Business Learning Institute
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Maryland GFOA

Basics of Exploring Data in Excel

Data, Tables, Functions, Pivot Tables

Presentation MDGFOA 2022 Annual Summer Conference

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June 15, 2022

Invenio Advisors, LLC

About Don

Don Tomoff

LinkedIn Profile

- #twinztalk
- #twinztechtip

Twitter

Google Search Don

“Let’s Excel” Blog on Medium

BLI Instructor

CPA, MBA, senior financial executive with experience in public accounting, industry and consulting

Agenda

1 – About This Presentation

2 – The Language of Data

3 – Data Structure & Excel Tables

4 – Key Excel Functions Review

5 – Pivot Tables / Pivot Charts

6 – Data Case Studies / Tips

7 – Handouts

"In a world of more data, the companies with more data-literate people are the ones that are going to win." — Miro Kazakoff, senior lecturer, MIT Sloan (Link)

About This Presentation

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- Think of this as an e-book.
- Resource with touch navigation and many content links.
- Load onto your Mobile device for easy access.

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SCAN ME

About This Presentation

1. Navigating the document
   - Tap ***Invenio Advisors, LLC*** >> Return to Agenda page
   - QR Codes provided for mobile device content access
2. It is a RESOURCE. Take it with you (mobile) / *keep it with you!*
3. Content hyperlinks are live.

Learning Objectives

Upon completion this session, participants will be able to:

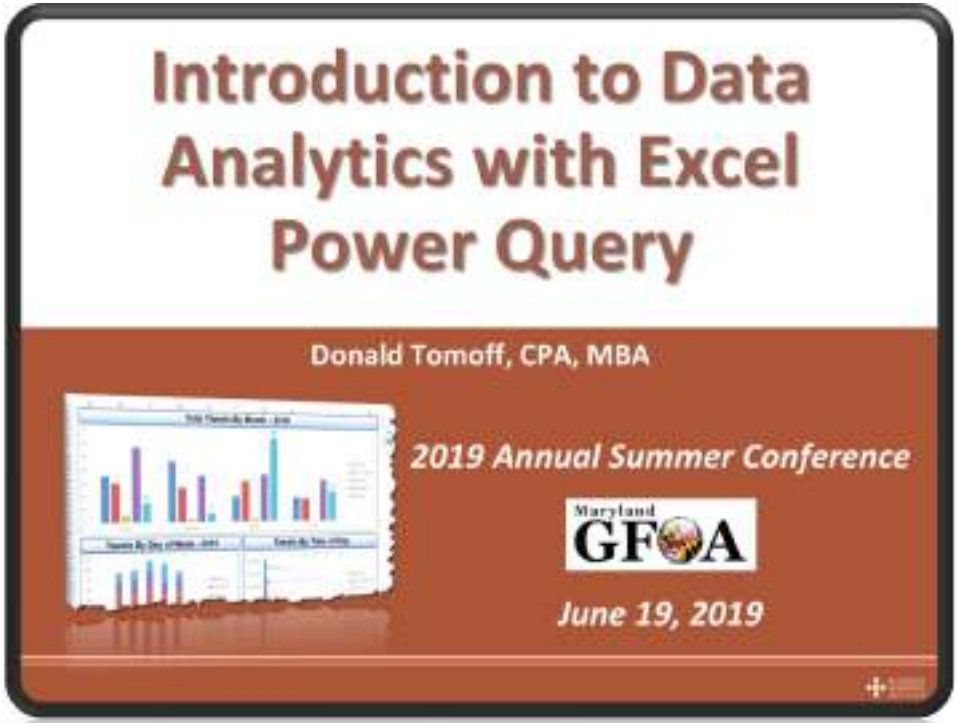
1. Develop and utilize Excel data Tables for your data and recall why they are necessary,
2. Identify proper structuring of data for pivot table analysis,
3. Recognize how pivot tables and pivot charts can make analysis faster, easier, and more flexible, and
4. Understand modifying data fields / dimensions to simplify and prepare for data analysis. Awareness of key functions and formulas!

How much time do you spend using Excel each day?

1. Less than 1 hour
2. 2-3 hours
3. 3-5 hours
4. Seems like all day!

QUESTION #1

Prior MDGFOA Presentation? – June 19, 2019



WERE YOU THERE?

Before We Dive In…Recommended Excel Skills?

SCAN ME

1. PowerQuery
2. PowerPivot (includes Pivot Tables)
3. Dynamic Arrays (365)
4. Data Visualization
5. Formatted Tables
6. Functions (20 key items)
7. Data Validation
8. PowerBI (separate tool)

Consider Baking a Pie…

"Similarly, when it comes to something like splitting column, <u>I think it's irresponsible</u> not to mention Power Query. ***Why?***"

Oz du Soleil • 1st
Microsoft Excel MVP | Excel Instructor on LinkedIn | YouTube: Excel on F...
23h •••

My approach has been to teach people what they need to know in order to be able to function.

In the latest book I describe baking a pie. Even a very basic pie is going to require some basic, intermediate and advanced skill. You're not going to have a pie if all you can do is measure ingredients.

Some pies are more complex than others, but there still is no such thing as baking a pie with only beginner level skill. A person has to step up and perform.

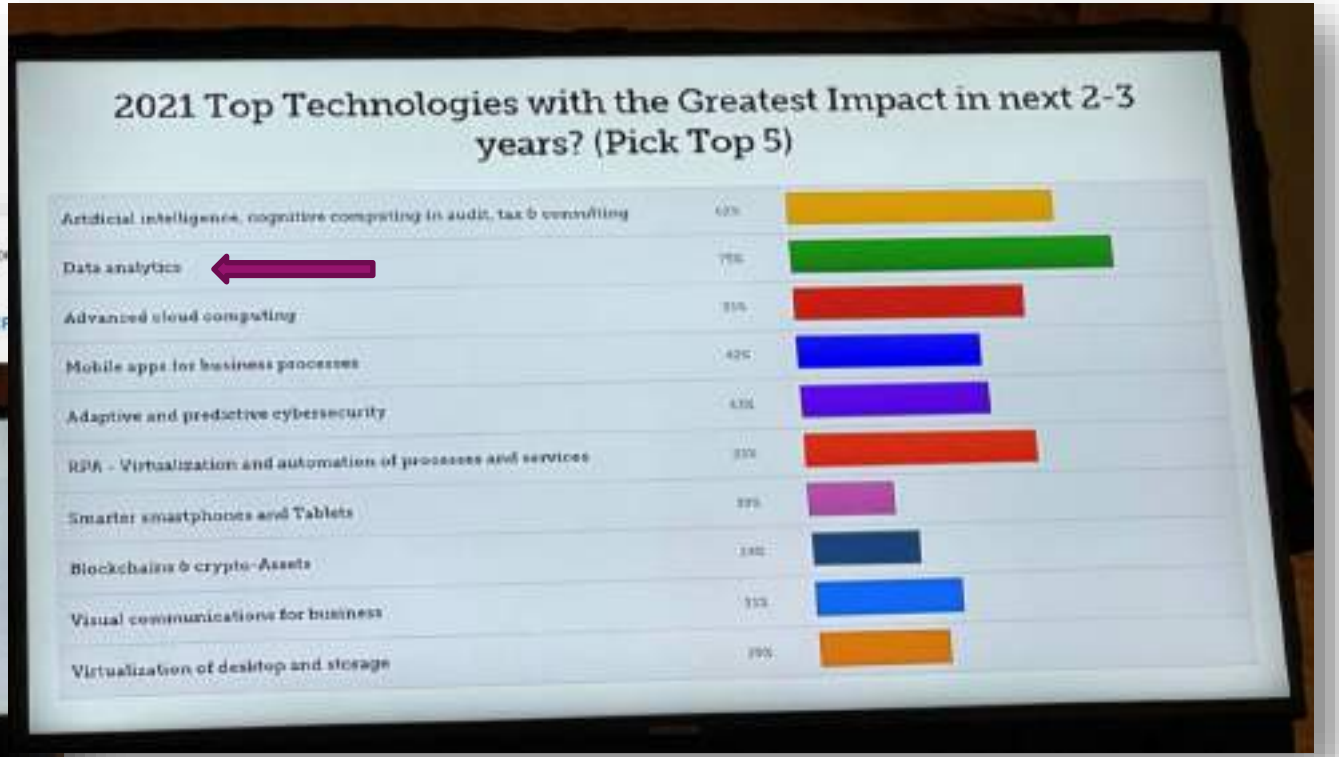
Similarly, when it comes to something like splitting columns, I think it's irresponsible not to mention Power Query. Why?

Splitting columns and repeatedly splitting columns is a common need. It'd be a genuine [redacted] move to show someone Text-to-Columns and say, "In a year, if you're ready, I'll show you Power Query, TEXTBEFORE, TEXTAFTER, and Flash Fill."

Jazz musicians do that kind of mess to up and coming musicians. "If you can't play Satin Doll in all 12 keys, you're forbidden from playing any jazz that was published after 1970."

The Language of Data

Why Analytics? Why Now?



DA is the #1 technology expected to impact finance & accounting professionals in the next 2-3 years!

So, Why Data Analytics?

“By now it has become clear that all businesses should embrace data to make their organization as efficient and profitable as possible. Old and tiresome puns like ‘data is the new oil’ may have been used to death but they have in no way whatsoever lost their meaning. This is because data is indeed one of the most important commodities to any business.”

- *FintechTimes - Promoting Digital Growth Through a Hands-on Approach to Data & Analytics*

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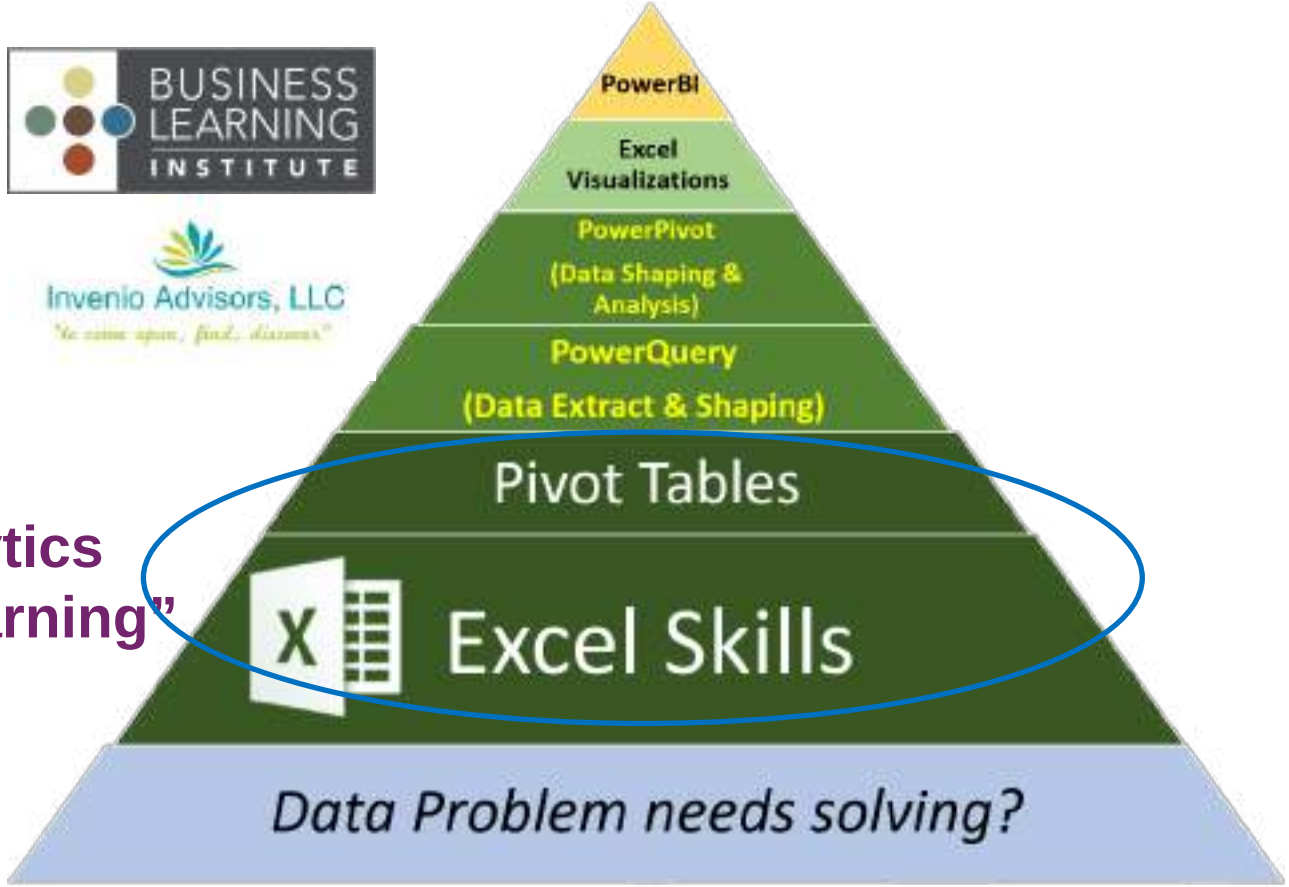
Microsoft's Analytics "Hierarchy of Learning"

