

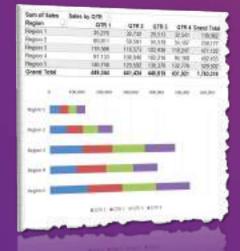


Basics of Exploring Data in Excel

Data, Tables, Functions, Pivot Tables

Presentation MDGFOA 2022 Annual Summer Conference Don Tomoff, CPA, MBA June 15, 2022





About Don



Don Tomoff

LinkedIn Profile

- <u>#twinztalk</u>
- <u>#twinztechtip</u>

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
- i → 3 Data Structure & Excel Tables
- 4 Key Excel Functions Review
- ♀ 5 Pivot Tables / Pivot Charts
- 6 Data Case Studies / Tips

7 – Handouts

Invenio Advisors, LLC

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



About This Presentation

Download Presentation PDF

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

<u>Click Here to Access</u> (or Scan Code) >>



Sustained Learning

DOI TODOT CPA 1814

Excel

Basics of Exploring Data in

Data, Tables, Functions, Pivot Tables

MDGPOA 2022 Annual Burness Conferences

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. <u>Content hyperlinks are live</u>.

Learning Objectives

8

Upon completion this session, participants will be able to:

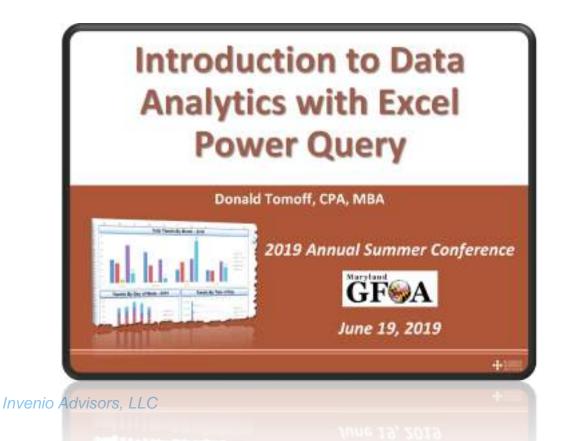
- 1. Develop and utilize Excel data Tables for your data and recall why they are necessary,
- 2. Identify proper structuring of data for pivot table analysis,
- 3. Recognize how pivot tables and pivot charts can make analysis faster, easier, and more flexible, and
- 4. Understand modifying data fields / 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?



- 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 not to</u> mention Power Query. **Why?**"





Oz du Soleil + 1st

Microsoft Excel MVP | Excel Instructor on LinkedIn | YouTube: Excel on F...

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 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."

23h ***



The Language of Data

Why Analytics? Why Now?

6

Tom Hood, CPA,CITP,COMA 2 - 14 EVP Business Engagement & Growth at Association of Internat Centred Professional Accountants 106 - 40

Top Technologies Impacting Finance & Accounting Pres at #aicpaCF with 200 plus finance pres.

years/ (Fick Top 5)	1.0	_	_	
				-
	- 1	-	100	4
	-			
	-			
	-			
	1.00	100		
	-			
			i.	•
		1111		E

495
114
425
424
175 1
146
113.
195

2021 Top Technologies with the Greatest Impact in next 2-3 vears? (Pick Top 5)

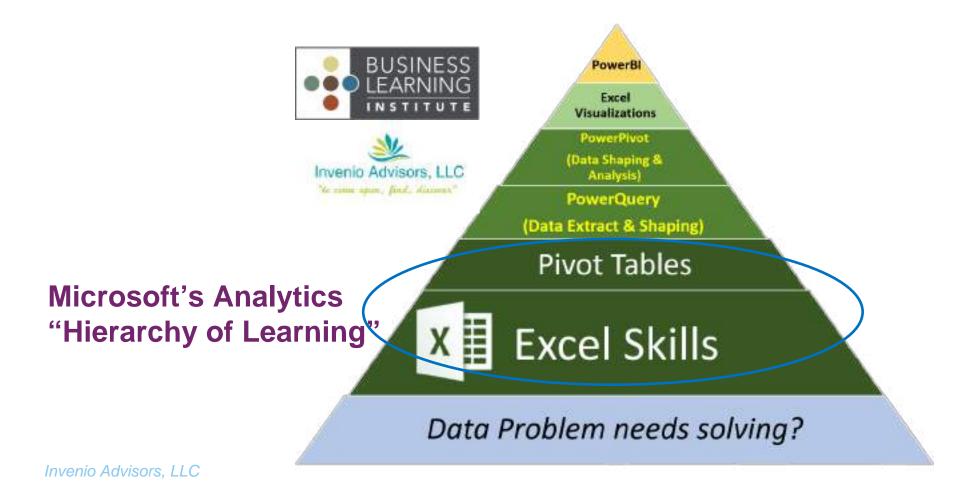
DA is the #1 technology expected to impact finance & accounting professionals in the next 2-3 years!

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

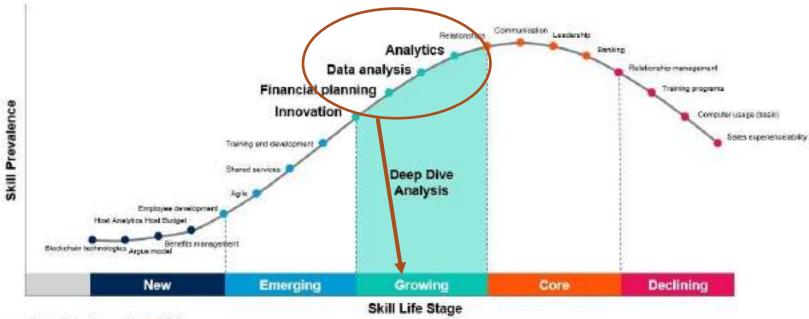


Gartner Skills Life Cycle Analysis (2021)

Financial Managers

Skills Life Cycle - S&P 100 Employers

Click Here for related LinkedIn Post



Source: Gartner TalentNeuren (March, 2021)

- 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)

21

Store Sales Data – Structure Example

Store Location	1/31(2020	2/29/2020	2/21/2050 1	1.4	N/20/5050	53/31(2020	41/2015050	12/31/2020			B	0	0	-	-
PDeadS	8.207	6,657	6.047	10.03	6.668		7.812	5.417		A	and the second division of the second divisio	C	D	E	PPOPOS'
Store32	7,126	2.347	8.601		6.439	8.476		9.313		Store Location	MonthEnd	Salat 💌	and a second sec		OTR
Store03 Store04	7,440 8,617	C STO	6,409			9,384 6,845	7,283 8,894	7,875	2	Store01	1/31/2020	9,207	2020 Jan		QTR 1
Stora06	R 117	7,109	5,483	15		6.717	6,191	9,868	3	Store01	2/29/2020	5,663	2020 Feb		QTR 1
Storg06	6.4	8.294	7,821		8.482	6.455	9,639	7,290		Class 01	3/31/2020	6.047	2020 Mar		QTR 1
Stora07	443	5,143	12	1.00	6.651	7,279	9,543	9,380	1 34	Store01	4/30/2020	6.857	2020 Apr		QTR 2
Store08	541	5,859	6.3		7.837	8.692	5.855	7.943	1	Store01	5/31/2020	5.807	2020 May		QTR 2
Stow09	5.2	7.875	9,439	1	0.662	7,296	7.515	5,824							
Blane 10	7,611	7,343	9,094	1	6 17	7.979	9,776	8.413	1	Store01	6/30/2020	8.527	2020 Jun		QTR 2
Elcou 11	7,902	7,241	5,307		1.455	6,225	5.647	3 105	8	Store01	7/31/2020	7,091	2020 Jul		QTR 3
Stora 12	7,205	8,638	8,626		7,453	6,628	8,291	9,738	9	Store01	8/31/2020	7.053	2020 Aug		QTR 3
Sizes 10	6,703	6 T	6,462		9,834	6,102	7.324	6.452	10	Store01	9/30/2020	5.659	2020 Sep		QTR 3
Sizes 14	7,825	312	5,737	10	6.328	8.433	8,725	9,562	1	Store01	10/31/2020	6.484	2020 Oct		QTR-4
Sices 16 Sices 16	5,785	6,656	8,7%	2	9.868	5,445 7,833	8,675 T 557	7.626		Store01	11/30/2020	7.812	2020 Nov		QTR 4
Store 17	6.792	0.209	7,453		61.	7.252	0.949	6273	12		The second contract of the second sec				
Store 10	1 45	8.420	B.207	1.00	5.250	T 999	9 683	0,100	1		12/31/2020	5,413	2020 Dec		QIR 4
Skore 15	1 597	6.257	7.0		7.548	9.321	7.283	5.877	14		1/31/2020	7,926	2020 Jan		QTR 1
Store 20	5 47	9.313	A ST		6.815	6,787	6,121	8 197	16	Store02	2/29/2020	9,317	2020 Feb.		QTR 1
Shore21	6.69	5.396	7,100	X-	6 41	6.413	6.876	6,597	36	Store02	3/31/2020	8.501	2020 Mm		QTR 1
Shore22	5.630	9.963	6.050		9,75	7,299	6,688	8.739	3 /17	Store02	4/30/2020	6.972	2020 Apr		QTR 2
Stora23	7,958	9.9	5,650		6.327	6,637	8,693	6,779	18		5/31/2020	5.055	2020 May		QTH 2
Stora24	8,545	6,900	.7,168		8,831	6.238	9,377	8.212	19	Carl Color Color Color	6/30/2020	7.227	2020 Jun		
Stora26	8,499	6,761	8,340		T.854	7,352	7,684	7,689	1000						QTR 2
Store26	5,896	9.576	6,143	1	8,768	T, 183	T.144	6.995	20	Carl Control C	7/31/2020	8,681	2020 Jul		OTR 3
Bitova27	8,951	6,291	7,433	1	9.389	\$114	9,420 8,273	6,580	21	1 Store02	8/31/2020	7,885	2020 Aug		QTR 3
Blone28 Blone29	5,177	9,946 8,190	5,540	1	7.256	7,558	8.273 9.565	7.178	2	Store02	9/30/2020	5,633	2020 Sep		QTR 3
CITERICS	3,313	9.477	7.836		0.304	0.424	5,285	1.170	23	Stope02	10/31/2020.	8 475	2020 Oct		QTR 4

