Using Tableau Prep to Join Data Streams

In this exercise using Tableau Prep Builder, you will:

Extract data files from Excel.

Transform the data into a flat data set in which all the data for a specific sales order is on one row. Aggregate the Number of units sold, sales and shipping cost by salesperson and shipping costs by product and region.

Load the transformed data into Excel.

There are five streams of data in the Excel file, Stuffed Animals. Join. Demo.xlsx. The

first stream is stored in a sheet titled "**Sales Data**". Notice that the column headings are in row three.

	А	В	С	D	E	F
1		Cud	dly Stuffed Ar	imals		
2			oures			
3	Sales Order #	Salesperson #	Region	State	Product #	Units Sold
4	35005	1303	west	WA	103	120
5	35006	1302	West	AZ	101	96
6	35009	1305	West	CA	102	156
7	35011	1305	West	CO	101	144
8	35014	1302	Midwest	IN	106	84
9	35017	1305	West	NV	103	72
10	35025	1301	Northeast	СТ	106	84
11	35026	1306	West	WY	105	132
12	35027	1301	Midwest	IL	103	120
13	35032	1305	South	AL	103	132
14	35041	1305	Midwest	MI	103	144
15	35046	1302	Midwest	KS	102	132
16	35052	1303	South	LA	102	108
47	▶ Introdu	ction Sales D	ata Products	Salespe (+)	4.00	100

Notice that the last "Sales Order #" is 50150, and there are 5,017 rows of data (row 5020 – row 3 =5017 rows).

	А	В	С	D	E	F
1		Cud	dly Stuffed A	nimals		
2			Sales			
3	Sales Order #	Salesperson #	Region	State	Product #	Units Sold
5016	50138	1303	West	NM	102	108
5017	50141	1304	West	AK	102	96
5018	50143	1303	West	NV	102	120
5019	50147	1306	Northeast	NH	106	72
5020	50150	1305	Northeast	NY	106	156
5021						
4	Introduce	tion Sales Da	ta Products	Salesperson Re	gion Shipping) Cc (+) 🕴

The second stream is stored in a sheet titled "Products". Notice that the column

headings are in row fifteen.

The last "Product ID" is 106, and there are 6 rows of data.

.4	В	С	D	E	F	G
10						
11						
12			Cuddly St	uffed Animals		
13			Product	Information		
14						
15	Product ID	Product	Unit Selling Price	Unit Manufacturing Cost	Profit Margin by Product	
16 17	101	Stuffed Lamb	20.00	8.75	11.25	
18 19	102	Stuffed Giraffe	22.00	9.75	12.25	
20 21	103	Stuffed Elephant	24.00	10.75	13.25	
22	104	Stuffed Unicorn	21.00	8.50	12.50	
24 25	105	Stuffed Horse	23.00	10.75	12.25	
26 27	106	Stuffed Pig	25.00	12.50	12.50	
27						

The third stream is stored in a sheet titled "**Salesperson**". Notice that the column headings are in row

fifteen.

_	С	D		E		F		(G	н
10 11										
12				Cudd	ly Stu	ffed	Animals			
13				Sales	persor	n Infe	ormation	า		
15	Code		Sa	lespersor	า			Ti	tle	
16	1301		James	РОК			Sales As	sociate	e 1	
17	1302		Ulysses	Grant			Senior S	Sales As	sociate	
18	1303		Thomas	s Jefferson	l		Senior S	Sales As	sociate	
19	1304		James	Madison			Sales As	sociate	e l	
20	1305		James	Monroe			Sales As	sociate	e l	
21	1306		Grover	Cleveland			Senior S	Sales As	sociate	
22	∢ ▶	Inti	roduction	Sales Data	Produc	ts S	alesperson	Region	Shipping Co: (+)	: •

The last "Code" is 1306, and there are 6 rows of data.

