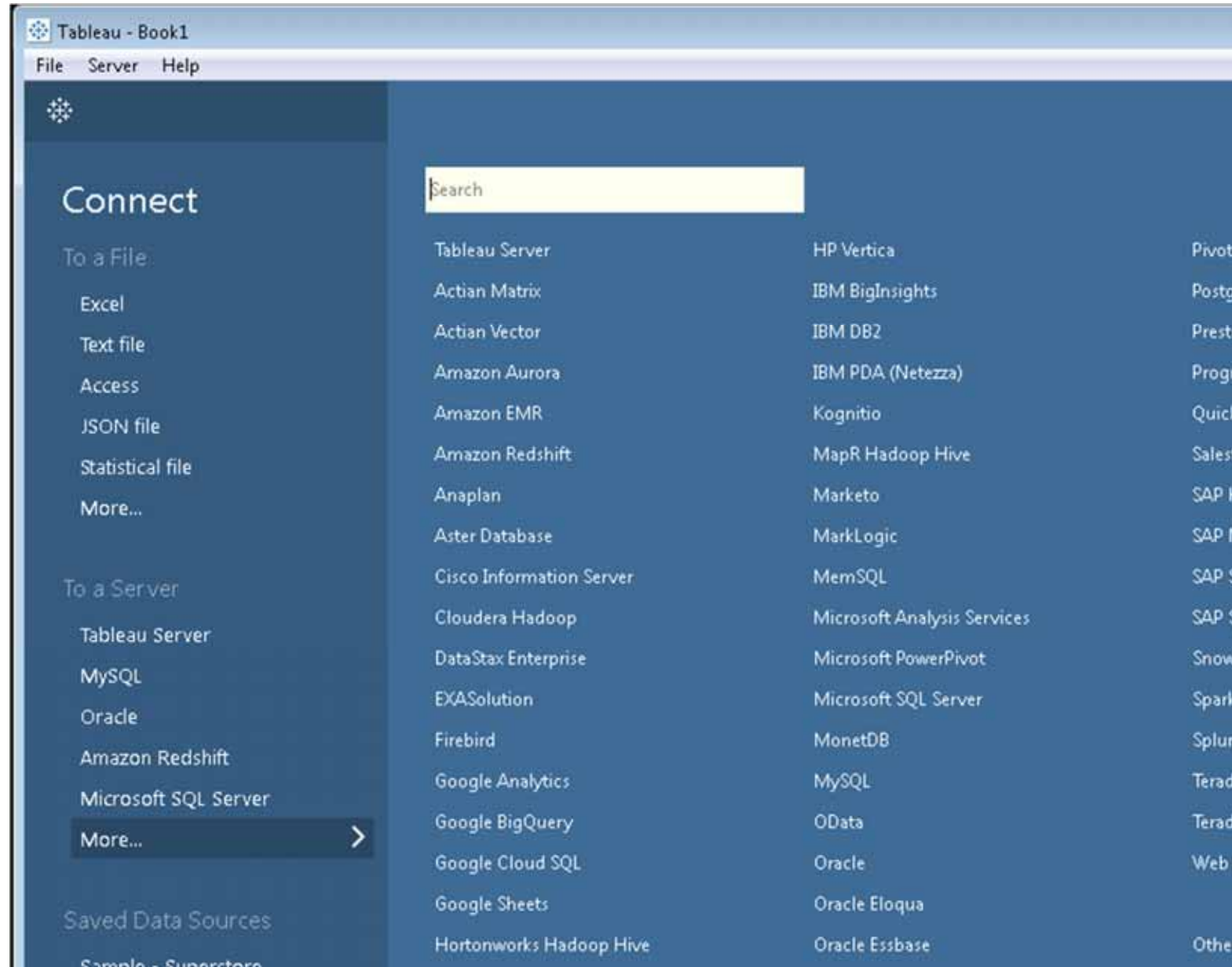


Tableau SQL Connect ...1,2,3...

The image illustrates the three-step process of connecting Tableau to a Microsoft SQL Server:

- Step 1: Connect** - The Tableau interface shows the 'Connect' menu on the left. Under 'To a Server', 'Microsoft SQL Server' is selected.
- Step 2: Microsoft SQL Server Configuration** - The configuration dialog is shown. The 'Server' field is set to 'sql' and the 'Database' is set to 'LMS_NW'. The 'Use (Windows Authentication) (pr)' option is selected.
- Step 3: Connections and Data View** - The 'Connections' pane shows 'TMS Project T... Data Extract' selected. The main view displays a data table with the following columns and data:

Acctg year	County	Trip ticket num	Seq Num	Species Code	Log Top Diam	Log Length	Log Bot Dia
10	Ocllam	2408	1	F	11	36	
10	Ocllam	2408	2	F	10	36	
10	Ocllam	2408	3	F	11	36	
10	Ocllam	2408	4	F	12	36	
10	Ocllam	2408	5	F	10	36	
10	Ocllam	2408	6	F	11	36	
10	Ocllam	2408	7	F	11	36	