Invenio Advisors, LLC

Proper Data Structure

Tables – *Demo* (see Handouts)

AL.	10 C		SHOWIE SHEEP COM				
Interno Advient, Li	d.	- 0	internet				
TARE	S DEMO			COR NEVERADO	1		
Breef Lat.	0	Instant .	TO GO TO BARE	internet - 1	VCC	Dt. 1	Description
Engloped-othershine		DR.	fall.iter		964	0.	Retar Excel From the (President action tool
148.51.51		OK.	Balls Barr	RVEW	VER		Tables have a centre
THREE.F		CK.	Do To Mart	RVEW	y 10		
708.65.69	- 30	-04	On To Read		YO	1	
VAR.S., SUCCERE, F	121	08	So is men	SEVERAL SECTION	10	2	
TABLE DEMONIA	24	08.	in lutter	NOVEW .	-	4	Name (Last, First
						5	Norling, Jeremy
Disponsibility F	- 11	1.06	In Dullment	HENROW.	10	6	Milici, Tuan
180.18						7	Brawner, Jeanna
PERS Column	21	-08	Ditt. Best	mumw.	100	8	Chaparro, Latarsh Danziger, Patrina
			105			10	
MUEX_HWIOHE_EF	18	0K	GLTL Dept	REVEW	.40	11	Meng, Sarai
NOTH WATCHE F	21	OK .	Ge Te Sheet		Ver	12	

A	В	С	D	E	F	1
	#9 CREATING	TABLES (DATA TABL	ES STRUCTUR	E IN EXCEL) - ST		
2						1
3						
4 Name (Last, First)	DeptNumber	Department	Annual Salary	SalaryGroup	Count	
5 Norling, Jeremy	2	Marketing	43,374	> \$30.0K <= \$60.0K		
6 Milici, Tuan	4	Information Technology	68,209	> \$60.0K <= \$100.0K		1
7 Brawner, Jeanna	2	Marketing	46,837	> \$30.0K <= \$60.0K		1
8 Chaparro, Latarsha	4	Information Technology	67,424	> \$60.0K <= \$100.0K		
9 Danziger, Patrina	4	Information Technology	87,841	> \$60.0K <= \$100.0K		
10 Guntrum, Mandi	1	Merchandising	31,712	> \$30.0K <= \$60.0K		
11 Meng, Sarai	1	Merchandising	77,852	> \$60.0K <= \$100.0K		1
12 Kostka, Nestor	4	Information Technology	69,857	> \$60.0K <= \$100.0K		
13 Sanluis, Francesca	5	Operations	64,174	> \$60.0K <= \$100.0K		
14 Reising, Dorcas	1	Merchandising	100,984	> \$100.0K		
15 Mchone, Dora	5	Operations	95,765	> \$60.0K <= \$100.0K		
6 Suess, Shanel	2	Marketing	91,693	> \$60.0K <= \$100.0K		
17 Bonds, Sonya	1	Merchandising	109,560	> \$100.0K		1
18 Pledger, Anastasia	5	Operations	70,594	> \$60.0K <= \$100.0K		
19 Prioleau, Marquetta	5	Operations	65,183	> \$60.0K <= \$100.0K		
20 Mollett, Barbera	5	Operations	66,520	> \$60.0K <= \$100.0K		
Pearsall, Kati	man and	Merchandising	0,493	> \$60 0K	A	17

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:
 - <u>"Excel Tables: Overlooked, Yet Awesome"</u>
 - <u>"Want to become a Data God? Learn Excel Data Tables"</u>

25

Data Structure Discussion - Examples

- 1. <u>Sales dataset</u>
- 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

A	B	U	U	E	F	G	н	1	-
RAW SALES DATA RECEIVED									-
Product	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-2	4 8
PRODUCT001	2,628	3,288	3,098	3,989	4,183	2,692	3,035		
PRODUCT002	4,564	4,227	3,343	3,963	4,011	3,881	4,870		
PRODUCT003	2,672	3,331	3,197	4,114	2,817	4,320	3,142		
PRODUCT004	3,748	2,560	4,395	4,114	4,836	4,320	3,142	4,60	
PRODUCT005	3,692	3,889	4,355	3,131	4,875	3,846	3,317	3,65	
PRODUCT006	4,961	3,362	3,999	4,561	2,862	4,558	3,657	4,93	
PRODUCT007	3,481	3,302	2,847	4,501	4,351	4,365	4,730	4,5	
	4,917		4,907	2,890					
PRODUCT008	2,944	4,610 4,997	4,907	4,122	3,283	2,638 3,387	3,587	2,76	
PRODUCT009					4,686				
PRODUCT010	2,781	4,424	3,230	2,843	3,070	2,721	4,186		
PRODUCT011	3,434	3,562	4,074	2,979	4,000	4,188	4,093	2,90	
PRODUCT012	4,840	3,951	4,513	3,874	3,546	3,858	3,243		
PRODUCT013	3,519	2,831	4,182	2,562	3,700	2,965	3,686		
PRODUCT014	4,287	4,603	4,260	2,844	4,833	4,446	2,511	4,24	
PRODUCT015	2,918	4,921	4,198	2,622	3,151	4,601	3,462		
PRODUCT016	4,825	3,159	4,730	3,561	4,028	4,906	3,709	3,71	
PRODUCT017	3,531	2,569	3,903	4,862	4,777	2,836	4,206	2,50	
PRODUCT018	4,867	3,275	\$ 350	U 2 267	4'343	2 081	J 3 111	IN 11	u:
PRODUCT019	3,581	3,480							
PRODUCT020	4,536	4,696	Sum	of Sales	Sales by (-				
PRODUCT021	4,302	3,569	Regio		QTR 1	QTR 2	QTR 3	OTR 4 (Grand Total
PRODUCT022	4,288	3,040			35,276	32,732	29,513	32,541	130,062
PRODUCT023	4,890	4,965							
PRODUCT024	3,736	3,467	Regio		60,811	59,591	55,578	54,197	230,177
PRODUCT025	3,704	3,877	Regio	n 3	119,366	110,573	122,936	118,247	471,122
PRODUCT026	4.100	4.853	Regio	n 4	97,133	108,946	102,216	94,160	402,455
			Regio	n 5	136,758	129,592	130,376	132,776	529,502
				d Total	449,344	441,434	440,619	431,921	1,763,318
			Regior Regior	11	0,000 200,00	0 300,000	400,000	500,000	600,000
			Region						
			Region	15		QTR 2 QT			