The fourth stream contains the shipping cost per unit by the product and region in which the sales were

		C D	E	F	G	н		J.
made is stored in	7			Cude	dly Stuffed An			
a sheet titled	8				oping Cost Per			
"Shipping	9							
Costs". Notice	10							
that the column	11							
headings are in	12				Rogio	n		
<u> </u>	13		Product ID	Midwest	Northeast	South	West	
row thirteen.	14		101	2.15	2.12	2.08	2.02	
	15		102	2.11	2.08	2.04	1.98	
	16		103	2.14	2.11	2.07	2.01	
	17		104	2.12	2.09	2.05	1.99	
	18		105	2.07	2.04	2.00	1.94	
	19		106	2.02	1.99	1.95	1.89	
	20		Salesperso	on Products F	Region Shipping (Costs +	: •	

The last "Product ID" is 106, and there are 6 rows of data.

The fifth stream contains data regarding the Regions and states in each region sold are stored in a sheet titled "Region".

	C	D	E	F	G	н		J	K	L
1										
2										
3								(Cuddl	
4									Reg	jion l
5										
6		Code	Region	1	2	3	4	5	6	7
7		1	Midwest	IL	IN	IA	KS	MI	MN	MO
8		2	Northeast	СТ	ME	MA	NH	NJ	NY	PA
9		3	South	AL	AR	DE	FL	GA	KY	LA
10		4	West	AK	AZ	CA	CO	HI	ID	MT
11										
12	•	Introduct	ion Sales	Data Sa	lesperson	I foduct	s Regio	n Shipp	ig Co	+ : [

The deliverable consists of two reports exported to the original Excel file. The first report

is a report by salesperson	
that shows the number of	Salespers
units sold, sales in dollars	Ulysses G
and shipping costs. The	Thomas J
second report is a shipping	James Po
cost report by product and	James Mo
region loaded back into	James Ma
Excel.	Grover C
	I

By Salesperson son Units Sold Sales Shipping Cost 57,924 \$ 1,317,384.00 \$ 117,878.40 Grant Jefferson 141,156 \$ 3,210,924.00 \$ 287,129.76 43,200 \$ 985,560.00 \$ 87,710.64 olk 121,236 \$ 2,748,540.00 \$ 246,882.36 onroe 59,136 \$ 1,349,352.00 \$ 120,158.04 adison 76,680 \$ 1,733,088.00 \$ 156,216.00 leveland 499,332 \$11,344,848.00 \$1,015,975.20 Total

Automate the process so that the reports can be completed at the end of every month. The unit selling price and costs do not change during the year.

		Shipping	Costs by Produc	t and Region				
	Midwest	Midwest Northeast South West						
Stuffed Elephant	\$ 47,610.72	\$ 35,625.24	\$ 50,822.64	\$ 63,990.36	\$ 198,048.96			
Stuffed Giraffe	\$ 76,744.92	\$ 56,958.72	\$ 80,686.08	\$ 91,095.84	\$ 305,485.56			
Stuffed Horse	\$ 26,032.32	\$ 17,062.56	\$ 25,488.00	\$ 31,916.88	\$ 100,499.76			
Stuffed Lamb	\$ 30,263.40	\$ 19,614.24	\$ 29,877.12	\$ 38,905.20	\$ 118,659.96			
Stuffed Pig	\$ 47,898.24	\$ 30,566.40	\$ 47,361.60	\$ 59,648.40	\$ 185,474.64			
Stuffed Unicorn	\$ 25,999.68	\$ 18,458.88	\$ 29,987.40	\$ 33,360.36	\$ 107,806.32			
Grand Total	\$254,549.28	\$178,286.04	\$264,222.84	\$ 318,917.04	\$1,015,975.20			

4

Start Tableau Prep

Note: You cannot extract data from an open Excel file, so make sure that the Excel file is closed before starting to input the data.