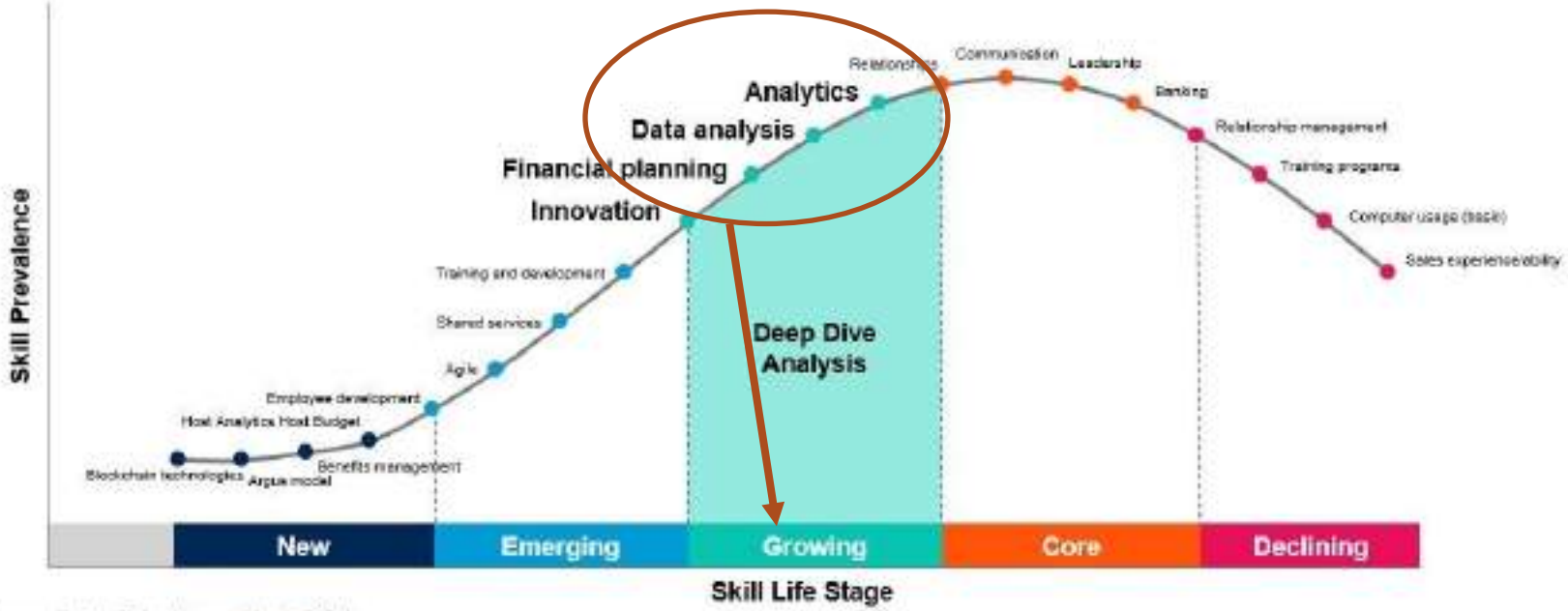


Gartner Skills Life Cycle Analysis (2021)

Financial Managers

Skills Life Cycle — S&P 100 Employers

Click Here for related LinkedIn Post



Source: Gartner TalentNeuron (March, 2021)

Data Analytics - Basic Terminology

1. Data Structure – **“Proper” Dataset** (Fields & Records VS Columns & Rows)
2. Transaction (**Fact**) tables (e.g., sales data) vs Lookup (**Dimension**) tables (e.g., customer table)
3. **ETLR** – Extract, Transform, Load and Report
4. **EDA** – exploratory data analysis
5. Relational Databases – **Data Joins** between tables “connect” data
6. **Queries** (PowerQuery, M-Code)
7. **Modeling** (PowerPivot, DAX, Data Model)

Consider…Typical Participant Poll Responses

1. Do you work with data? **100%**
2. Aware of Excel Tables and Pivot Tables? **70%**
3. Can explain the purpose of each and why they are important? **50%**
4. Use Tables and Pivot Tables on a regular basis? **20%**

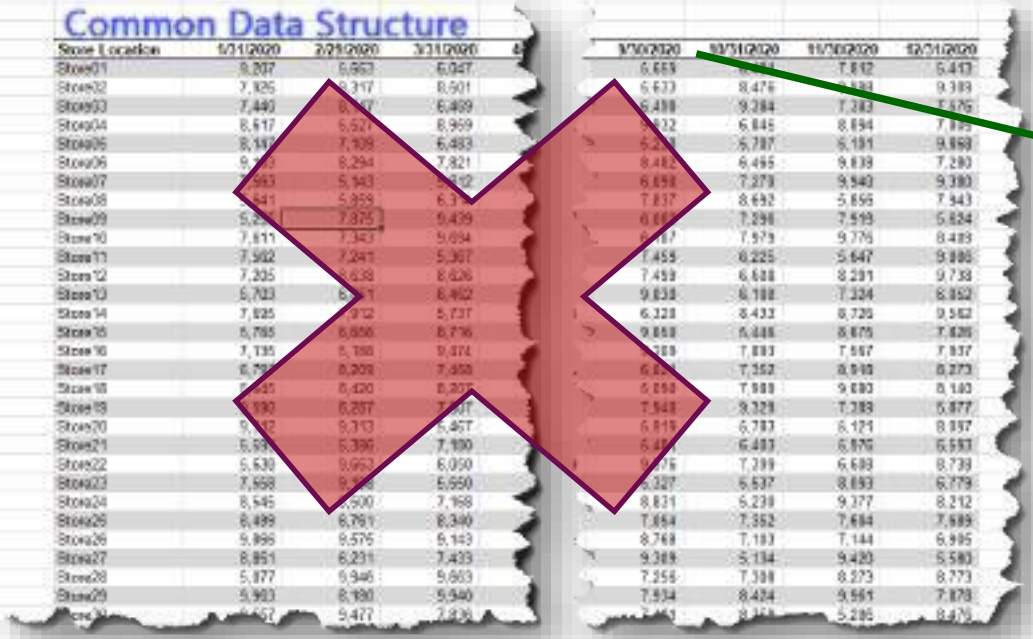
= OPPORTUNITY!

Data Structure and Excel Tables

Data Basics – Data Structure

1. Excel Tables (Data Structure)
2. LOOKUP Functions - VLOOKUP, HLOOKUP, XLOOKUP – (Data Structure)
3. Date “dimensions” to shape data (Data Structure)
4. Pivot Tables (Data Analysis)

Store Sales Data – Structure Example



Store Location	1/31/2020	2/29/2020	3/31/2020	4
Store01	9,207	5,663	6,047	
Store02	7,926	9,317	8,501	
Store03	7,440	[illegible]	6,409	
Store04	8,617	5,527	8,959	
Store05	[illegible]	7,109	6,483	
Store06	[illegible]	8,294	7,821	
Store07	[illegible]	5,143	[illegible]	
Store08	[illegible]	5,959	[illegible]	
Store09	[illegible]	7,875	9,439	
Store10	7,611	7,343	9,694	
Store11	7,902	7,241	5,367	
Store12	7,205	[illegible]	8,626	
Store13	6,703	[illegible]	6,462	
Store14	7,925	[illegible]	5,737	
Store15	8,785	[illegible]	8,716	
Store16	7,135	[illegible]	9,374	
Store17	[illegible]	[illegible]	[illegible]	
Store18	[illegible]	[illegible]	[illegible]	
Store19	[illegible]	[illegible]	[illegible]	
Store20	[illegible]	9,313	[illegible]	
Store21	[illegible]	[illegible]	7,100	
Store22	5,630	[illegible]	6,050	
Store23	7,658	[illegible]	6,950	
Store24	8,545	[illegible]	7,188	
Store25	8,499	6,761	8,340	
Store26	9,996	9,576	9,143	
Store27	8,851	6,231	7,433	
Store28	5,877	9,946	5,603	
Store29	5,903	8,180	5,940	
[illegible]	[illegible]	9,477	[illegible]	

7/30/2020	8/31/2020	9/30/2020	10/31/2020
6,669	[illegible]	7,812	5,413
6,673	8,476	[illegible]	9,389
6,488	9,284	7,283	[illegible]
[illegible]	6,845	8,894	[illegible]
[illegible]	5,787	6,191	9,868
[illegible]	6,495	9,839	7,280
6,898	7,273	9,940	9,380
7,837	8,692	5,895	7,943
[illegible]	7,296	7,599	5,834
[illegible]	7,579	9,776	8,489
7,455	6,225	5,647	9,886
7,459	6,688	8,291	9,738
9,838	6,188	7,324	8,852
6,328	8,433	8,726	9,562
9,858	6,486	8,675	7,826
[illegible]	7,893	7,567	7,837
[illegible]	7,352	8,598	8,273
6,898	7,988	9,693	8,183
7,548	9,328	7,283	5,877
6,919	6,783	6,121	8,197
[illegible]	6,483	6,976	6,593
[illegible]	7,299	6,688	8,739
5,327	6,537	8,893	6,779
8,831	6,238	9,377	8,212
7,854	7,352	7,684	7,689
8,748	7,183	7,144	6,995
9,389	5,134	9,420	5,583
7,258	7,398	8,273	8,773
7,934	8,424	9,561	7,878
[illegible]	[illegible]	5,285	8,476

	A	B	C	D	E	F
1	Store Location	MonthEnd	Sales	Year	Month Name	QTR
2	Store01	1/31/2020	9,207	2020	Jan	QTR 1
3	Store01	2/29/2020	5,663	2020	Feb	QTR 1
4	Store01	3/31/2020	6,047	2020	Mar	QTR 1
5	Store01	4/30/2020	6,857	2020	Apr	QTR 2
6	Store01	5/31/2020	5,807	2020	May	QTR 2
7	Store01	6/30/2020	8,527	2020	Jun	QTR 2
8	Store01	7/31/2020	7,091	2020	Jul	QTR 3
9	Store01	8/31/2020	7,053	2020	Aug	QTR 3
10	Store01	9/30/2020	5,669	2020	Sep	QTR 3
11	Store01	10/31/2020	6,484	2020	Oct	QTR 4
12	Store01	11/30/2020	7,812	2020	Nov	QTR 4
13	Store01	12/31/2020	5,413	2020	Dec	QTR 4
14	Store02	1/31/2020	7,926	2020	Jan	QTR 1
15	Store02	2/29/2020	9,317	2020	Feb	QTR 1
16	Store02	3/31/2020	8,501	2020	Mar	QTR 1
17	Store02	4/30/2020	6,972	2020	Apr	QTR 2
18	Store02	5/31/2020	5,055	2020	May	QTR 2
19	Store02	6/30/2020	7,227	2020	Jun	QTR 2
20	Store02	7/31/2020	8,681	2020	Jul	QTR 3
21	Store02	8/31/2020	7,885	2020	Aug	QTR 3
22	Store02	9/30/2020	5,633	2020	Sep	QTR 3
23	Store02	10/31/2020	8,476	2020	Oct	QTR 4