Budget Payroll Dataset (Intermediate)

Latera

Testa

Saty) Saty

Marine

Tetri La Karyt A Maha B

Jersid 1 Mono h Hyo Ba Darith Darith Ub Av

Lacia Morgan Temple

Helera
 Sela D
 Sheeds
 Laurett
 Laurett
 Course

Joie De

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

	Employee10	PentionNet	Posterity		Cost Cer	- P	of increase	1/15/2019	5/35/2019	2/16/2019	6105/8525	1454
Bay .	127, 197	H	and the second	Representative	Dipertal at		8	3,129	3,103	1,109	2,109	2,6
ijada	128,567	1	Track Devel		Operative 0			11/8	3,071	3,478	\$1078	- 34
Sehenke	126,648	18	Data Scientist		Analytics		7	1.821	1,021	1,421	1,521	1,82
99	127, 557		Catility Nursing A	0040308	Walnuss		- U	2,449	2.00		2.083	2,0
alian.	126,777	6	Company Driver		Openid a			17:2	1,711		1,710	1.7
laio.	126,982	10	Owner		ENROLINY		7	1.683	1,693	1,693	1.689	1.5
agos	126,632	18	Business Analysi		Analytics		7	1.10	5.91	3,101	2,191	- 37
Covercey	136,925		Associate		Administ		-3	2,249	2.249		2.249	4
ler	126,718	18	Opphysics Analysi		Analytics			2.849	2,615		2.889	2,6
a Mohalley	126,920	4	Dever		Operation		1	1,780	1,711	1,790	1.790	1.0
Hodgkins	126,768	- 14	Sainto (Segrecenturi		Marbuter		1	2.640	2.841		2.840	- 28
Adii	127,066	- 14	Sales Representat	A.A.	Mariotin			2.834	2,934		2,011	
	127.068	15	Deatres as An elyst		Analytics		2	2,175	2,173		2.173	7.
NIB.	107 121		Autopate		Administ			2.621	2,611		2.68	- 24
glecs	127,185	4	Onver		Opstal o			2,118	2,118		2.118	- 24
dillor convert	126,945	10	Castress Analyst		Analytics			3 864	3,064		3.064	- 24
			Owner.		Executiv		- 2		2,118		2,110	- 3
gik :	127,054		Project Varoger		IT Suppo			2.831	2,611		1.981	- 12
ate al	126,536		Salao Associata Associata		Marlotin Administ			151	1.981		1.98	1,99
Scanton	126,545	18	Ownor		Exected			146	3,485	1.4%	3.485	- 3.4
ujilo	127,001	14	Seles Representati	-	Variatio			2.262	2.202	2.252	2.202	2.3
neno .	126,703		Project Vanopor	nw.	IT Suppo		1	2.007	2.037	2,437	2.087	- 24
anhouten	126,688	17	Administrative Acu	alant.	Administ		7	2.470	2,471		2,470	2.4
te Skalele	126.728	3	Saftware Engineer		(T 3,000			1.092	3,042	3,892	3.092	- 22
hady.	126.700	10			Analytics		1	1837	1.832	1.652	1.832	- 8
ioban	127,168	4	Track Driver	А	reaps	D	6	U	1,000	E	E.	
	126,747		Cempery Driver	Sum of Ar	nount (Juarter v						1
Contell	106,722		Campany Briver				OTD		TD 2		I T - 4	
Diardwy	121,214	5	Project: Varueper	Cost Cente		QTR 1			TR 3		Grand Tota	
abda	126,942	- 5	Saftuary England	Administra	tive	242,937	242,93	7 248	,059	250,606	984,54	0
Samme	126,818	2	Seltware Engree	Analytics		227,374	227,374	4 231	.303	236,455	922,50	6 🔞
A	125,902	10	Company Briver;	Executive		108,598				112,728	440.20	
-		and the sea	and the second second						*			
)	IT Support		204,211				210,941	826,81	
			1	Marketing		177,412	177,41	2 181	,459	184,254	720,53	37 1
			3	Operations		359,976	359,97	5 367	.824	372,791	1,460,56	68
			3	Wellness		133,554				138,346	540,27	
			,		-							
			0	Grand Tot	ai	1,454,062	1,454,06	2 1,481	,19 <i>1</i> 1,	506,121	5,895,44	2 4
			1									
			2									1

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	8	C	1
2	START DA	TA - PROVIDED	TOUS	
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	
0	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	07:08:50	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	1 5
18	6/11/2020	07:52:03	16:51:59	1-5
				-/
19	6/12/2020	07:23:23	16:55:38	
20	6/13/2020	07:19:34	17:46:51	
21	11	H	1 1	
22	1			3
23	1			
24		Initial Initial		Same D Manhala D Same
25	*	\$1.52.55 (\$46.50	\$13 mt	A CONTRACTOR OF A CONTRACTOR O
26	8 8.2/3078 11 8/30008	0028.00 16.48.40 87.1485 17.43.81	8 49 1000 18 M 2020	8 8102000 0782 Jun 411
27	11 (14.2329 11 (05.859)	47.55.11 (6-17.93 47.86.0 (9.35.58	A 75 2000	6 #30200 0Fk2 Jun 420
	TE 08/2028	87.08.00 18.30.50	8.48 2000	8 6102000 GFR 2 Jun 2 A51
Statement of the local division in which the local division in the	W #1 0.85098	00.14.35 16.45 16.45 10.	1.1% 2000 7.1% 1000	6 830200 0782 24 4 481 6 830200 0782 24 4 430
	TO HACKNE	85.17.16 121.04 (16) 47.527.55 C2.38.04	8 PB 2000 9.10 2000	
	 Arristoppe 			
	17 0-0-0109 40 0771329	6152.02 18:52.59	8.00 1000	
	10 0710829	01 58 00 18 58 58 11 21 25 10 18 58	8.56 2000	8 6302000 CFR 2 Jun 1 131
	10 0710828 10 10 2.2008	6152.02 18:52.59		8 6102020 078.2 Au 6 6102020 078.2 Au 6 8102020 078.2 Au 7 534

Excel Date & Time Basics

	EXC	EL - KEY DA	TE & TIME CONCE	PTS						
		F ormula		Chartout						
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 v	Using formulas will cause results to be dynamic, otherwise they are static								
	Underlying value	of just time i	s decimal value of P	ORTION 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?

į	FieldName	Source?	Semple Value	Commenta.	
5	Date	Provided	6/1/2020	nich - / - / - / - /	
r.	StartTime	Provided	07:37:25		
E.	EndTime	Provided	10:48:57		
0	Total_Hours	Added	9 19	24 hours of Time = 1, th hours we need to conver day (multiply by 24)	
0	Year	Added	2020	12A 12AA	
1	Month	Added	6		
	Month End	Added	6/30/2020		
3	Quarter	Added	QTR 2		
4	MonthNamo	Added	Jun		
5	WeekNumber	Added	23		
8	Year-WeekNum	Added	2020-23	TEXT function used to "s number as 2 characters	
7	DayOfWeek	Added	1	Day of Week starts on M 2 in the WEEKDAY form	
8	WeekDayName	Added	Mon :		
9	AM_Hours	Added	4.82		
0	PM_floors	Added	4.38		
1	Overtime Hours	Added	1.19	OT defined as any hours Sat or Sun, or any hours 8 hours on a weekday.	
2	1.12			Story of States and States and	Same and

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 – <u>Workbook Link</u>

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

A.			EXCEL BASICS	(AND MORE) CONCE	PTS - CON	TENT REVIEW
N			UPDATE SHIET JUST			Maryland
Invenio Advisors, LL	.0	- 0	WFORTE BIODA			GF
EXCEL 0	UNCTIONS &	MORE		LOG REMEWED		
Sheet Lat		anilist?	- On To Steel -	Reviewed?	WREPT	· December
Jiller	and the second	On	Ou 11 STeel	1.22		
About_Invento_Addepots	2	OK	Go To Sheet			
Plant's ST	3	OH.	Go To Street	REVIEW	YES	Fledi 18 is a new heatre added in Excel 2013
FlashFit_F	14	ON	Ga Ta Siveri	REVIEW	VES	
VLOOKUP_ST	.0	.04	On To Sheet		YES	VLOUKUP tooks up date to a fable organized writical (ESPACT Melch)
VLOOKUP_F	- 6	ON	Go To Sheet		VES	the second second second second second
XLOOKUP_6T	4	0K	00 Ye 93001	REVIEW	YES	1305 version Cely131.00002P is a readers and floxin reducement for other handwes two VLOCKUP HLOOKUP, and LOCKUP
SECONDE_F	6	OR	the To Count	NEVEW	YES	
INDEX_MATCH_ST	9	OK	Ga Ta Sheet	REVIEW	YES	INDEX and MATCH is a popular reathod in Excet for performing more advanced loakups (1 Way Match)
HIDEN, MATCH, F	10	06	00 15 SNot -	REVIEW	YES	13

Invenio Advisors, LLC



- 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?