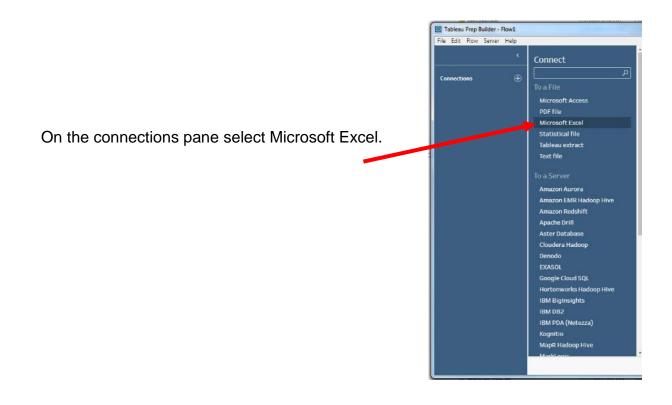
The Tableau Prep Builder workspace consists of the Connections pane and three coordinated areas that help you interact with and explore your data:

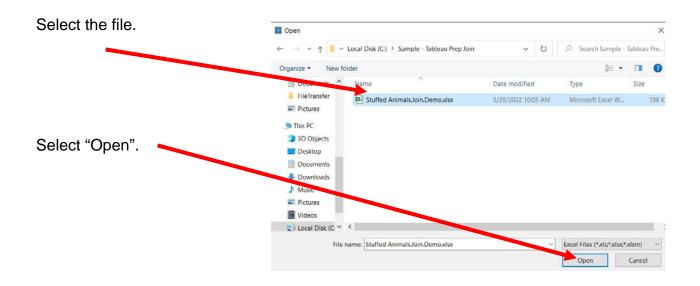
- Flow pane: A visual representation of your operation steps as you prepare your data.
- Profile pane: A summary of each field in your data sample. See the shape of your data and quickly find outliers and nulls.
- 🐻 Tableau Prep Builder CSA Join File Edit Flow Server Help $\leftarrow \rightarrow \square | \bigcirc | \bigcirc \cdot \triangleright \cdot$ Stuffed Animals.Join. ß Flow Salesperson Clean 3 Connection Filter Values. ♀ 1 Recommendation 💌 💾 🗐 6 fields 5K rows Rename Fields... Create Calculated Field. # Ø Abc 0 # I Data for Shipping Re. 3 Sales Order # 5K Salesperson # 6 Region 4 State 50 Product # 6 Units Sold Changes **Formated Report by** Sales Data 30 35,000 1,301 Midwest AK 101 III Shipping Costs 1,302 102 39,000 70 1,303 103 I Shipping Report **Profile** 1,304 104 110 43,000 💷 test Shipping Costs 1,305 105 1,306 106 47,000 150 ____ СТ Introduction B13:C24 DE 51,000 7 190 FL Introduction B27:E35 GA 230 E Introduction B40:049 HI IA E Introduction G27-135 ⊕ Introduction | 27:035 State Product # Units Sold Sales Order # Salesperson # Region ⊕ Introduction T40:T49 35,005 1,303 West WA 103 Products 35,006 1,302 West AZ 101 **Data Grid** Products B15:F16 35,009 1,305 West CA 102 Products B18:F26 1,305 со 101 35,011 West 1.302 84 35.014 Midwest IN 106 Region 35.017 1.305 West NV 103 72 35.025 1.301 Northeast CT 106 84 E Region D7:U10 35.026 1.306 West
- Data grid pane: The row level detail for your data.

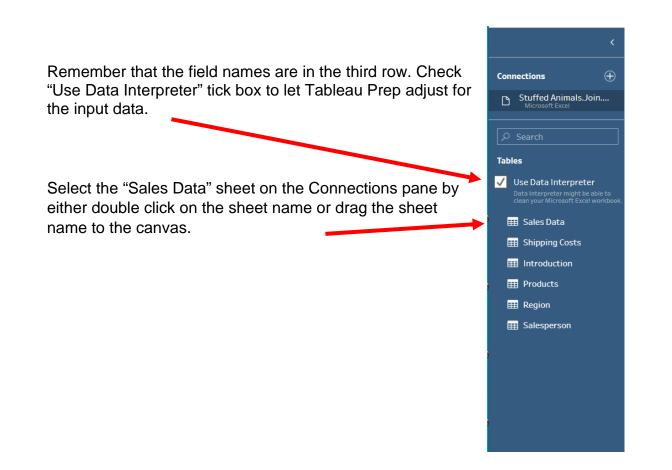
After you connect to your data and begin building your flow, you add steps in the Flow pane. These steps function as a lens into the structure of your data, as well as a summary of operations that is applied to your data. Each step represents a different category of operations that you define. In the Configuration area, select the "Connect a File or Database" drop-down arrow. **Step 1: Input Excel file**