Proper Data Structure

Tables – *Demo* (see Handouts)

Name (Last, First)	DeptNumber	Department	Annual Salary	SalaryGroup	Count
Norling, Jeremy	2	Marketing	43,374	> $30.0K <= $60.0K	
Milici, Tuan	4	Information Technology	68,209	> $60.0K <= $100.0K	
Brawner, Jeanna	2	Marketing	46,837	> $30.0K <= $60.0K	
Chaparro, Latarsha	4	Information Technology	67,424	> $60.0K <= $100.0K	
Danziger, Patrina	4	Information Technology	87,841	> $60.0K <= $100.0K	
Guntrum, Mandi	1	Merchandising	31,712	> $30.0K <= $60.0K	
Meng, Sarai	1	Merchandising	77,852	> $60.0K <= $100.0K	
Kostka, Nestor	4	Information Technology	69,857	> $60.0K <= $100.0K	
Sanluis, Francesca	5	Operations	64,174	> $60.0K <= $100.0K	
Reising, Dorcas	1	Merchandising	100,984	> $100.0K	
Mchone, Dora	5	Operations	95,765	> $60.0K <= $100.0K	
Suess, Shanel	2	Marketing	91,693	> $60.0K <= $100.0K	
Bonds, Sonya	1	Merchandising	109,560	> $100.0K	
Pledger, Anastasia	5	Operations	70,594	> $60.0K <= $100.0K	
Prioleau, Marquetta	5	Operations	65,183	> $60.0K <= $100.0K	
Mollett, Barbera	5	Operations	66,520	> $60.0K <= $100.0K	
Pearsall, Kati	1	Merchandising	0,493	> $60.0K	00.0K

Key Benefits / Features of Excel Data Tables

1. Automatic data filters and sort options
2. Formulas “Structured” references vs cell references
3. Auto-fill formulas
4. No need to freeze headers to keep column references
5. Dynamic range (updates as new records are added)
6. Auto expansion of table as data is added (rows & columns)
7. Auto summing and calculations on table totals

Excel Tables (Data Structure)

1. Foundation of data structure for analysis purposes
2. Benefits of Excel Tables:
   - *“Excel Tables: Overlooked, Yet Awesome”*
   - *“Want to become a Data God? Learn Excel Data Tables”*

Data Structure Discussion - Examples

1. Sales dataset
2. Payroll Budget dataset
3. Date / Time Timeclock dataset

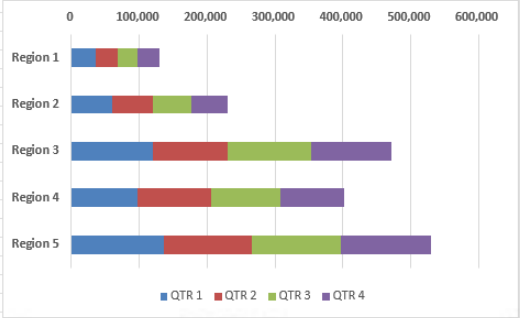
Sample Sales Dataset (Basic)

1. Structure issues?
2. What might I want to know?
   - This question drives transformation process
   - Create analysis flexibility by adding Fields to enable analysis

RAW SALES DATA RECEIVED

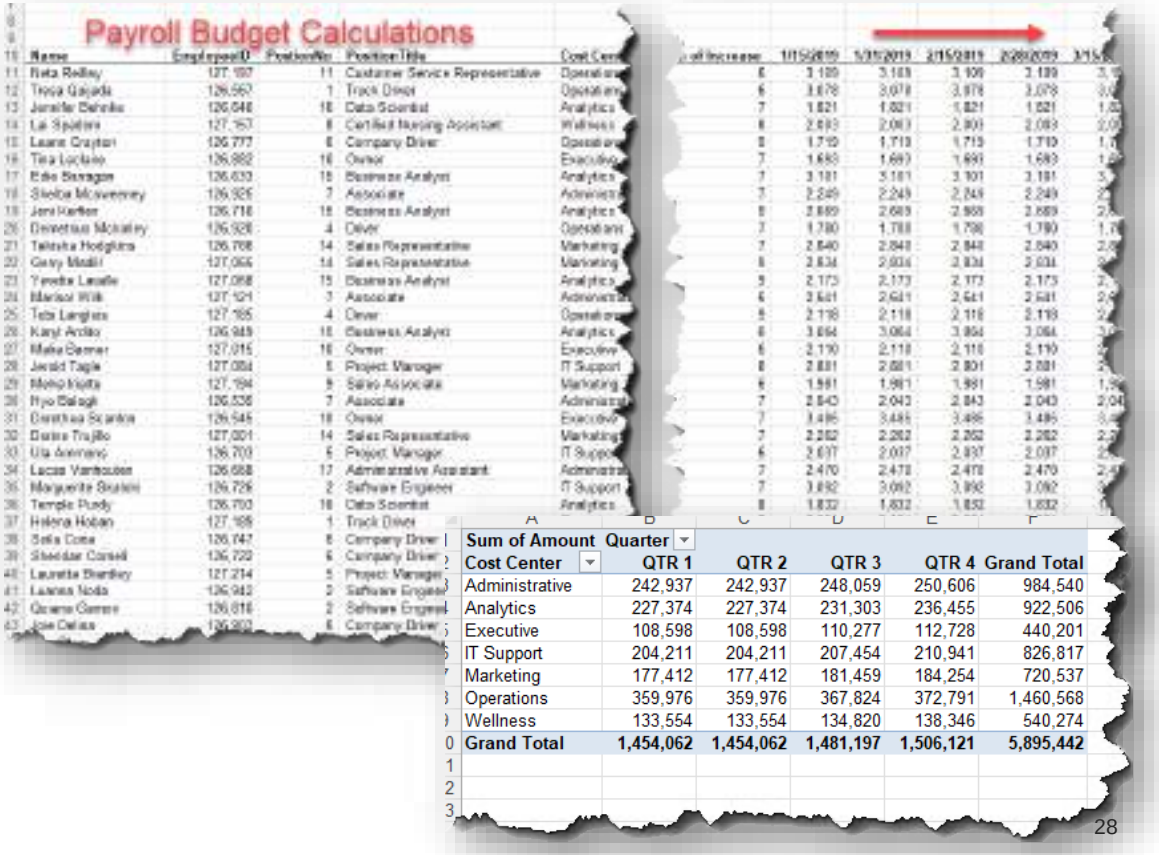
Product	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21
PRODUCT001	2,628	3,288	3,098	3,989	4,183	2,692	3,035	4,778
PRODUCT002	4,564	4,227	3,343	3,963	4,011	3,881	4,870	3,294
PRODUCT003	2,672	3,331	3,197	4,114	2,817	4,320	3,142	4,602
PRODUCT004	3,748	2,560	4,395	4,277	4,836	4,418	3,813	4,654
PRODUCT005	3,692	3,889	4,370	3,131	4,875	3,846	3,317	3,658
PRODUCT006	4,961	3,362	3,999	4,561	2,862	4,558	3,657	4,934
PRODUCT007	3,481	3,877	2,847	4,100	4,351	4,365	4,730	4,701
PRODUCT008	4,917	4,610	4,907	2,890	3,283	2,638	3,587	2,764
PRODUCT009	2,944	4,997	4,228	4,122	4,686	3,387	3,664	4,125
PRODUCT010	2,781	4,424	3,230	2,843	3,070	2,721	4,186	3,499
PRODUCT011	3,434	3,562	4,074	2,979	4,000	4,188	4,093	2,904
PRODUCT012	4,840	3,951	4,513	3,874	3,546	3,858	3,243	2,782
PRODUCT013	3,519	2,831	4,182	2,562	3,700	2,965	3,686	3,886
PRODUCT014	4,287	4,603	4,260	2,844	4,833	4,446	2,511	4,246
PRODUCT015	2,918	4,921	4,198	2,622	3,151	4,601	3,462	2,971
PRODUCT016	4,825	3,159	4,730	3,561	4,028	4,906	3,709	3,779
PRODUCT017	3,531	2,569	3,903	4,862	4,777	2,836	4,206	2,500
PRODUCT018	4,867	3,275	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT019	3,581	3,480	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT020	4,536	4,696	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT021	4,302	3,569	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT022	4,288	3,040	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT023	4,890	4,965	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT024	3,736	3,467	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT025	3,704	3,877	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT026	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sum of Sales	Sales by (				
Region	QTR 1	QTR 2	QTR 3	QTR 4	Grand Total
Region 1	35,276	32,732	29,513	32,541	130,062
Region 2	60,811	59,591	55,578	54,197	230,177
Region 3	119,366	110,573	122,936	118,247	471,122
Region 4	97,133	108,946	102,216	94,160	402,455
Region 5	136,758	129,592	130,376	132,776	529,502
Grand Total	**449,344**	**441,434**	**440,619**	**431,921**	**1,763,318**



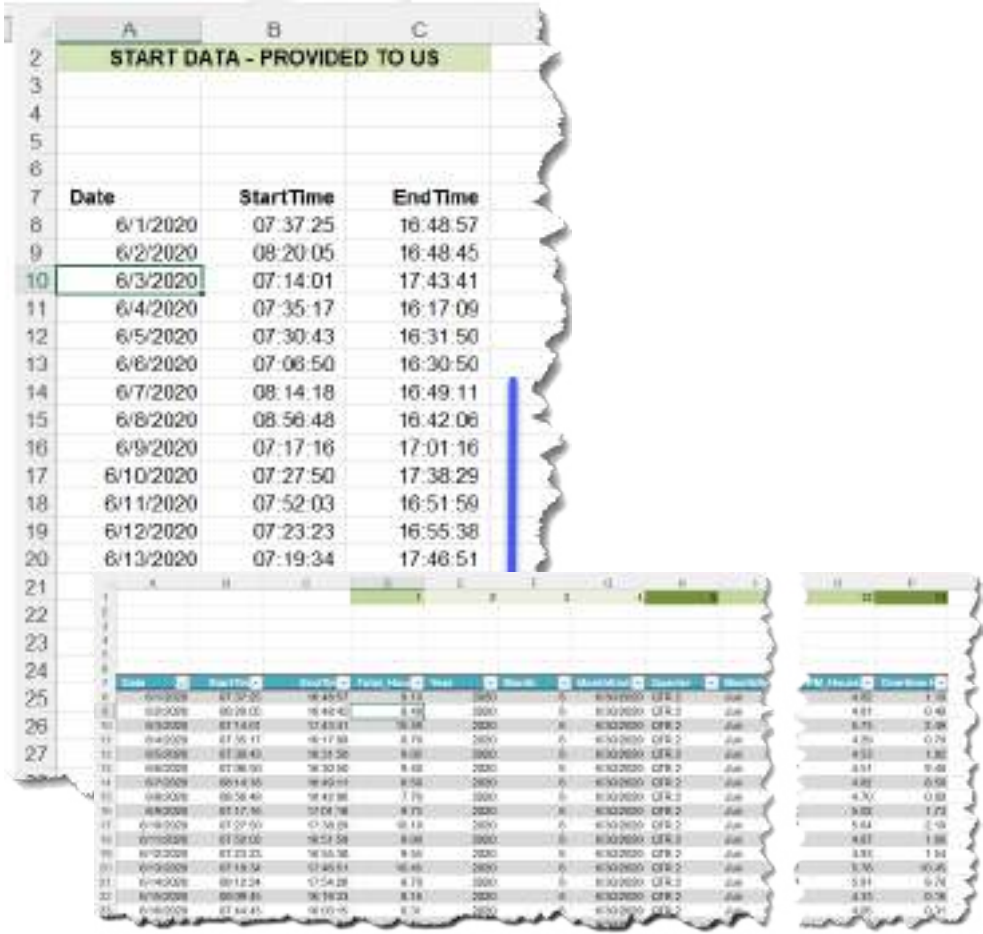
Budget Payroll Dataset (Intermediate)

1. Budget calculations, but we need quick analysis!
2. What might we want to know?
   - Salary Totals by Dept?
   - Quarterly trend?