Link to open

.....

The thing is, 93% of those paople are alther incompation, doinvous, or clinging to the detailors that local still local like it doin the 300e, back to the days of 18,000 row limits and "Clippy" the indicutous (and rarely helpful) cartoon paperola.

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

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

Consider where we are now:

Chris Dutton - 111. Founder & COG, Mavee Analytics

4.00

Power Query lets you to connect, transform and analyze HUGE dataants, 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 LAMIDA are helping Excel users write clean code and define powerful custom functions



- 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 - hr Missort M/P1 Speaker (Power B & Excel Developer & Instructor) Power Guery & NLOKUE will reake you: We better (Parpose: Makes... 24. Dated: - @

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

Litterfact using Excel over 20 years ago and for elmost a decade of that firms period Excel cidn't change. We had time to learn from our colleagues by looking over their shoulder. This was QK.

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 liftle improvement has a big impact.

My recommendation is to make sure that a "skills update" training course covers Tables, Power Query, Oynamic Army formalia and at least an overview of Power Power low, otherwise look for another training provide. Then for those people who have the "data gene" give them dedicated Power Query, Power Pivot and even Power Bi training. They'l low it and your organization will benefit from having these internal data champions in the lawn.

hin an Excelland Power Billitainer so live clearly got skin in the game here, but that closer/1 make me wrong.

Wyn Microsoft MVP Excel and Power Bl 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 (<u>Power Query & Power Pivot</u>)
- 2. Dynamic Array Formulas (Blog post here!)
 - o <u>UNIQUE</u>, <u>SORT</u>, <u>FILTER</u>, *etc*
- 3. <u>XLOOKUP</u> replaces <u>VLOOKUP</u>
- 4. Artificial Intelligence (<u>Recommended Pivot Tables</u>, <u>Recommended Charts</u>, <u>Analyze Data (Ideas)</u>
- 5. <u>New "Data Types" Ribbon & Custom Data Types</u>
- 6. LAMBDA Functions (<u>Blog post here</u>) in Beta currently, but this is game changing!
- 7. <u>LET</u> Function
- 8. PowerPivot Pivot Tables!

Data Transformation – Shaping For Analysis

KEY TOPICS

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



SCAN MI	

"How To" Review items – <u>DEMO / Workbook Review</u>

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

A:		0	EXCEL BASICS	(AND MORE) CONC	EFTS - CON	E TENT REVIEW
-	1		UPDATE SHIET JHE			Maryland
Invertio Advisors LL	0	-0	UFORTE INCOM			GF
DXCEL 0	UNCTIONS & A	MORE		LOG REVIEWED		
abert Lat	miners miles	-	- 0a 1a Beet -	Revieweal?	Watat	E Description .
jula .	and the second	.Oh	Og 11 STeel	1.00		
About_Invento_Advisors	2	OK	Go To Sheet			
3 Plant II, ST	3	OH	Go To Street	REVEN	YES	Fiest til is a raw hakes added in Excel 2013
A FRANCELF	- 4	OF	Go Ta Sivel	REVIEW	VES	
VLOOHUP_ST	6	01	On To Street		YES	VLOOKUP tools up date in a table organized writical (EXACT Match)
VLOOKUP_F	- 6	ON	Go To Sheet		VES	the state of the second strategy and the
XLOOKUP_6T		06	On Ye sheet	REVIEW	YES	1985 version Only 1XL00KUP is a modern and flexin registrament for index functions like VL00KUP. HL00KUP, and L00KUP
B SECONDAY_F	-6	OR.	On To Great	NEWEW	YES	
INDEX_MATCH_ST	9	OK	Go To Sheet	REVIEW	YES	INDEX and MATCH is a popular method in Excel for performing more advanced lookups (1 Way Match)
D HIDEN, MATCH, F	10	08	00.1532681	REVIEW	YES	



Pivot Tables / Pivot Charts

Pivot Tables Introduction



Pivot Tables Topics

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

Threnic Demo, LLC

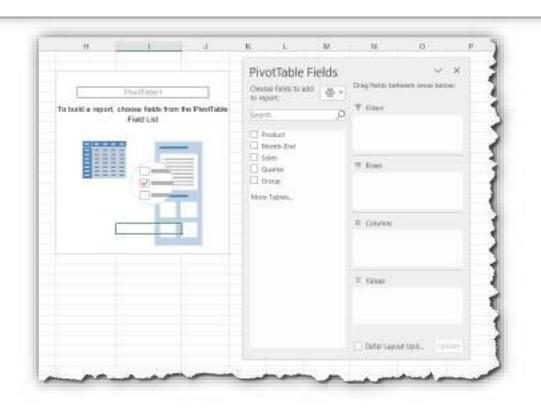
Inserting a Pivot Table - 1

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

Contraction of the local division of the loc	Page Layout Formulas	Data Rev	
17 H	🔤 🖏 🤘 🚱	Mit Smith	
writTable Recommended Table	Pictures Shapes loons an	Scro	
* FivorTables	Mode	A B G D E F	
175	Ramatio 2	Product D Worth End D Sales D Guarter D Region D	
🛱 Firm LablesRange 👍 🚃		PRODUCT001 1/31/2021 2.628 GTR 1 Region 4 PRODUCT001 2/26/2021 3.288 GTR 1 Region 4	
From External Data Source	Q	PRODUCTO01 3/31/2021 3 008 078 1 Region 4	
C	5	PRODUCT001 4/30/2021 3,009 GTR 2 Region 4	
Trans Quite Miletel	√ fx e	PRODUCTION S/31/2021 4,103 GTR 2 Ragas 4	
A	C D E	PRODUCT001 8/30/2021 2,692 QTR 2 Region 4	
Product Month-End	Bales - Quarter - Region 9	PRODU Reactions for a faller or single T	
PRODUCT001 1/31/2021	2,628 QTR 1 Regros 41	PROOD Select a halfs or range	
PRODUCT001 2/28/2021	3,288 OTR 1 Region 41	PRODU Detrafferent (2021Lars Proper 1)	
PRODUCT001 3/31/2021	3,000 WIRT Region 4	PROOF Chocks where you wait the Youth Kiel To be placed	
P980D0CT001 4/30/2021	3,989 GTR 2 Region 4	DOCUL	
PRODUCT001 5/31/2021	4,183 QTR 2 Region 4	PROOU The Andrew Davidshiel	
PRODUCT001 8/30/2021	where entry undertowill	Provide Instance is information .	
PRODUCT001 7/35/2021	3,035 GTR 3 Region 417	PROOF Power (Canada and Canada an	

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*)