To open Excel file via Tableau Prep, press green button "Connect to Data" on the Flow pane.

🔛 Tableau Pre	ep Builder -	Flow1		
File Edit Flo	ow Server	Help		
		<		
		~	Open a Flow Connect to Data	
Connections		\oplus	Recent Flows 📟	i≣
			No flows have been created.	







he step, "Sale	s Data", will appear on the Fl	ow p	ane).			
Tableau Prep Builder - Flow 1* File Edit Flow Server Help <							- 🗆 🗙
Connections	Sales Data						100%
Tables	Input					,₽ si	aarch 🗸
Cleaned with Data Interpre. Youroo manage, clear the shecksor that that orderport errors that will result to flow errors Sales Data	Settings Multiple Files Data Sample Changes (0) Wildcard union 	Clearth	ata 61 e check b	00 II 8 100000		e data types. <u>Ad</u>	<u>d a clean step</u> to view and clean data.
E Shipping Costs	Table Sales Data	1	Туре	Field Name	Original Field Name	Changes	Preview
Introduction		1	#	Sales Order #	Sales Order #		35,005, 35,006, 35,009
Distroduction B13:C24		\checkmark	#	Salesperson #	Salesperson #		1.303, 1,302, 1,305
5 Introduction B27:E35		1	Abc	Region	Region		West
Distroduction B40:Q49		1	Abc	State	State		WA, AZ, CA
Distroduction G27:J35		1	#	Product #	Product #		103, 101, 102
Introduction L27:Q35		\checkmark	#	Units Sold	Units Sold		120, 96, 156
P Introduction T40:T49							

The sample data will be visible on the Profile pane.

The "Use Data Interpreter" worked, and the "Field Name" column is correct.

Step 2: Clean the data

Review the data that we just added. Click the plus sign and add "Clean Step".

	Ð
Sales Data	Add:
	+ Clean Step
	E New Rows
	Σ Annrenate

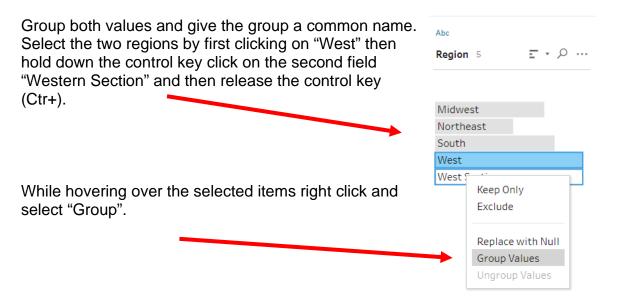
On the profile pane review the data.

#	#	Abc	Abc	
Sales Order # 5K	Salesperson # 6	Region 5	State 50	
35,000	1,301	Midwest	AK	
39,000 -	1,302	Northeast	AL	
59,000 -	1,303	South	AR	
43,000 -	1,304	West	AZ	
	1,305	West Section	CA	
47,000 -	1,306		СО	
			DE	
51,000			FL	
			GA	
			HI	
			IA	

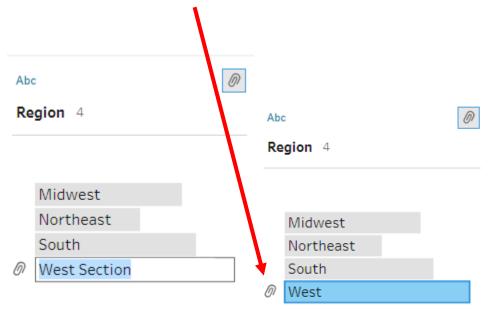
The "Region" column can only contain one of the four regions. Browse the data in the "Region" field to verify that all the data is correct. Make any changes that are required.