Date / Time Timeclock Dataset (Intermediate +) – 1

1. Employee time clock data for analysis
2. Dimension fields need to be added for flexibility!
3. What’s the optimal way to approach this?



	A	B	C
2	START DATA - PROVIDED TO US		
3			
4			
5			
6			
7	Date	StartTime	EndTime
8	6/1/2020	07:37:25	16:48:57
9	6/2/2020	08:20:05	16:48:45
10	6/3/2020	07:14:01	17:43:41
11	6/4/2020	07:35:17	16:17:09
12	6/5/2020	07:30:43	16:31:50
13	6/6/2020	07:06:50	16:30:50
14	6/7/2020	08:14:18	16:49:11
15	6/8/2020	08:56:48	16:42:06
16	6/9/2020	07:17:16	17:01:16
17	6/10/2020	07:27:50	17:38:29
18	6/11/2020	07:52:03	16:51:59
19	6/12/2020	07:23:23	16:55:38
20	6/13/2020	07:19:34	17:46:51

Excel Date & Time Basics

EXCEL - KEY DATE & TIME CONCEPTS				
Formatted Date	**Format**	**Formula**	**Underlying value**	**Shortcut**
6/6/2022	Date	=TODAY()	44718.00	**CTRL + ; (semi-colon)**
6/6/2022 15:46	Date / Time	=NOW()	44718.66	**CTRL + ; (semi-colon), <u>then</u> SPACE & "CTRL + SHIFT + ;"**
3:17 PM	Time		0.64	**CTRL + SHIFT + ; (semi-colon)**
	Using formulas will cause results to be dynamic, otherwise they are static			
	Underlying value of just time is decimal value of PORTION of 24 hours			

Date / Time Timeclock Dataset - 2 (Intermediate +)

1. Employee time clock data for analysis
2. Dimension fields need to be added for flexibility!
3. What's the optimal way to approach this?

FieldName	Source?	Sample Value	Comments
Date	Provided	6/1/2020	
StartTime	Provided	07:37:25	
EndTime	Provided	16:48:57	
Total_Hours	Added	9.19	24 hours of Time = 1, thus to calc total hours we need to convert to hours of a day (multiply by 24)
Year	Added	2020	
Month	Added	6	
MonthEnd	Added	6/30/2020	
Quarter	Added	QTR 2	
MonthName	Added	Jun	
WeekNumber	Added	23	
Year-WeekNum	Added	2020-23	TEXT function used to "pad" week number as 2 characters (01, 02, etc)
DayOfWeek	Added	1	Day of Week starts on MON, thus the 2 in the WEEKDAY formula
WeekDayName	Added	Mon	
AM_Hours	Added	4.82	
PM_Hours	Added	4.38	
Overtime Hours	Added	1.19	OT defined as any hours incurred on a Sat or Sun, or any hours in excess of 8 hours on a weekday

Tables – My Fav Keyboard Shortcuts

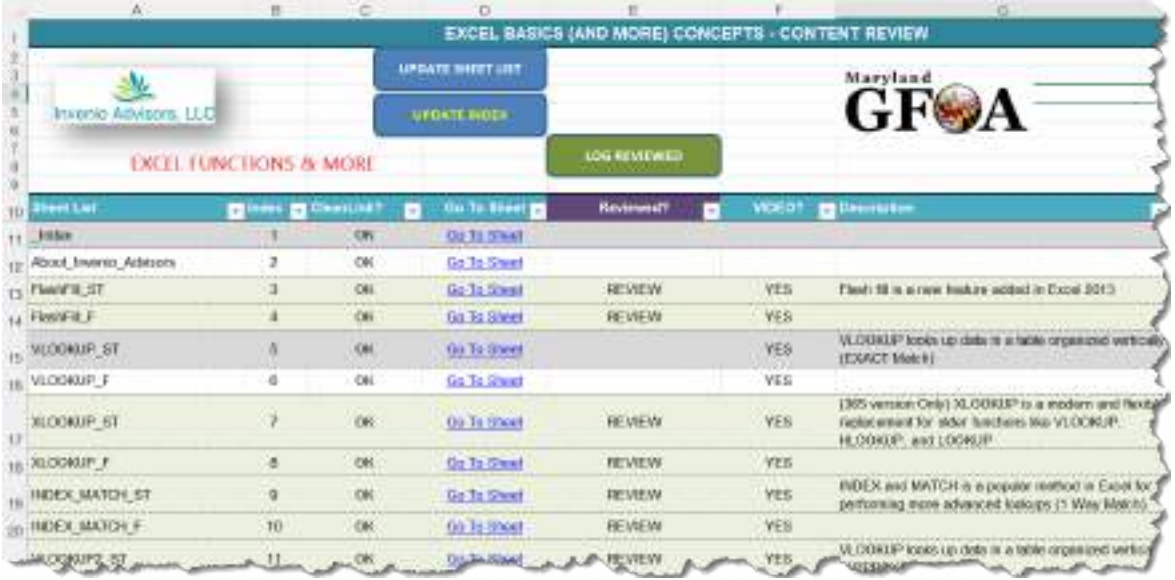
1. *Create Table* – CTRL + T (CTRL + L also works)
2. *Select Table Area* – CTRL + A (& “CTRL + A” twice!)
3. *Activate Filter Dropdown Menu* – ALT + ▼
4. *Insert / Delete Row or Column* – CTRL + “+” / CTRL + “-”
   - **ROW**? Select cell in Table (Insert Row above)
   - **COLUMN**? Select minimum two cells in Table (Insert COL to Left)

Key Excel Functions Review

Data Transformation – Shaping For Analysis

“How To” Review items – Workbook Link

- *This workbook covers various Excel functions and capabilities that are considered essential knowledge to understand related to working with data in Excel.*

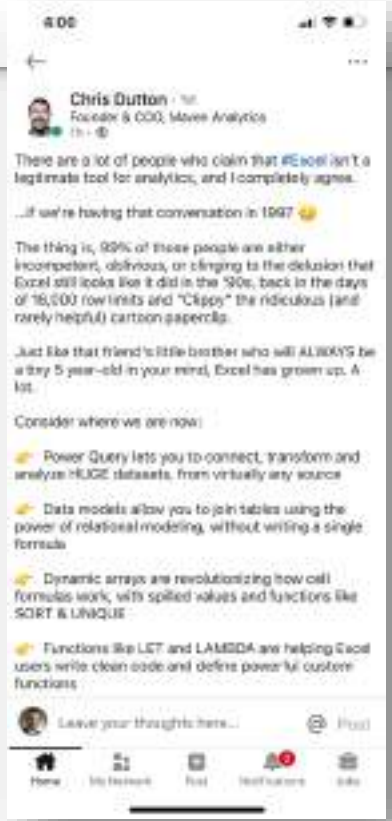


KEY TOPICS

1. FlashFill
2. VLOOKUP (Exact Match)
3. VLOOKUP (Approx Match)
4. **Tables**
5. **Table Slicers**
6. Transpose

SCAN ME

Excel 365? Does It Really Matter?



Chris Dutton · 1st
Founder & COO, Maven Analytics
1h ·

There are a lot of people who claim that #Excel isn't a legitimate tool for analytics, and I completely agree.

...if we're having that conversation in 1997 🤦

The thing is, 99% of those people are either incompetent, oblivious, or clinging to the delusion that Excel still looks like it did in the '90s, back in the days of 16,000 row limits and "Clippy" the ridiculous (and rarely helpful) cartoon paperclip.

Just like that friend's little brother who will ALWAYS be a tiny 5 year-old in your mind, Excel has grown up. A lot.

Consider where we are now:

👉 Power Query lets you to connect, transform and analyze HUGE datasets, from virtually any source

👉 Data models allow you to join tables using the power of relational modeling, without writing a single formula

👉 Dynamic arrays are revolutionizing how cell formulas work, with spilled values and functions like SORT & UNIQUE

👉 Functions like LET and LAMBDA are helping Excel users write clean code and define powerful custom functions

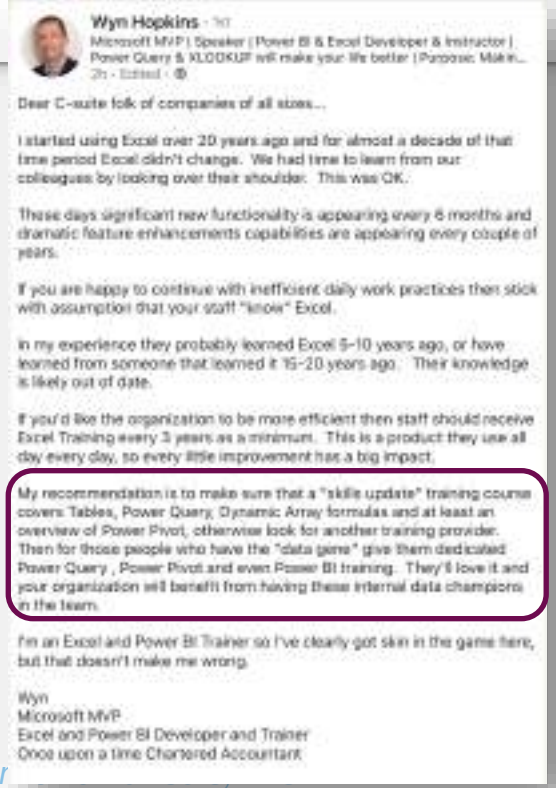
Leave your thoughts here...
Post

Home | My Network | Post | Notifications | Jobs

Link to open

- 👉 **Power Query** lets you to connect, transform and analyze HUGE datasets, from virtually any source
- 👉 **Data models *(Power Pivot)*** allow you to join tables using the power of relational modeling, without writing a single formula
- 👉 **Dynamic arrays** are revolutionizing how cell formulas work, with spilled values and functions like SORT, UNIQUE & FILTER
- 👉 **Functions** like LET and LAMBDA are helping Excel users write clean code and define powerful custom functions
- 👉 New **(*custom*) data types** add layers of rich, real-time info to spreadsheet values, from stocks and geography to chemistry and food

Excel – Open Letter to C-Suite…



Wyn Hopkins · 1st
Microsoft MVP | Speaker | Power BI & Excel Developer & Instructor | Power Query & XLOOKUP will make your life better | Purposic Makin...
2h · Edited · 🌐

Dear C-suite folk of companies of all sizes...

I started using Excel over 20 years ago and for almost a decade of that time period Excel didn't change. We had time to learn from our colleagues by looking over their shoulder. This was OK.

These days significant new functionality is appearing every 6 months and dramatic feature enhancements capabilities are appearing every couple of years.

If you are happy to continue with inefficient daily work practices then stick with assumption that your staff "know" Excel.