Tableau Reporting...Drag and Drop

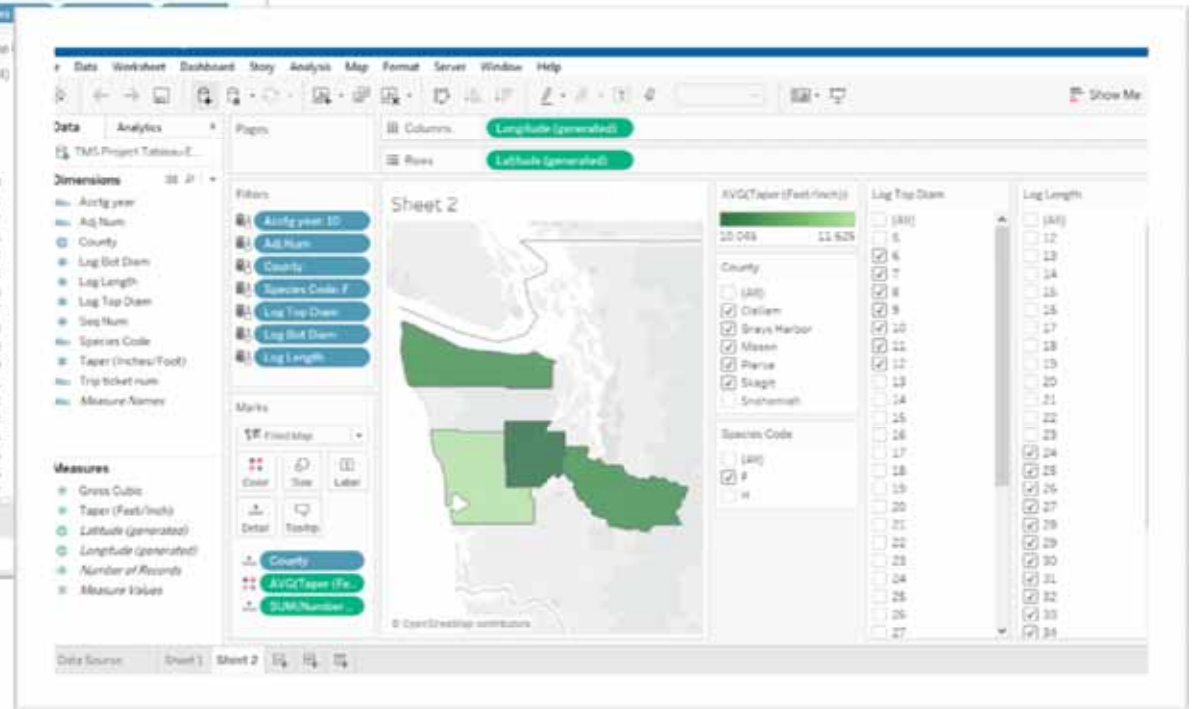
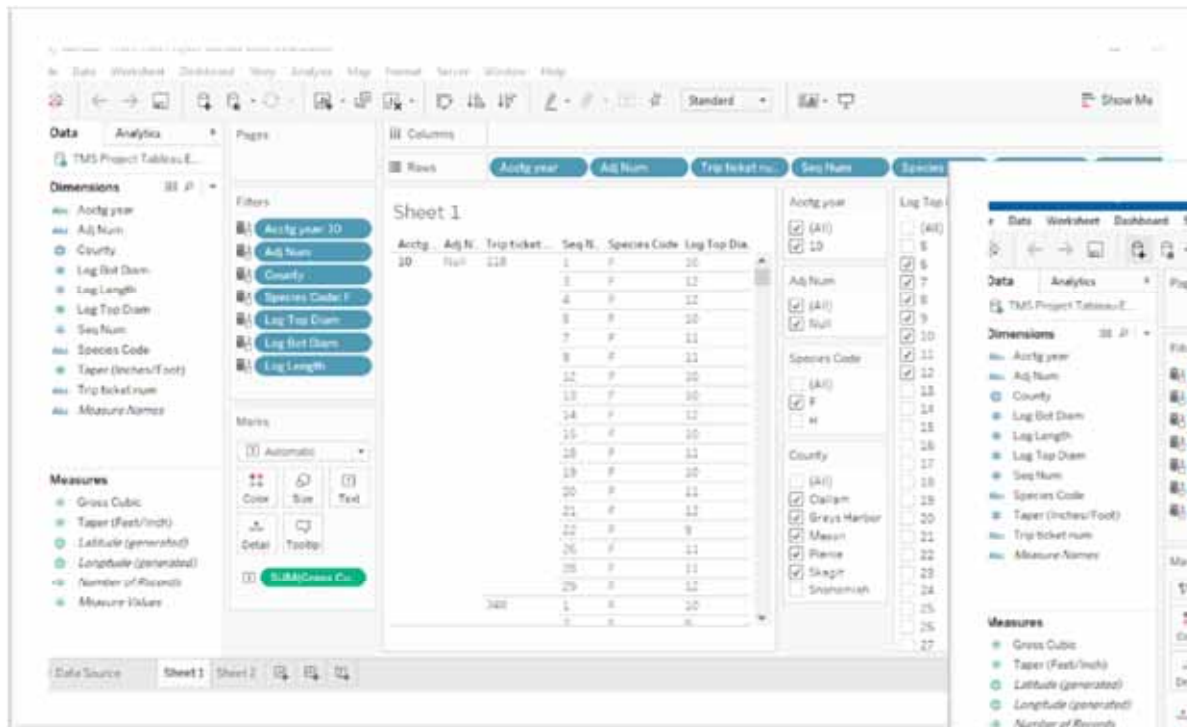
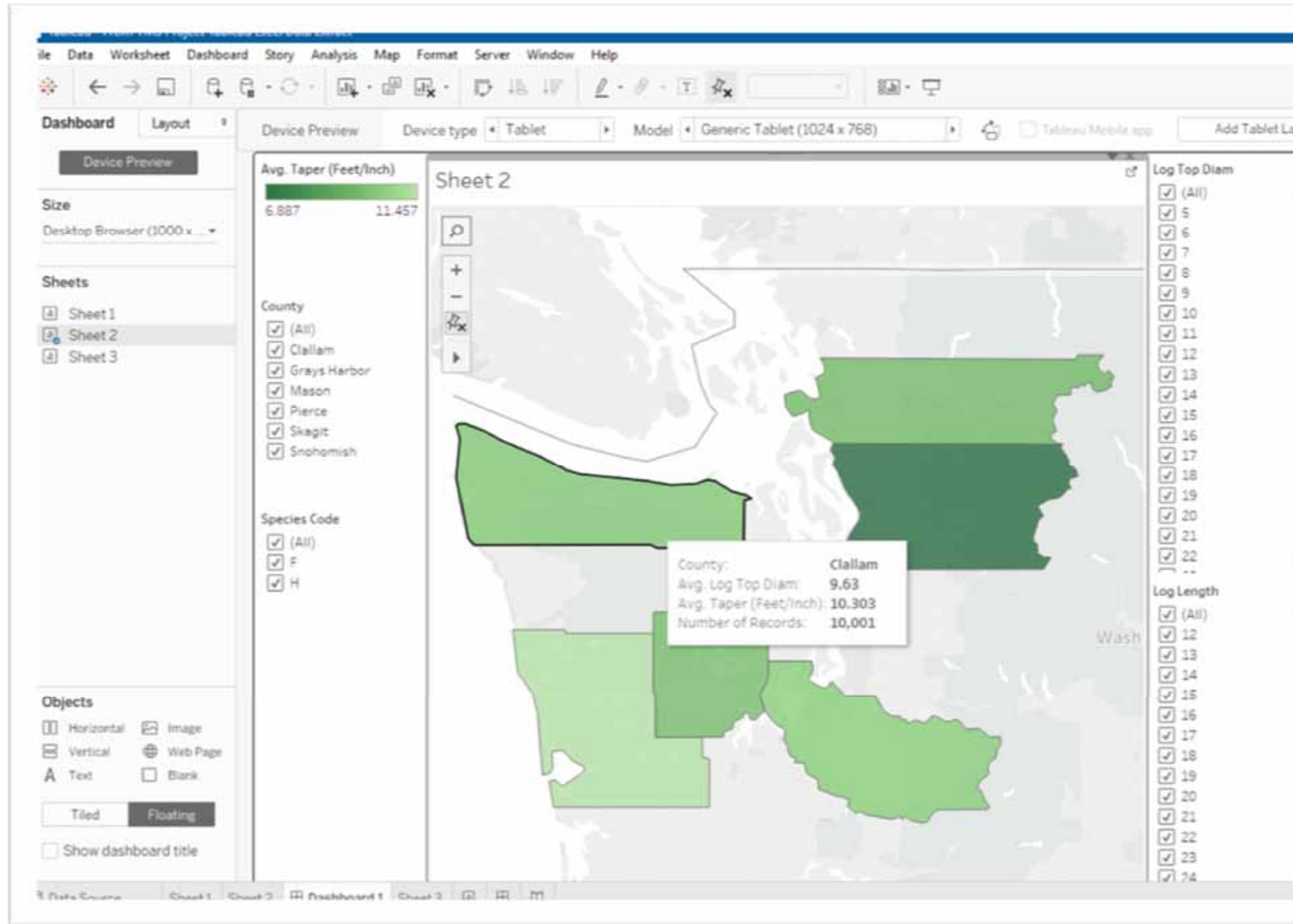


Tableau
Filters...
Drag
Drop
Select



Recap

- What are “Data Sources”? - Devices/Machine Centers/DBMS
- Who is “IT” or “Admin”? - Best Friend
- What is Excel’s roll? - Limited Data Manipulation
- Connect to Data using Excel. - Connect Directly if Allowed
- What are Excel’s limitations? - 1,048,000 Rows (or records)
- Connect Excel to Access Database. - Connect to Bigger Data
- What are Access Database limitations? - 2 Gigabytes
- Connect to SQL. - Connect to Server Data
- Connect to Big Data using Business Intelligence Software. - Tableau