In the "Region" column two regions looks similar, but not the same: "West" and "West Section". In one or more records "West" was incorrectly entered as "West Section". We need to correct this manual input error.

Code	Region
1	Midwest
2	Northeast
3	South
4	West



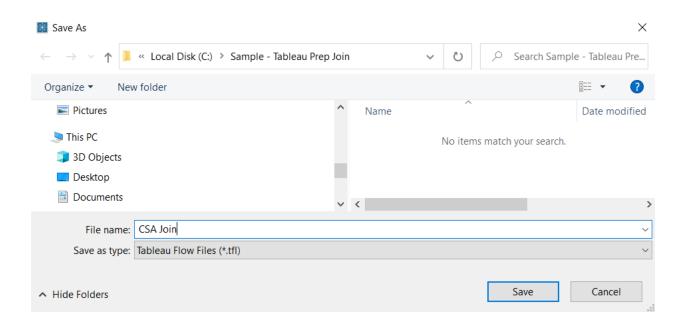
If necessary, name the group "West".



Save the workflow regularly.

Select "File > Save As..."

Enter the "File name:" and Save.



Step 3: Extract the data from the "Products" sheet. Review the data, join to Stream 1 and verify the number of rows.

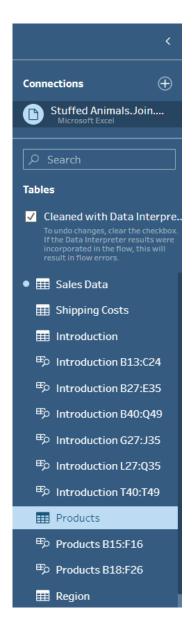
Data varadia a tha	10	В	C	D	E	F	G
Data regarding the Product's ID, name selling price,	12 13				uffed Animals Information		
	15 Pro	duct ID	Product	Unit Selling Price	Unit Manufacturing Cost	Profit Margin by Product	
manufacturing cost and	16 17	101	Stuffed Lamb	20.00	8.75	11.25	
profit margin are stored in an Excel sheet titled	18 19	102	Stuffed Giraffe	22.00	9.75	12.25	
"Products". Notice that	20 21	103	Stuffed Elephant	24.00	10.75	13.25	
the column headings are	22 23	104	Stuffed Unicorn	21.00	8.50	12.50	
in the fifteen row.	24 25	105	Stuffed Horse	23.00	10.75	12.25	
	26 27 28	106	Stuffed Pig	25.00	12.50	12.50	
	20	Introduc	tion Sales 13 Produ	cts Sat person Region	Shipping Costs 🔶 🕴 🕻		Þ

Select "Stuffed Animals.Join.Demo.xlsx".



The "Cleaned with Data Interpreter" should still be selected.

Select the "Products" sheet on the Connections pane by either double click on the sheet name or drag the sheet name to the canvas.



Step 4: Clean the data

Review the data that we just added. Click the plus sign and add step "Clean 2".

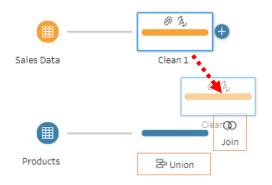
		Sales D	ata Clean 1		
		Produ	View and clean da	- - - - - - - -	
			Add: + Clean Step Σ Aggregate □ ^{\$\$} Pivot		
	Products	Clean 2			
Clean 2	2 5 fields 6 rows 7 Filter	_	-	commendation 🔻 💾 🗐	
6	# Product ID 6	Abc Q Product 6	# Unit Selling Price 6	# Unit Manufacturing Cost 5	# Profit Margin by Product 4
Changes (0)	101 102 103 104 105 106	Stuffed Elephant Stuffed Giraffe Stuffed Horse Stuffed Lamb Stuffed Pig Stuffed Unicorn	20 21 22 23 24 25	8.5 8.75 9.75 10.75 12.5	11.25 12.25 13.25

Everything looks correct. Step "Clean 2", from the second stream has 6 records and contains the field "Product ID". Step "Clean 1", from the first steam has 5,017 records and contains the field "Product #".