In my experience they probably learned Excel 5-10 years ago, or have learned from someone that learned it 15-20 years ago. Their knowledge is likely out of date.

If you'd like the organization to be more efficient then staff should receive Excel Training every 3 years as a minimum. This is a product they use all day every day, so every little improvement has a big impact.

My recommendation is to make sure that a "skills update" training course covers Tables, Power Query, Dynamic Array formulas and at least an overview of Power Pivot, otherwise look for another training provider. Then for those people who have the "data gene" give them dedicated Power Query , Power Pivot and even Power BI training. They'll love it and your organization will benefit from having these internal data champions in the team.

I'm an Excel and Power BI Trainer so I've clearly got skin in the game here, but that doesn't make me wrong.

Wyn
Microsoft MVP
Excel and Power BI Developer and Trainer
Once upon a time Chartered Accountant

Link to open

"My recommendation is to make sure that a "skills update" training course covers Tables, Power Query, Dynamic Array formulas and at least an overview of Power Pivot, otherwise look for another training provider. Then for those people who have the "data gene" give them dedicated Power Query, Power Pivot and even Power BI training. They'll love it and your organization will benefit from having these internal data champions in the team."

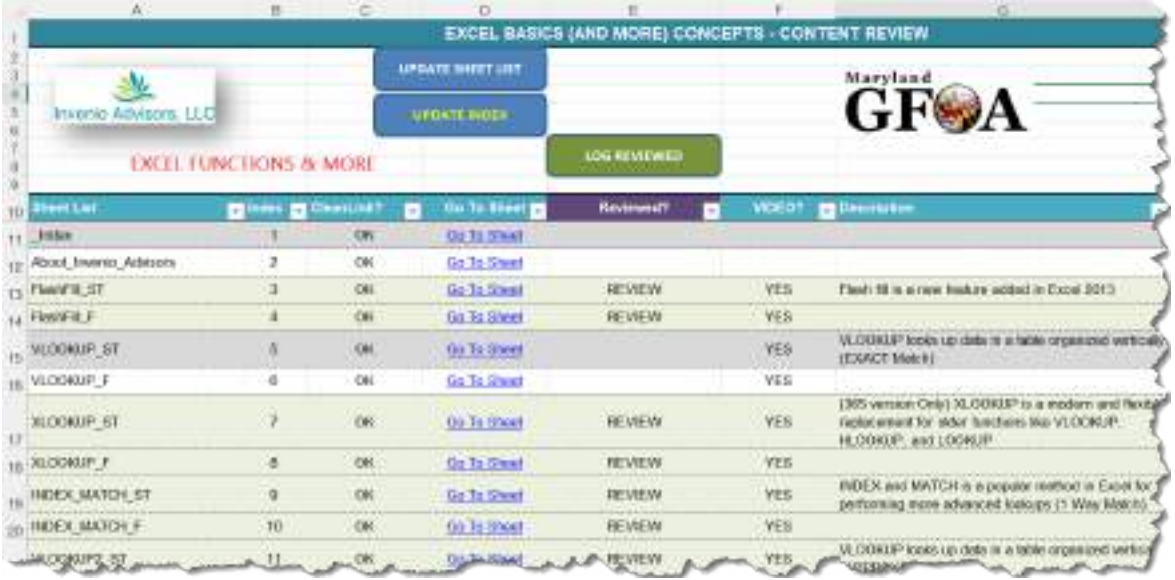
“Modern” Excel…

1. Power Tools (Power Query & Power Pivot)
2. Dynamic Array Formulas (Blog post here!)
   - UNIQUE, SORT, FILTER, *etc*
3. XLOOKUP replaces VLOOKUP
4. Artificial Intelligence (Recommended Pivot Tables, Recommended Charts, Analyze Data (Ideas)
5. New “Data Types” Ribbon & Custom Data Types
6. LAMBDA Functions (Blog post here) – in Beta currently, but this is game changing!
7. LET Function
8. PowerPivot Pivot Tables!

Data Transformation – Shaping For Analysis

“How To” Review items – *DEMO / Workbook Review*

- *This workbook covers various Excel functions and capabilities that are considered essential knowledge to understand related to working with data in Excel.*



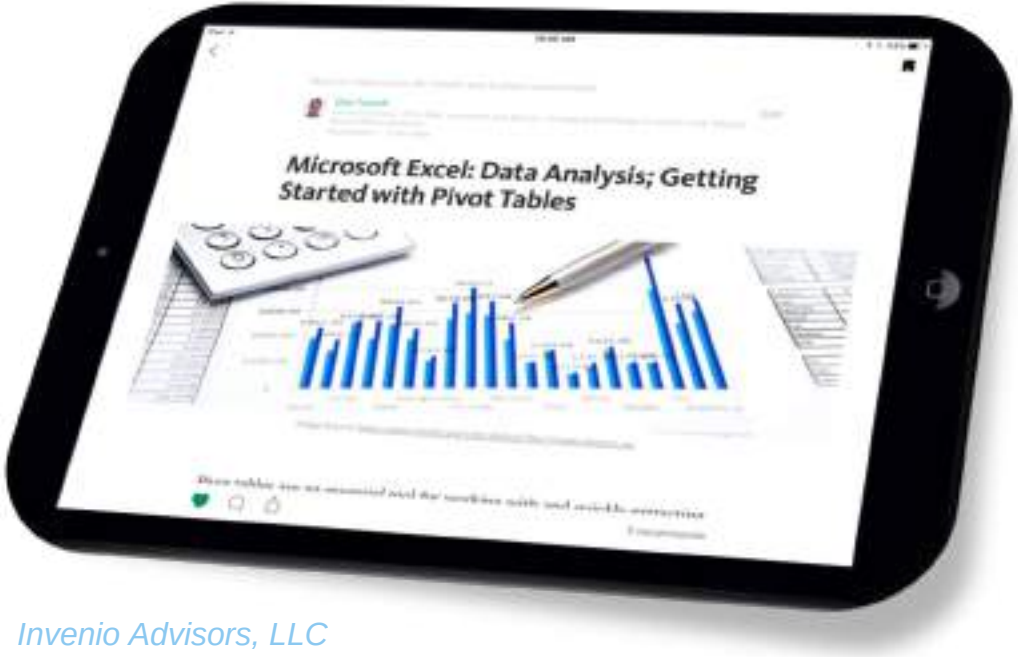
KEY TOPICS

1. FlashFill
2. VLOOKUP (Exact Match)
3. VLOOKUP (Approx Match)
4. **Tables**
5. **Table Slicers**
6. Transpose

SCAN ME

Pivot Tables / Pivot Charts

Pivot Tables Introduction



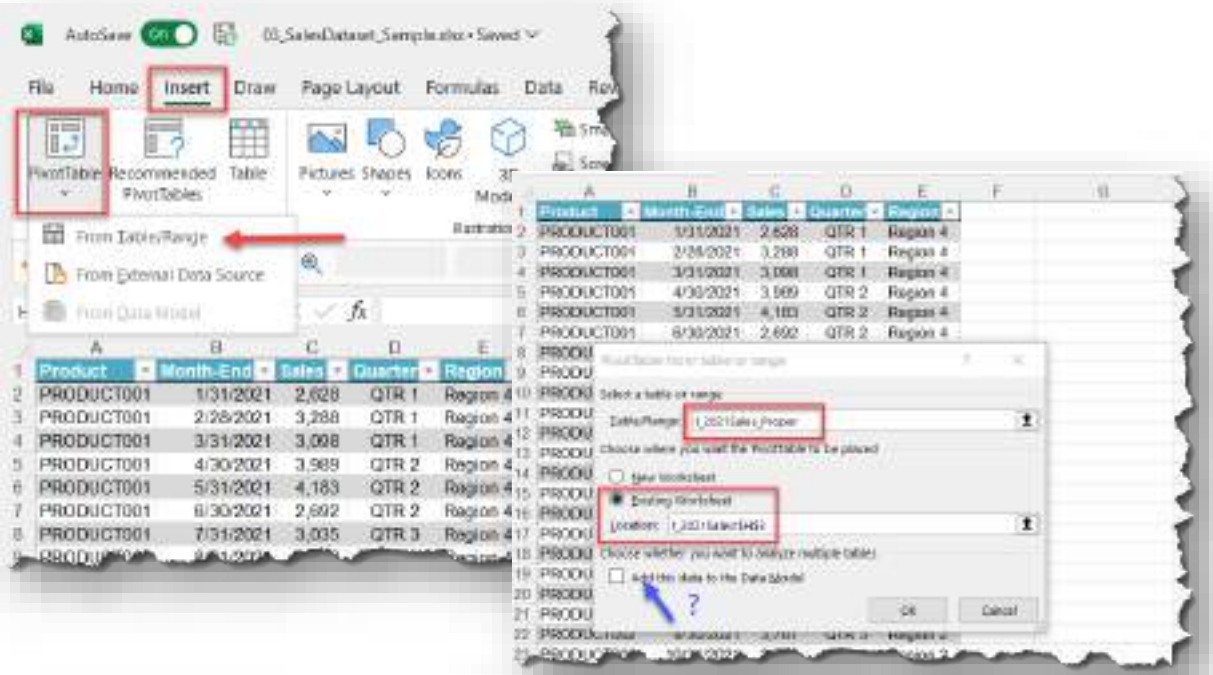
http://bit.ly/2cO7cy1

Pivot Tables Topics

1. Inserting a pivot table (and the “ALT, N, V shortcut)
2. Field list review and layout
3. Recommended PivotTable
4. Pivot Table context menus and options
5. “Right-click” menu options
   - Value Field Settings
   - Pivot Table Options
6. Change Default Layout Settings (365)
7. *Demo*