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

Louis		- 110
Inveni	o Advisor	S, LLC

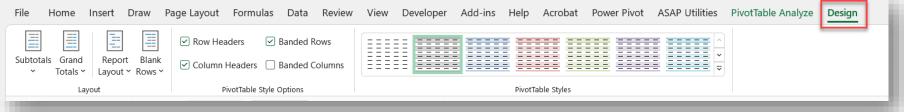
Terrent Person		Feters	iteer i	51 LT1	Annester Charles and Annester
Faither		-		Sector March	and the
000	+ 91 B	-	-		
ACC 82.08	T	-	-		
\$7	- 11		h		
Constant of the		10	0	0.0	PSA III III III III III
Product in M	and the second se		and the second se	PM general	New York Contraction of the second
(PRODUCTION	10112021	2,028	. grie ł	Hagton &	Recommended PivotTables V ×
:PRODUCTION	2262021	3.258	OIR!	-Regime #	
29000/C1801	3012021	1,080	Oth I	Region A	laure:
PRODUCTION	8/30/2021	1989	dis	Paugion A	1 mm
PRODUCTION	9/31/20/1	4,145	GIRE	Flagton #	(Distance) Name
PRODUCTION	0.00/2021	2.682	GTR 2	Region #	
PRODUCTION	7/24/2021	3,025	OTR 1	Region 4	
PRODUCTION	8/01/2021	4,170	GTR 5	Region 4	Salec by Rinduit and Quarter
PRODUCTION	9:30/20/1	3,469	QTR 5	Region #	
PRODUCTION	10/21/2001	3.244	QTR4	Region #	Sam of Sales Calarmi Labora
FRODUCTION	0.002021	2.634	UTR4	Regard A	Row Labour GFR 1 078 2 079 2 0FK 4 Grand Total
PRODUCTION	12:31/2021	4.162	UTRA	Region 4	PRODUCTIVE FEAR GOIL SATIR FLAT 10.071
PROBACTING	2/26/2021	4.207	GTR I	Region 2	the second s
PROPACTING		1.943	QTR I	Region 2	PR02025988_02302_11289_02305_02444 89428
PRODUCTING	4/30/2021	3982	UTR 2	Region 9	PRODUCTION IF ALL LEAVE STATES 12/MF KERZE
PRODUCTING	5010001	401	QIR2	Region 2	HODOLOTINE HALES HALES WITH HOME 4640
the second se	0.00/2021	3.001	QTR 2	Region 2	INCOLUCIAL INVESTIGATION AND AND AND AND AND AND AND AND AND AN
PRODUCTION	7012021	4 620	QTR I	Region 2	
PRODUCTION	81112021	1.085	UTRI	Region 2	9000007382 8253 93994 9829 (8289 4589) ;
PRIDUCTING	8/8/2021	SAME	QIR I	Reality 2	
PRODUCTING	18/21/2021	2,00	QTR 4	Region 2	and the second s
PRODUCTING	1116/2021	1000	QTR A	Regim 2	Inset are - Intelligent - Instituy dawd
PRODUCTION	12:11 2021	4.627	QTR.4	Regula 2	
PRODUCTING	101000	2.622	QIR1.	Fangains 6	dilucity design
PACENCTED	2/26/2021	1.01	QTR+	Region 8 :	Sile: by Tegani
PROPERTIES.	3312021	1.182	CTR 1	Meanin &	Roal Laboration Same of Sales
PROFILICIERS	418/2021	4118	GTR 2	Pergeon #	
PRODUCTION	3012021	200	GIR2	Report	fegoră MitAli
PRODUCTION	0.007021	4.370	GTR T	Negros 2	Teytor () 471.111
PROPERTIES	0112021	3.147	OTES:	Bugos #	Report #1.418
PROFILCTING	8112021	1462	UTH 3	Pageo d	Sector 2
A PROPERTY AND	1000420	14.850	Common of Lot	Berger II and	

Pivot Tables Context Menus (appear when PT selected)

Pivot Table Analyze

He Home	inset Draw P	age Layout	Formulas Data	Beview View	Developer	Add-ins	ныр	Acrobat Power#	vot As	AP Utiliti	es Pivot	lable Analyze	Design	
Notidale Name:	Acties Field	小小	< tion for	-9 Group Lebertree		335	100	D Da	127		1-1	112		
Finol Tatand	Sun of Sees	Delli Dell	104 C.V	all brannan	inet	imer:	Titler.	Refresh Change Da			More	EL/30 Seids Items	OLLE Relationship	s Reid +/- Feld
Options v	Field Settings	three an -	 A construction (see); 	TT Games Dans		Timeline 11		* Source *		1000	Pacellalsia	fic Sets =	lum -	Unt Battern Pleasters
PLANTERS.		Active Hold		Group		N'NY.		tosta		- 40501	6	c	akoutations.	Show

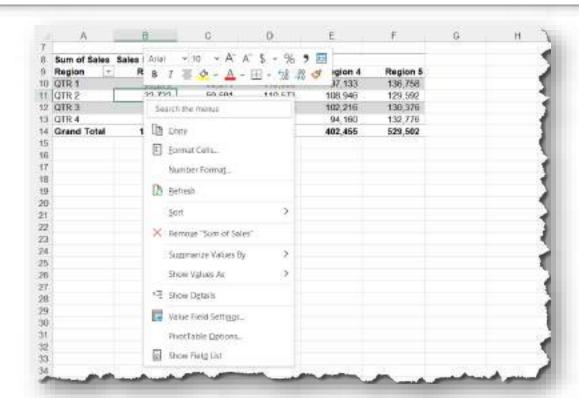
Pivot Table Design



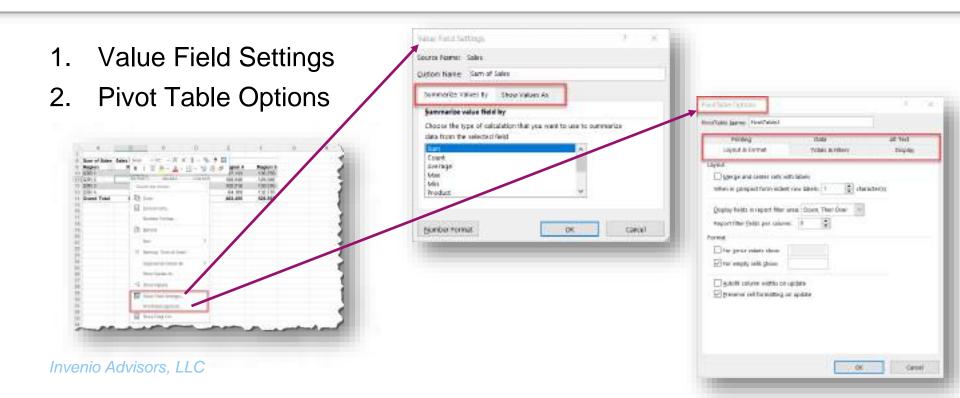
Right-click Menu Options - 1

- From within pivot table, Right-click mouse button opens shortcut menu options
- Learn these options

 you will spend a
 lot of time here!



Right-click Menu Options - 2



Pivot Table Default Settings (365 only) - 1

- Default settings options configuration
 - File >> Options >> Data "Edit Default Layout"

-		1.2.0				DEALERSTING TODALE MANY MARKE Middle Toda
	Things ration involved to data import and data analysis. Data springs bios for product to the struct spring or front spring. 200 Detail (1994)				1	Tarret Sarret Sarret Sarret Sarret
en of Alfred International	Country which for any Practical or Section and Area practice and	Ech Default Leyout Leyout Import			×	Internation (1997) (19977) (19977) (19977) (1997) (19977) (19977) (19977) (1997
nacias Presso 20. Artera Varina 19. ar	Backler wave for Table Model optimized in the entered is all lower that (single (in 1980)	Subtotals Do Not Steve Salatitude	1	angenet	a Tobal	El adott olare valto co solar El morre ul finanzio e solar
ر معمون		Grand Tetals On for Rows and Octumes	193			
		Show in Tabular Firm	123	🗹 Aspect All Herri Labeh		08 - Cana
		Bark Roes D mot jark une after kach dem		Excellable Options.		
nvenio A	Advisors, LLC	gelat is tuoi befait				