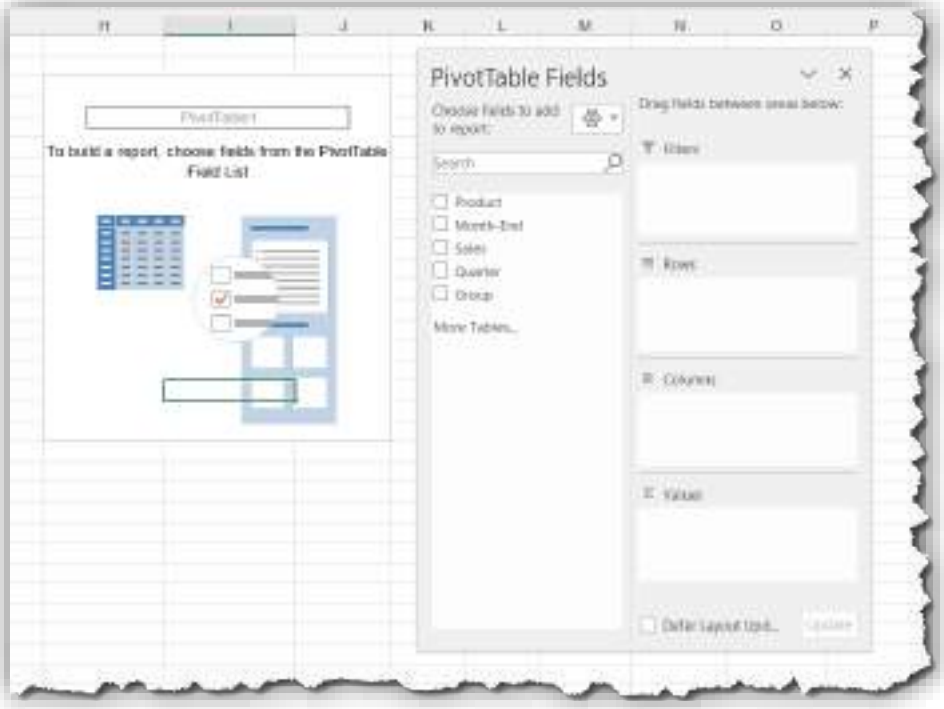
Inserting a Pivot Table - 1

1. Insert >> PivotTable >> From Table/Range
2. Identify where you want the PivotTable placed



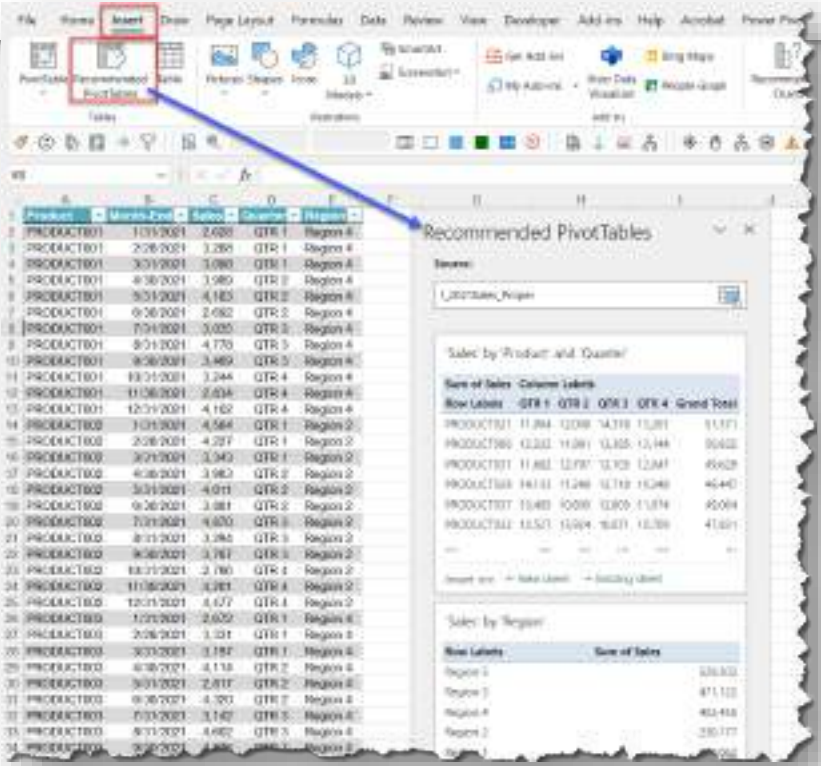
Inserting a Pivot Table - 2

3. Placeholder appears along with “Field List”
4. Fields
   - Filters
   - Rows
   - Columns
   - Values



Inserting a Pivot Table – 3 (*Recommended Pivot Table*)

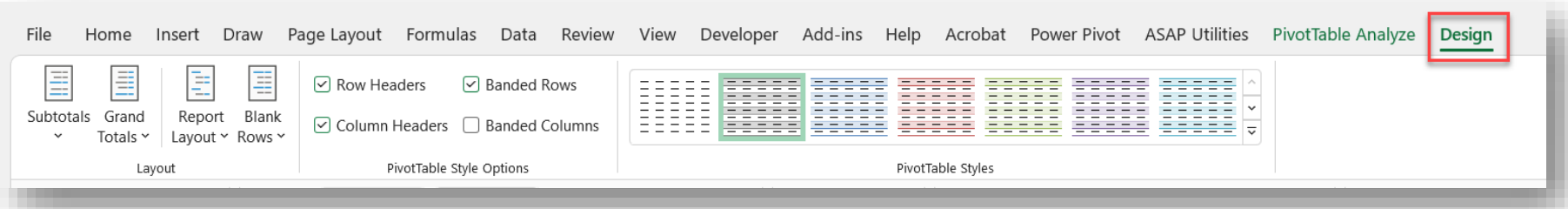
1. Insert >> Recommended PivotTable
2. Double click option to insert Pivot Table



Pivot Tables Context Menus (appear when PT selected)

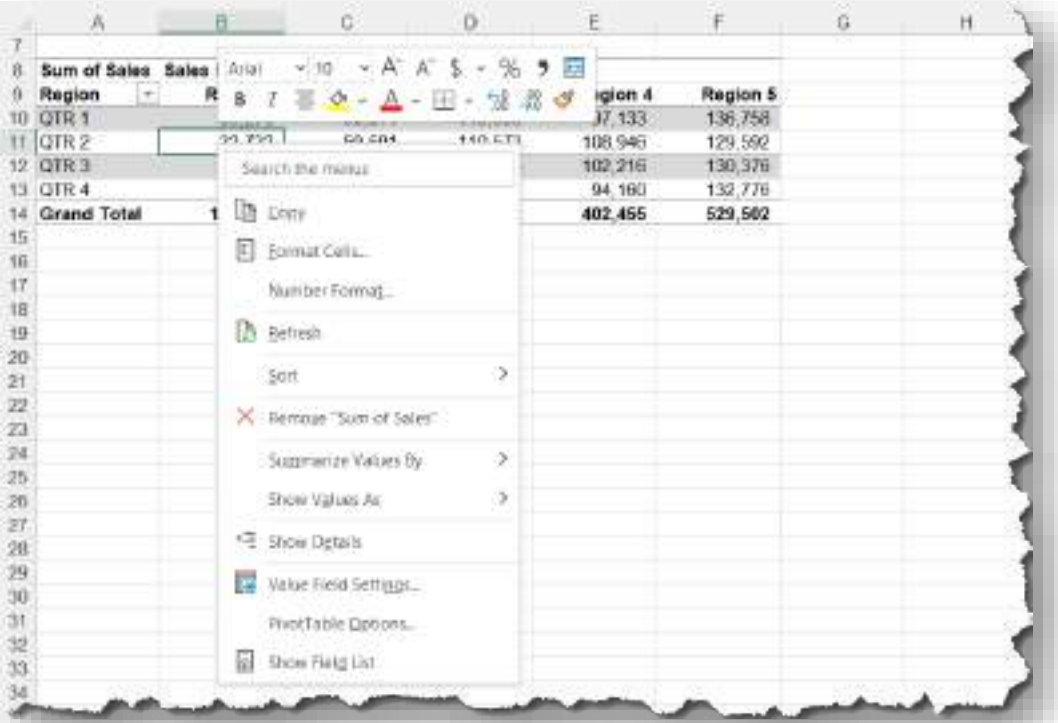
Pivot Table Analyze

Pivot Table Design



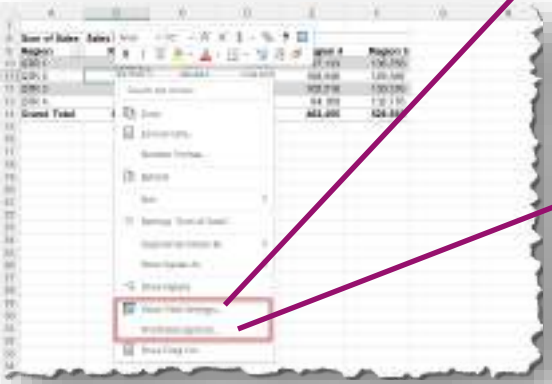
Right-click Menu Options - 1

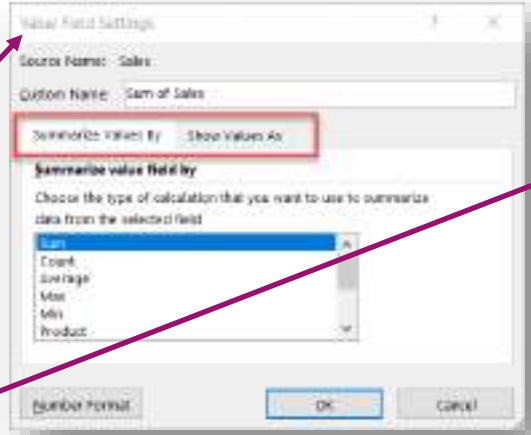
1. From within pivot table, Right-click mouse button opens shortcut menu options
2. <u>Learn</u> these options – you will spend a lot of time here!