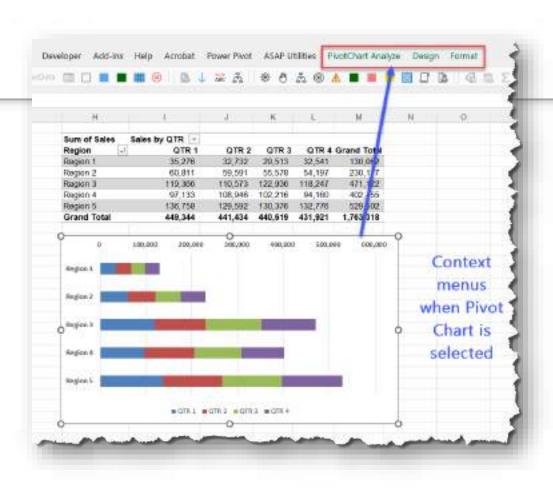
Default Settings – Here's How 😜

	فسيست والكلية	H. 1984	and the second	i - i - i - i - i - i - i - i - i - i -	+ A
He leave ocersitivs ment low P	specialist Remaine	Date Burny	You Developer Addies Hig Account 79	new Print 1454P (2007in) Toble D	enge d
ODE-DAG SA.	B B H A I	* & 2 0	③ Amina ●100 日 2 元 月 日初・日	1000A0000	8.0-
ALE - III > - A Contorchat	er Georgia				
. Doni Harra		0.07	Argeniu Indutie	Children Dehr 1 Your	0.000
2 JuniTratis International Base	- City Alterna	GA	No Acquirer	00/30/2002	2907
3 Patters	Abducture	UA	NO DIRECT	09/28/2007	2007
E Integris Busic	Appropriate	dia.	Report Dank	08/28/2008	2908
Althe Bark & Texal	ADDINING N	114	Readons Plane, N.A.	1174 2008	79.8
Contracto Real	Logenetic	CLA.	Burk of Frank	15752008	79.8
Fettilies an Commanity Base	And income	113	trained table	12/06/2008	20.8
Prevent Trant Barts	Date	104	Branch Menerg & Frant Company, (6467)	1216,2008	2008
Fundament Factor at Generation	McDarough	124	Register Dank	00108-2008	2008
# President Bank of Second	Carathera	GA	Scriteet George has	7208 2008	2008
T FILL DATE DATE	Steridoridge	GA	No Acquiter	00.25-2008	2003
I Oren Indonei Tare	Alama	64	Ri Acipitet	00.27.2008	203
2 Aniermen Sudhern Bailt	Languist	ica.	Sank of North Georgia	04747008	2010
4 Sharter Bed, MA	Alaria	0.8	No Jegener	04/14/2008	2008
 Scherner Germanite Barn 	Fuerofiantia	ALL.			70.0
	Ville Pille	12.8	Inded Converde Bark	0018/2008	20.0
8 (Caminardy Brain at West Deviges - 7 Residentical Continuativ Hank	Contraction of the International Contractional Contractiona	NA.	In Acquire		20.0
E Fett Producet Early	timotoli	UA.	Chanvilos	00126-2008	200.0
	Winstein Marcon	GA	First Anschaet Bark, and Traid Carryson	0//24/2008	20.0
I Security Revi of Bibli Caulty			Dials. Dank and Trant Company		
V Security Dank of Humbre Calenda	Perty.	64	Divelo Den A and Travel Company	07/24/2008	2008
H Secondy Bank of James County	9rw	(GA	State Dark and Fred Dompany	07/24/2009	2009
2 (Security Bank of North Mains	Rostaboli	GA	State Bank and Tradi Complexy	07/24/2008	2008
Society Bark of Ownerd Graids	Subarau .	-GA	Bake Bank and Freek Company	0/124 2008	29.9
 Security Sect of North Patton 	TEROODA	0.004	Balli Sara and Trast Collipany	07/24/2009	2908
1 Mark	F3belb	- ILA	Basing Bank, NA	08.5.2.5008	70.0
W First Cowers Harm	hinston	108	Kided Elizak Kird Citzeni, Isan and Yead Company, Inc.	08252808	2008
O Georgian Born	Alberta	TEX.		10.05.000	201.0
 Anventual Wolket David 	Lorennaki		Aynevis Earth	Colores Colores	
9 Having Lacorey Rank	Sports	- GA	Among Early	1 (A C	
6 The Dackhood Eurementy them	Alleria	GA.	Diato there and Type! Company	and the second se	100
11 Pilot Gecunty National Bark	- Nertreel	64	Bally Barie and Trippi Collepony		
2 The Failent Bark	Keetyelle	AD:	Nertage Sont of the Groth	Contraction of the second	1.1
A	ACLASSINGS FINANCE THE O	A Loose a special base	and the property of the second s	1 TO 1	

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

A	B	L	U	E	F	G	н	1	~
RAW SALES DATA RECEIVED									-
Product	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-2	n a
PRODUCT001	2.628	3,288	3,098	3,989	4,183	2,692	3,035		
PRODUCT002	4.564	4,227	3,343	3,963	4.011	3,881	4,870		
PRODUCT003	2,672	3,331	3,197	4,114	2,817	4.320	3,142		
PRODUCT004	3,748	2,560	4,395	4,277	4,836	4,418	3,813		
PRODUCT005	3,692	3,889	4,370	3,131	4,875	3,846	3,317	3,65	
PRODUCT006	4,961	3,362	3,999	4,561	2,862	4,558	3,657	4.93	
PRODUCT007	3,481	3,877	2,847	4,100	4,351	4,365	4,730	4,70	
PRODUCT008	4,917	4,610	4,907	2,890	3,283	2,638	3,587	2,76	
PRODUCT009	2,944	4,997	4,228	4,122	4,686	3,387	3,664	4,12	
PRODUCT010	2,781	4,424	3,230	2,843	3,070	2,721	4,186		
PRODUCT011	3,434	3,562	4,074	2,979	4,000	4,188	4,093	2,90	
PRODUCT012	4,840	3,951	4,513	3,874	3,546	3,858	3,243		
PRODUCT013	3,519	2,831	4,182	2,562	3,700	2,965	3,686		
PRODUCT014	4,287	4,603	4,102	2,844	4,833	4,446	2,511	4,24	
PRODUCT015	2,918	4,921	4,198	2,622	3,151	4,601	3,462		
PRODUCT016	4,825	3,159	4,130	3,561	4,028	4,001	3,402	3,77	
PRODUCT017	3,531	2,569	3,903	4,862	4,020	2,836	4,206		
PRODUCT018	4,867	3,275	3,303	4,002	4,777	2,030	3 111		
PRODUCT019	3,581	3,480		0	¥1	1	0	1 13	L .
PRODUCT020	4,536	4,696							
PRODUCT021	4,302	3,569			Sales by 💽				
PRODUCT022	4,302	3,040	Regio	on 🖃	QTR 1	QTR 2	QTR 3	QTR 4 G	Frand Total
PRODUCT022 PRODUCT023	4,200	4,965	Regio	n 1	35,276	32,732	29,513	32,541	130,062
PRODUCT023	3,736	3,467	Regio		60,811	59,591	55,578	54,197	230,177
PRODUCT024	3,704	3,407	Regio		119,366	110.573	122,936	118.247	471,122
PRODUCT025	4.400	4.853							
ODUCIUZANA			Regio		97,133	108,946	102,216	94,160	402,455
			Regio		136,758	129,592	130,376	132,776	529,502
			Gran	d Total	449,344	441,434	440,619	431,921	1,763,318
			Region		0,000 200,00	0 300,000	400,000	500,000	600,000
			Region	n 2					
			Regio	n 3					
			Regio	n 4					
			Regio	n 5					
					OTP 1		"R 3 ∎ QTR 4		

Budget Payroll Dataset (Intermediate)