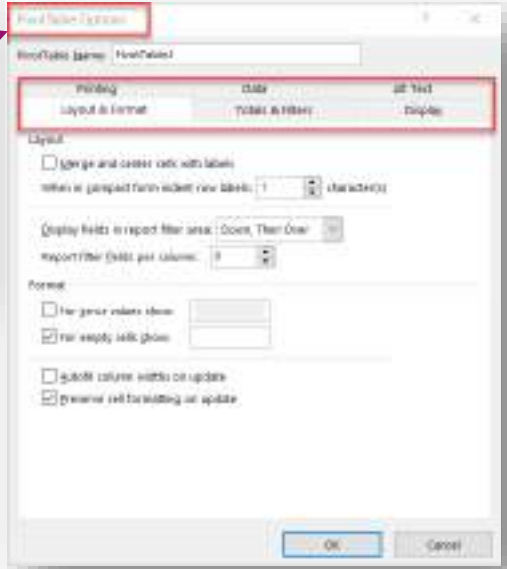


Right-click Menu Options - 2

1. Value Field Settings
2. Pivot Table Options

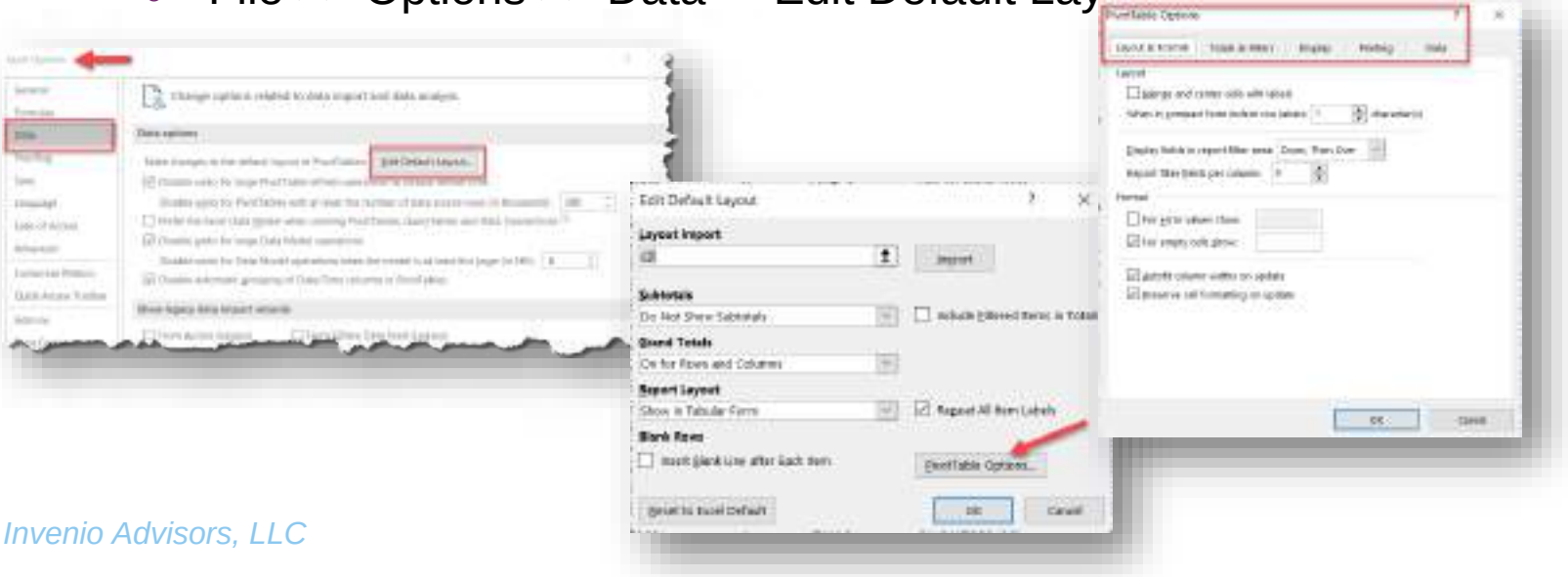




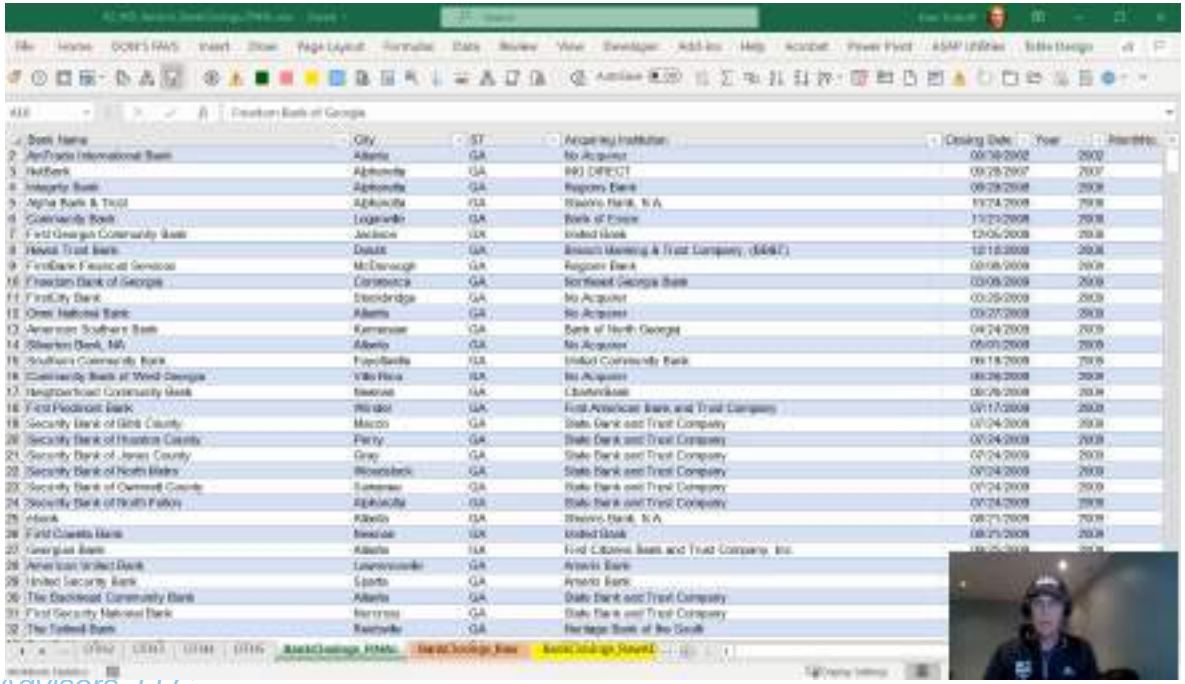


Pivot Table Default Settings (365 only) - 1

- Default settings options configuration
  - File >> Options >> Data – “Edit Default Layout”



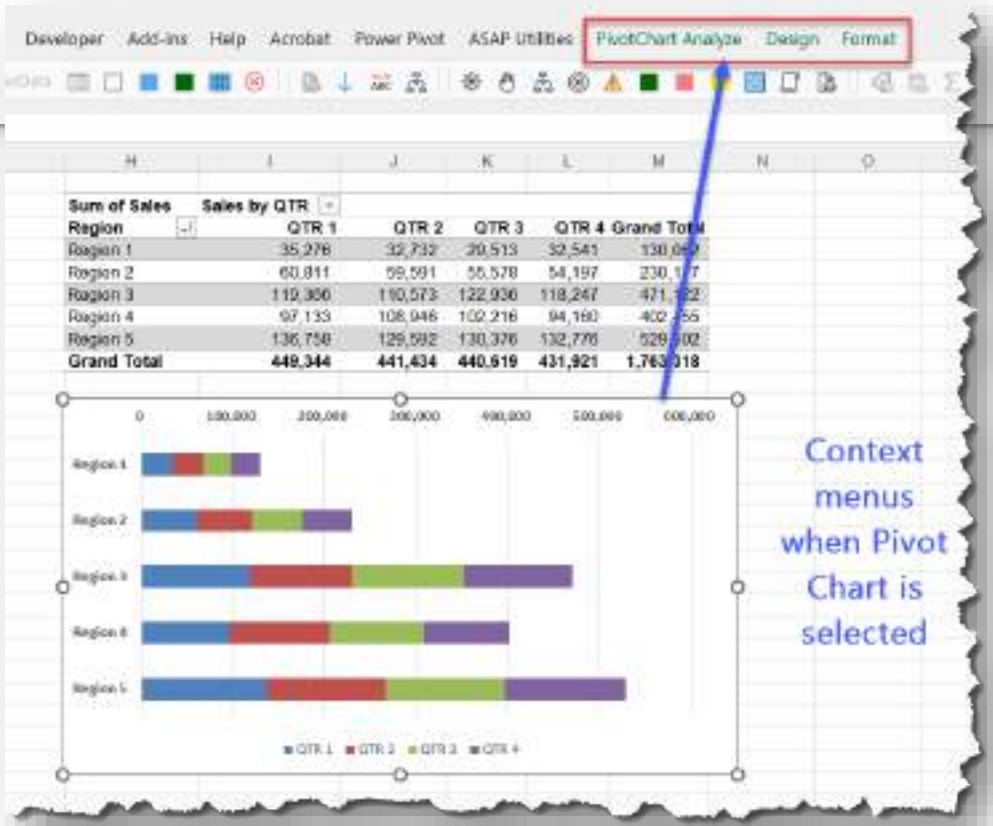
Default Settings – Here’s How 😀



[YouTube Video Link]

Pivot Charts

- Insert just like Pivot Tables (a pivot table will be created simultaneously with the Pivot Chart)



Data Case Studies

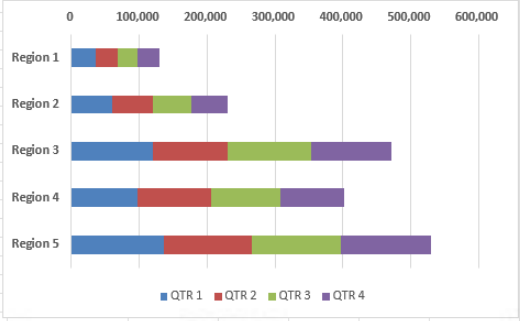
Sample Sales Dataset (Basic)

1. Structure issues?
2. What might I want to know?
   - This question drives transformation process
   - Create analysis flexibility by adding Fields to enable analysis

RAW SALES DATA RECEIVED

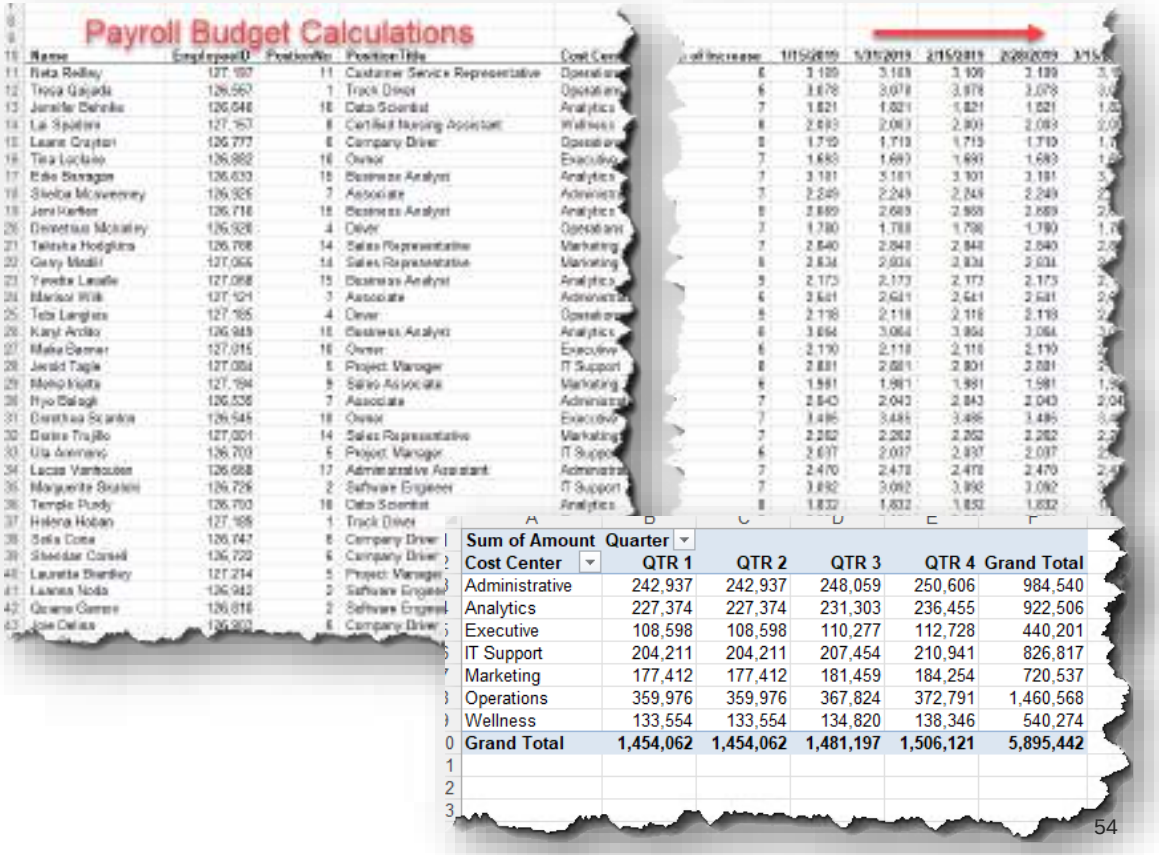
Product	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21
PRODUCT001	2,628	3,288	3,098	3,989	4,183	2,692	3,035	4,778
PRODUCT002	4,564	4,227	3,343	3,963	4,011	3,881	4,870	3,294
PRODUCT003	2,672	3,331	3,197	4,114	2,817	4,320	3,142	4,602
PRODUCT004	3,748	2,560	4,395	4,277	4,836	4,418	3,813	4,654
PRODUCT005	3,692	3,889	4,370	3,131	4,875	3,846	3,317	3,658
PRODUCT006	4,961	3,362	3,999	4,561	2,862	4,558	3,657	4,934
PRODUCT007	3,481	3,877	2,847	4,100	4,351	4,365	4,730	4,701
PRODUCT008	4,917	4,610	4,907	2,890	3,283	2,638	3,587	2,764
PRODUCT009	2,944	4,997	4,228	4,122	4,686	3,387	3,664	4,125
PRODUCT010	2,781	4,424	3,230	2,843	3,070	2,721	4,186	3,499
PRODUCT011	3,434	3,562	4,074	2,979	4,000	4,188	4,093	2,904
PRODUCT012	4,840	3,951	4,513	3,874	3,546	3,858	3,243	2,782
PRODUCT013	3,519	2,831	4,182	2,562	3,700	2,965	3,686	3,886
PRODUCT014	4,287	4,603	4,260	2,844	4,833	4,446	2,511	4,246
PRODUCT015	2,918	4,921	4,198	2,622	3,151	4,601	3,462	2,971
PRODUCT016	4,825	3,159	4,730	3,561	4,028	4,906	3,709	3,779
PRODUCT017	3,531	2,569	3,903	4,862	4,777	2,836	4,206	2,500
PRODUCT018	4,867	3,275	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT019	3,581	3,480	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT020	4,536	4,696	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT021	4,302	3,569	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT022	4,288	3,040	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT023	4,890	4,965	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT024	3,736	3,467	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT025	3,704	3,877	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PRODUCT026	4,490	4,853	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Sum of Sales	Sales by (				
Region	QTR 1	QTR 2	QTR 3	QTR 4	Grand Total
Region 1	35,276	32,732	29,513	32,541	130,062
Region 2	60,811	59,591	55,578	54,197	230,177
Region 3	119,366	110,573	122,936	118,247	471,122
Region 4	97,133	108,946	102,216	94,160	402,455
Region 5	136,758	129,592	130,376	132,776	529,502
Grand Total	**449,344**	**441,434**	**440,619**	**431,921**	**1,763,318**



Budget Payroll Dataset (Intermediate)

1. Budget calculations, but we need quick analysis!
2. What might we want to know?
   - Salary Totals by Dept?
   - Quarterly trend?



Sum of Amount	Quarter				
Cost Center	QTR 1	QTR 2	QTR 3	QTR 4	Grand Total
Administrative	242,937	242,937	248,059	250,606	984,540
Analytics	227,374	227,374	231,303	236,455	922,506
Executive	108,598	108,598	110,277	112,728	440,201
IT Support	204,211	204,211	207,454	210,941	826,817
Marketing	177,412	177,412	181,459	184,254	720,537
Operations	359,976	359,976	367,824	372,791	1,460,568
Wellness	133,554	133,554	134,820	138,346	540,274
Grand Total	**1,454,062**	**1,454,062**	**1,481,197**	**1,506,121**	**5,895,442**

Date / Time Timeclock Dataset (Intermediate +)

1. Employee time clock data for analysis
2. Dimension fields need to be added for flexibility!
3. What’s the optimal way to approach this?

START DATA - PROVIDED TO US

Date	StartTime	EndTime
6/1/2020	07:37:25	16:48:57
6/2/2020	08:20:05	16:48:45
6/3/2020	07:14:01	17:43:41
6/4/2020	07:35:17	16:17:09
6/5/2020	07:30:43	16:31:50
6/6/2020	07:06:50	16:30:50
6/7/2020	08:14:18	16:49:11
6/8/2020	08:56:48	16:42:06
6/9/2020	07:17:16	17:01:16
6/10/2020	07:27:50	17:38:29
6/11/2020	07:52:03	16:51:59
6/12/2020	07:23:23	16:55:38
6/13/2020	07:19:34	17:46:51

Date / Time Timeclock Dataset - 2 (Intermediate +)

1. Employee time clock data for analysis
2. Dimension fields need to be added for flexibility!
3. What's the optimal way to approach this?

FieldName	Source?	Sample Value	Comments
Date	Provided	6/1/2020	
StartTime	Provided	07:37:25	
EndTime	Provided	16:48:57	
Total_Hours	Added	9.19	24 hours of Time = 1, thus to calc total hours we need to convert to hours of a day (multiply by 24)
Year	Added	2020	
Month	Added	6	
MonthEnd	Added	6/30/2020	
Quarter	Added	QTR 2	
MonthName	Added	Jun	
WeekNumber	Added	23	
Year-WeekNum	Added	2020-23	TEXT function used to "pad" week number as 2 characters (01, 02, etc)
DayOfWeek	Added	1	Day of Week starts on MON, thus the 2 in the WEEKDAY formula
WeekDayName	Added	Mon	
AM_Hours	Added	4.82	
PM_Hours	Added	4.38	
Overtime Hours	Added	1.19	OT defined as any hours incurred on a Sat or Sun, or any hours in excess of 8 hours on a weekday

Date / Time Timeclock Dataset - 3 (Intermediate +)

FieldName	Source?	Sample Value	Transformation Process	Formula Reference	Comments
Date	Provided	6/1/2020			
StartTime	Provided	07:37:25			
EndTime	Provided	16:48:57			
Total_Hours	Added	9.19	Formula	=([@EndTime]-[@StartTime])*24	24 hours of Time = 1, thus to calc total hours we need to convert to hours of a day (multiply by 24)
Year	Added	2020	Formula	=YEAR([@Date])	
Month	Added	6	Formula	=MONTH([@Date])	
MonthEnd	Added	6/30/2020	Formula	=EOMONTH([@Date],0)	
Quarter	Added	QTR 2	Formula	=IFS([@Month]<4,"QTR 1",[@Month]<7,"QTR 2",[@Month]<10,"QTR 3",[@Month]>9,"QTR 4")	
MonthName	Added	Jun	Formula	=TEXT([@Date],"mmm")	
WeekNumber	Added	23	Formula	=WEEKNUM([@Date])	
Year-WeekNum	Added	2020-23	Formula	=[@Year]&"-"&TEXT([@WeekNumber],"00")	TEXT function used to "pad" week number as 2 characters (01, 02, etc)
DayOfWeek	Added	1	Formula	=WEEKDAY([@Date],2)	Day of Week starts on MON, thus the 2 in the WEEKDAY formula
WeekDayName	Added	Mon	Formula	=TEXT([@Date],"ddd")	
AM_Hours	Added	4.62	Formula	=(12-([@StartTime]*24))	
PM_Hours	Added	4.38	Formula	=(([@EndTime]*24)-12)	
Overtime Hours	Added	1.19	Formula	=IFERROR(IFS([@WeekDayName]="Sat",[@[Total_Hours]],[@WeekDayName]="Sun",[@[Total_Hours]],[@[Total_Hours]]>8,[@[Total_Hours]]-8),0)	OT defined as any hours incurred on a Sat or Sun, or any hours in excess of 8 hours on a weekday

Handouts

Presentation PDF

Click Here to Access (or Scan Code) >>

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Before We Dive In…Recommended Excel Skills?

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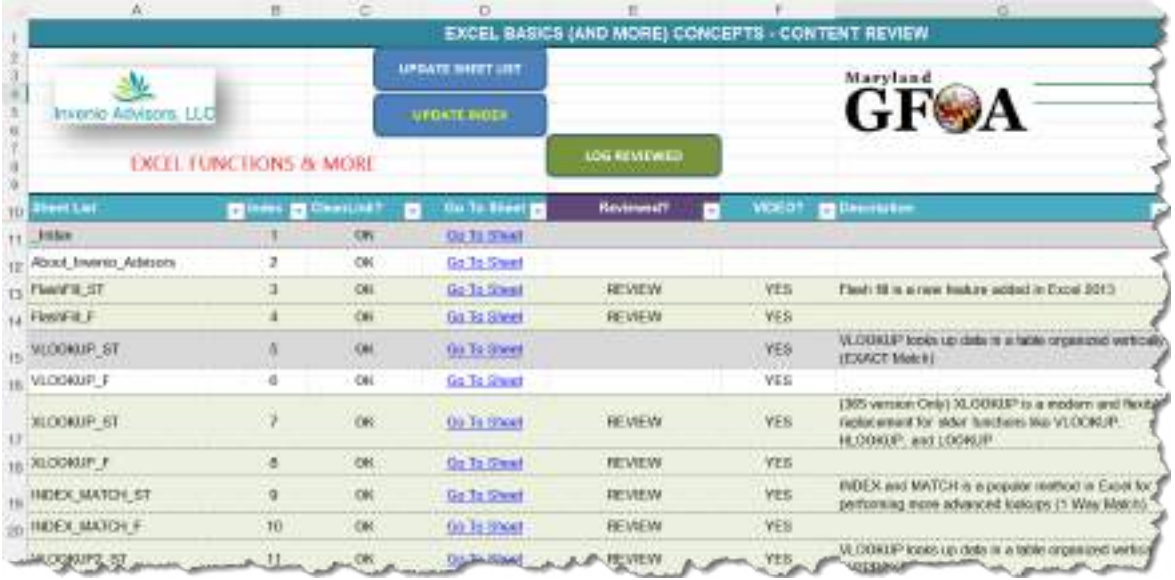
1. PowerQuery
2. PowerPivot (includes Pivot Tables)
3. Dynamic Arrays (365)
4. Data Visualization
5. Formatted Tables
6. Functions (20 key items)
7. Data Validation
8. PowerBI (separate tool)

Data Transformation – Shaping For Analysis

“How To” Review items – Workbook Link

- *This workbook covers various Excel functions and capabilities that are considered essential knowledge to understand related to working with data in Excel.*



KEY TOPICS

1. FlashFill
2. VLOOKUP (Exact Match)
3. VLOOKUP (Approx Match)
4. **Tables**
5. **Table Slicers**
6. Transpose

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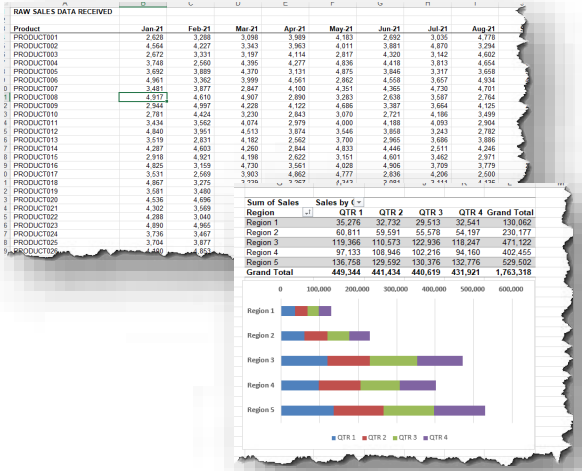
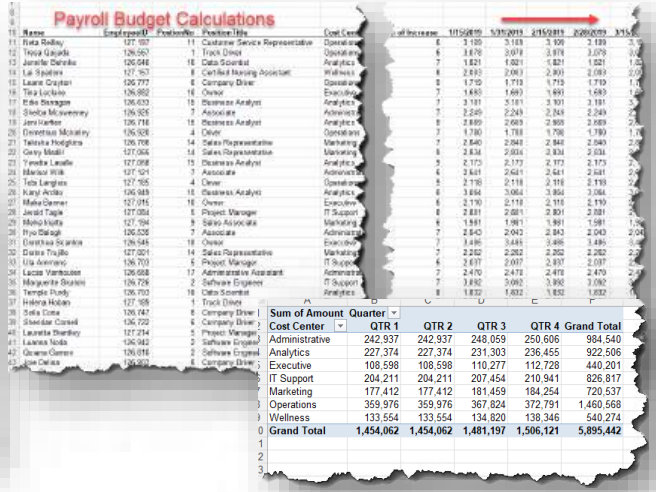
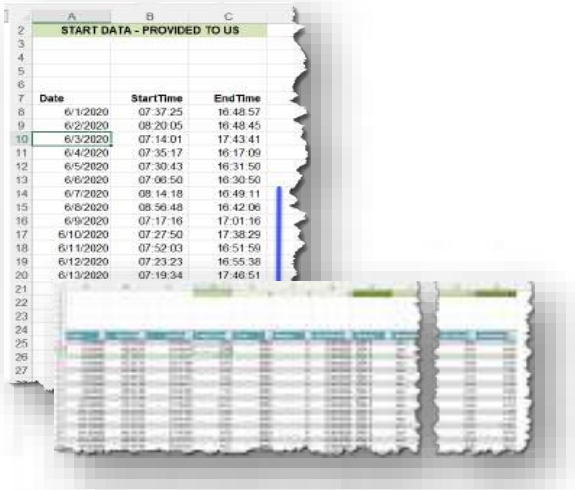
Datasets Used



Sales Analysis



Budget Payroll Analysis



Date / Timeclock Analysis

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Pivot Tables – Tips, Tricks & Techniques

SCAN ME

PDF

eBook (ePub Format)

Invenio Advisors, LLC

Learning Objectives

Upon completion this session, participants will be able to:

1. Develop and utilize Excel data Tables for your data and recall why they are necessary, ✓
2. Identify proper structuring of data for pivot table analysis, ✓
3. Recognize how pivot tables and pivot charts can make analysis faster, easier, and more flexible, and ✓
4. Understand modifying data fields / dimensions to simplify and prepare for data analysis. Awareness of key functions and formulas! ✓

Questions?