Law

Teat

Marine

Tetri La Karyt A Maha S

Jacobi Mono I Muo Ek

Lacia Morgan Temple

Helera
 Sela D
 Shedd
 Lauret
 Lauret
 Course

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

	Employeei0	PostionWei	Pesteritte	-	Cost Cer	- A	of increase	1/15/2019	5/35/2019	2/15/2019	2/28/2019	245.5
Bay:	127, 197	11	Californie Service I	Representative	- Dpenal at		5	3,129	3.143	1,109	2.129	3,8
sjada	128.567	1	Track Driver		Operation of		. 6	1178	3,078	3.078	2.078	- 3.4
Seleka	126,648	18	Data Scientist		Analytics		7	1.621	1,621	1,821	1.521	1,0
lora.	127, 167	1	Catilias Narsing A	point and	Walnuss	4	- E	2,449	2.003	2,803	2.083	2,0
rates	(26,777	6	Company Driver		Openal an	- C		17:0	1,711	1,715	1.710	1.7
kaiso.	126,982	- 18	Owner		Evenility		7	1.683	1,697	1,693	1.683	1.6
ragon	126,632	18	Business Analysi		Analytics		.7	130	3.991	3, 101	2,191	4
dcoverney	126,925	- 7	Associate		Administ	4 No.	2	2,249	2.243	2,245	2.249	2
for .	126,718	18	Seattle as Analyst		Analytics			1.849	2,615	-2.968	2.889	2,8
a Mohaley	126.928	- 4	Dever		Operation	н 🔪	1	1,780	1,718	1,790	1.790	1.0
Hodgkins	126,768	- 14	Salas Negrosentai		Marbuttry		1	2.540	2,841	2.8HI	2.840	2,8
ndii (127,066	14	Sales, Representat	Net-	Marioting		1	2.836	2,934	2,034	2,634	
Leosle	127.088	15	Destre as An elyst		Analytica			2,175	2,173	2,172	2.175	2.5
PDB .	107 121	- 3	Autoplate		Administ		- 6	2,621	2,611	2,661	2.68	2.6
glata	127,185	- 4	Orver:		Operation of		(表)	2,118	2,118	2,118	2.118	- 24
dillo .	126,949	15	Cestines: Analys:		Adaptics			3.864	3,064		3,064	- 36
oner.	127,015	.16	Queer:		Executive			2,190	2,110	2,110	2,110	- 21
gia :	127,084	1	Project Varoger		IT Suppo			2.831	2,511		2,701	- 21
10	127,194	2	Salas Associate		Marloting			1.91	1.981		1.581	1,9
igh .	126,536	7	Associate		Adminiat		7	25-0	2,043		2.043	2,04
a Skiankon	126,545	- 18	Over		Electory			3,416	3,445	3,496	3,485	- 3/4
ujilo	127,001	14	Sales Representet	ive.	Variating		2	2,262	2,202	2,252	2.282	2.3
	126.709		Project Warrager		IT Support			2.017	2.037	2,437	2.037	-275
méculént	126,688	17	Administrative Acc	sat	Administ		7	2,470	2,471	2,410	2,470	-25
te Skaleli	126.728	2	Saftware Engineeri		(T 3),ppp		:7:	1.192	3,092	3,098	3.092	- 31
Pundy	126,700		Oato Scientist		Analytics	1.0		1.832	1,832	1,852	1,832	- 0
loban	127,168		Track Driver	A		D	0	U		L	Г	
	126,742	8	Cempery Driver	Sum of Ar	nount C	Quarter 💌						
Contell	136,722		Campany Briver >	Cost Cente	er 🔻	QTR 1	QTR 2) ()	TR 3	OTR 4	Grand Tota	al d
Diardery	121 214	5	Project Varueper	Administra		242.937				250.606	984,54	_
loda	126,942	2	Safiyaw English		live							
Samme	126,814	2	Selfware Engree	Analytics		227,374	227,374	4 231	,303	236,455	922,50	6
and in the	126.903	1	Company Briver;	Executive		108.598	108,59	3 110	.277	112,728	440.20	1
				IT Support		204,211	204,21	1 207	,454	210,941	826,81	7
												_
				Marketing		177,412				184,254	720,53	
			3	Operations		359,976	359,97	5 367	,824	372,791	1,460,56	8
)	Wellness		133,554	133,554	4 134	,820	138,346	540,27	4
			0	Grand Tot	al	1,454,062	· · · · ·			506,121	5,895,44	
			1	Grand Tot	ai	1,434,002	1,434,00	1,401	,131 1,	300,121	3,033,44	-
												-
			2									- 3

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?

	. 3	A	8		C		3				
2	5	TART DA	TA - PR	OVIDED	TOUS		-				
3											
4							1				
							- 1				
5							1				
6							1				
7	Date		Start	Time	EndTi	me	-				
8	6	/1/2020	07:	37.25	16:48	57	2				
9	. F	/2/2020	08-	20.05	16:48	45	~				
10		/3/2020		14:01	17:43		- 2				
	-	and and an an other states of the second	- 562	and prove the providence of			- 6				
21		/4/2020		35:17	16:17						
12		/5/2020		30:43	16:31	1157 F	1				
13		/6/2020	07:	06:50	16:30	50					
14	e	7/2020	08.	14:18	16:49	11	1				
15	6	8/2020	08	56:48	16:42	06	-				
16		/9/2020		17:16	17:01	1.0	3				
A.C.4		10/2020		S.S., S.S. T. S.		1000	-5				
17		Card and a second second		27:50	17:38	and the second second	- 5				
18		11/2020		52:03	16:51	10,01	1				
19	6/	12/2020	07:	23:23	16:55	:38	1				
20	6/	13/2020	07:	19:34	17:46	:51	2				
21			11				1	0.1 0		1.0	+
22	1.0			_					- 3	-	_
23	- 21								- 3		
1.5	- 81								3		
24	- 21	100 E	Telling.	INVERTING 1	-	• 0•	01	And Mark Distances	C Really	AN INCOME THE	
25		0122078	41.52-55	16.42.42	8.18	1990	-	HINDER UR	10	4.07	
26	10	0+2028	8734/0 6735-11	12.43.41	10.34	2000	100	#302600 CFE 2	10.0	425	3
27	1.111	05259	10100.0	18.31.50	28.001	3000	1.0	HIG200 UTK.	400 1	458	
	A. 10	62028	601405	19:30 10	1.12	2020		6.302620 CFR 2 6.302620 CFR 2	in 1	4.01	
	· • • • • •	08:001	(0.58.42	10.4230		. 1990.		#1000899. GFR.2	2.0 4	430.	- 6
	100	019.0008	87.17,16 67.27.00	12 DI /W	10.12	2000	6	#10260 0FE2	10	5.64	1
	(4)	0710228	015830	18:52 58	100	1000	1.0	KINDOW LEAD	40. 5	107	
	191	N-0.2008	81.21.25	16165.58	(8.56)	2000		41832620 078.2		1.00	1
	100.0	4-3-309	010.54	014651	16.45	2000		#302600 GF8.2	10 2	1.00	-
	22	EPHODE NUMBER	001224	0.5A38 363938	47) KB	2000		#1000090 CFR.2	100	4 5.04	
		616.0029	ET MEAN		1.12					w. S.	
	38		10134045	. 91101-6	- R.M	2830		#36900 008.2			

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?

1	-			
5	FieldName	Source?	Emple Velue	Commenta
0	Date	Provided	6/1/2020	Build and a second s
7	StartTime	Provided	07:37:25	
8	EndTime	Provided	10:48:57	
0	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)
:0	Year	Added	2020	101 120 Mail
12	Month	Added	6	
12	MonthEnd	Added	6/30/2020	
13	Quarter	Added	QTR 2	
14	MonthName	Added	Jun	
15	WeekNumber	Added	23	
18	Year-WeekNum	Added	2020-23	TEXT function used to "pad" week number as 2 characters (01, 02, etc)
17	DayOfWeek	Added	1	Day of Week starts on MON, thus the 2 in the WEEKDAY formula
18	WeekDayName	Added	Mon	
19	AM_Hours	Added	4.82	
80	PM_tiours	Added	4.38	
1	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.
22	E. S.			- ACANONISI NANASI - MANANASI

Date / Time Timeclock Dataset - 3 (Intermediate +)

FieldName	Source?	Sample Value	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([(0)Oate])	
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])	ADDRESS CONTRACTOR OF A
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([@Dste], "ddd")	
AM_Hours	Added	4.82	Formula	=(12-([@StartTime]*24))	
PM_Hours	Added	4.38	Formula	=(([@EndTime]*24)-12)	and the second second
Overtime Hours	Added	1.19	Formula	=IFERROR(IFS()@WeekDayName]="Saf",[@[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



Basics of Exploring Data in Excel

Data, Tables, Functions, Pivot Tables

Presentation MDGFOA 2022 Annual Summer Conference Don Tomoff, CPA, MBA June 15, 2022

Innin Assault LLC

<u>Click Here to Access</u> (or Scan Code) >>





Before We Dive In...Recommended Excel Skills?



- 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 – <u>Workbook Link</u>

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

A.			EXCEL BASICS	(AND MORE) CONCE	PTS - CON	TENT REVIEW
N			UPDATE SHIET JUST			Maryland
Invenio Advisors, LL	.0	- 0	WFORTE BIODA			GF
EXCEL 0	UNCTIONS &	MORE		LOG REMEWED		
Sheet Lat	- 10 mm - 20 C	anilist?	- On To Steel -	Reviewed?	Water	· December
Jiller	and the second	On	Ou 11 STeel	1.22		
About_Invento_Addepots	2	OK	Go To Sheet			
Plant's ST	3	OH.	Go To Street	REVIEW	YES	Fledi 18 is a new heatre added in Excel 2013
FlashFit_F	14	ON	Ga Ta Siveri	REVIEW	VES	
VLOOKUP_ST	.0	.04	On To Sheet		YES	VLOUKUP tooks up date to a fable organized writical (ESPACT Melch)
VLOOKUP_F	6	ON	Go To Sheet		VES	the second second second second second
XLOOKUP_6T	4	0K	00 Ye 93001	REVIEW	YES	1305 version Cely131.00002P is a readers and floxin reducement for other handwes two VLOCKUP HLOOKUP, and LOCKUP
SECONDE_F	6	OR	the To Street	NEVEW	YES	
INDEX_MATCH_ST	9	OK	Ga Ta Sheet	REVIEW	YES	INDEX and MATCH is a popular reathod in Excet for performing more advanced loakups (1 Way Match)
HIDEN, MATCH, F	10	06	00 15 SNot -	REVIEW	YES	13

Invenio Advisors, LLC

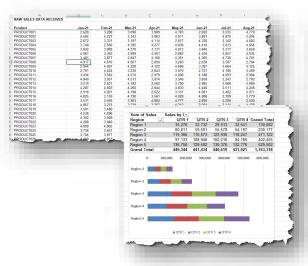


- 1. FlashFill
- 2. VLOOKUP (Exact Match)
- 3. VLOOKUP (Approx Match)
- 4. Tables
- 5. Table Slicers
- 6. Transpose

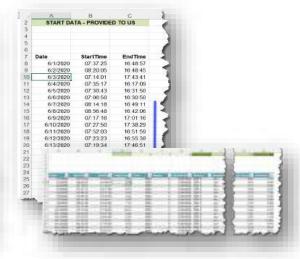


SCAN ME

Datasets Used



Harse	inglapool0 Per	(in the	lculation		Cost C	1	i increase	1/15/2019	5/35/2019	2115/2019	228(2079	215.6
fieta Rolley	127, 197	11		Representative	Down		1	1 129	3.168	1 909	2.129	2.1
Troca Galada	126,667	1	Track Driver		Operati	and 1	. 6	1178	3.071	3,078	3.078	- 34
Junatile Databas	126.646	18	Data Scientist		Acatyle		7	1.521	1.021	1.821	1.621	1.0
La Spolara	127, 967	1			Walling		1	2,449	200	2,803	2.083	- 15
Leave Grayton	126 777		Company Driver		Openid		1	17:0	1.713	1,715	1.710	1.1
Ting Lockson	126,992				Evana	10	7	1.683	1.693	1,897	1.683	1.6
Edo Sanager	126.632	18	Destroy on Analysi		Analyti		7	3.121	3.181	3, 101	2,181	5
Sielts Movemey	126.925	- 7	Associate		Admini	64 L	3	2,249	2,243	2.849	2.249	200
Jani Karller	126,718	18			Anatyte			2.849	2.685	2.965	2.689	- 23
Depettan Motoriev	126.928	4	Dever		Operad		1	1.780	1.788	1,730	1.780	- 3.7
Teleska Hodgkins	126.708	. 14	Salas Representati	her .	Marbat		7	2.540	2.841	2.841	2.545	2.0
Gerry Madii	127,066	14	Sales Representat	2.4	Mariot		1	2.834	2,934	2.434	2.034	28
Yevets Laughe	127.058	15	Destrates Analyst		Analytic		5	2.175	2,173	2 173	2.175	
Mariaol Will	107 121	- 3	Autopiate		Admini	an	6	2.6.01	2,611	2,641	2.681	1.2.2
Teta Langliera	127.185	- 4	Onver		Contail	-		2,118	2118	2.118	2,118	- 24
Karst Arciao	126.945	18	Castress Analysis		Acalyti			3 8 54	3,064	3,956	3.064	36
Maka Garriar	127.015	10	Owner		Execut			2.190	2,118	2,115	2 110	- 6
Jergid Taple	127.054		Project Varuger		IT Sup	ort 1		2.831	2.611		2.701	- 3
Mono Miora	127, 194		Salao Associata		Market	10.0		1.641	1.981	1,981	1.981	1.5
the Delega	126.536	- 7	Associate		Admini	100 E	7	250	2,012	2.843	2.043	2.0
Denthau Scanlos	126 545	18	Ownor		Evacut		2	1416	3488	3,486	3.485	- 8.4
Dutte Traillo	127.001	14	Selec Representati	ive.	Variat	100	2	2,252	2,202	2,252	2,282	2.3
Ula dremeno	136,703	6	Protect Vanceor		IT Supp		6	2.007	2.037	2,437	2.087	- 34
Lacia Vanhouten	126.688	17	Administrative App	sight .	Admin		7	2.470	2478	2.410	2.470	-24
Managerite Statute	126,728	2	Saftware Engineer		17.940	101	7	1492	3.002	3,892	3.092	- 81
Temple Pundy	126.703	10	Oato Scientist		Fraid	C1	1.1	1.832	1,832	1.852	1.832	- :d
Helena Hoban	127.169	1	Truck Drives	M		D	6	U		C	F	
Sella Cotta	126.747	8	Cerrpery Driver	Sum of Ar	nount	Quarter -						
Sheedar Cornel	136,722	6	Campany Briwny	Cost Cent		QTR 1	OTR		TR 3	OTD 4	Grand Tota	
Lauratta Diardiay	121 214	5	Prosect Variager									
Lantes Noda	126,942	- 2	Saffuare Ergener	Administra	tive	242,937	242,93			250,606	984,54	
Quarte Garner	126,816	2	Selfware Engreed	Analytics		227,374	227,37	4 231	.303	236,455	922,50	6 4
joie Delian	126.902		Company Briw;	Executive		108,598	108.59			112,728	440.20	
the state of the s	And a state of the	10. APR	and the second s									
			,	IT Support		204,211	204,21			210,941	826,81	
				Marketing		177,412	177,41	2 181	,459	184,254	720,53	7
			3	Operations		359.976	359.97	6 367	.824	372,791	1.460.56	8
				Wellness		133,554	133.55			138.346	540.27	
			,									
			0	Grand Tot	al	1,454,062	1,454,06	2 1,481	,197 1,	506,121	5,895,44	2 4
			1									
			2									14
			23									1.1



Sales Analysis



Budget Payroll Analysis



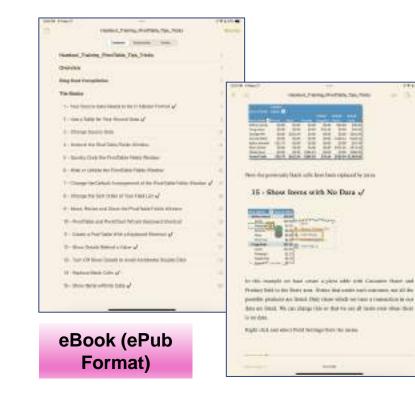
Date / Timeclock Analysis



Pivot Tables – Tips, Tricks & Techniques

PARE 35





10.000



Learning Objectives

Upon completion this session, participants will be able to:

- 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, \checkmark
- 3. Recognize how pivot tables and pivot charts can make analysis faster, easier, and more flexible, and \checkmark
- Understand modifying data fields / dimensions to simplify and prepare for data analysis. Awareness of key functions and formulas! √

Questions?