Clean 1	Gfields 5Krows Filter	alues 📝 Rename Field 📑	Create Calculated Field	Duplicate Field	Keep Only Field	% Hide Field 🛛 🕅 Remove Fiel
>	#	#	Abc	Ø Abc	ç	#
s(2)	Sales Order # 5K	Salesperson # 6	Region 4	State 50		Product # 6
Changes (
5	35,005 35,006 35,009 35,011 35,014 35,017 35,025	1,301	Midwest	АК	E	101
	35,006	1,302	Northeast	AL		102
	35,009	1,303	South	AR		103
	35,011	1,304	West	AZ		104
	35,014	1,305		CA		105
	35,017	1,306		со		106
	35,025			СТ		

Step 5: Combine Data from first Two Streams on a Common Field

Now join the two the streams. Drag the "Clean 1" step from the first stream to the "Clean 2" step in the second stream and a Join box will appear. Drop the "Clean 1" step into the Join box.



As a result, step "Join 1", a combination of the two streams will appear. Select the "Join 1" step.

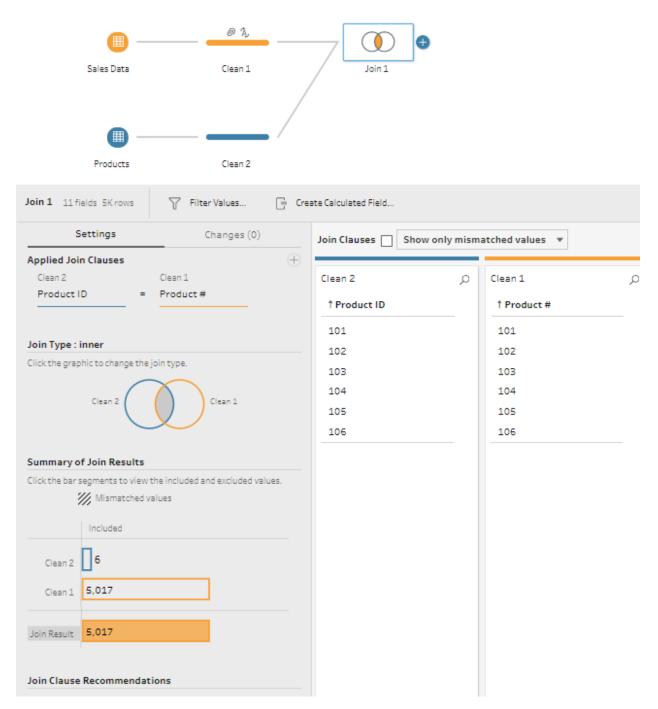


Tableau automatically joined based upon a match of "Product ID" in Clean 2 and "Product #" in Clean 1.

The Join result is 5,017 rows, everything was matched, there are no errors.

Sales Order #	Salesperson #	Region	State	Product #	Units Sold	Product ID	Product	Unit Selling Price	Unit Manufacturing Cost	Profit Margin by Product
35,005	1,303	West	WA	103	120	103	Stuffed Elephant	24	10.75	13.25
35,006	1,302	West	AZ	101	96	101	Stuffed Lamb	20	8.75	11.25
35,009	1,305	West	CA	102	156	102	Stuffed Giraffe	22	9.75	12.25
35,011	1,305	West	со	101	144	101	Stuffed Lamb	20	8.75	11.25
35,014	1,302	Midwest	IN	106	84	106	Stuffed Pig	25	12.5	12.5

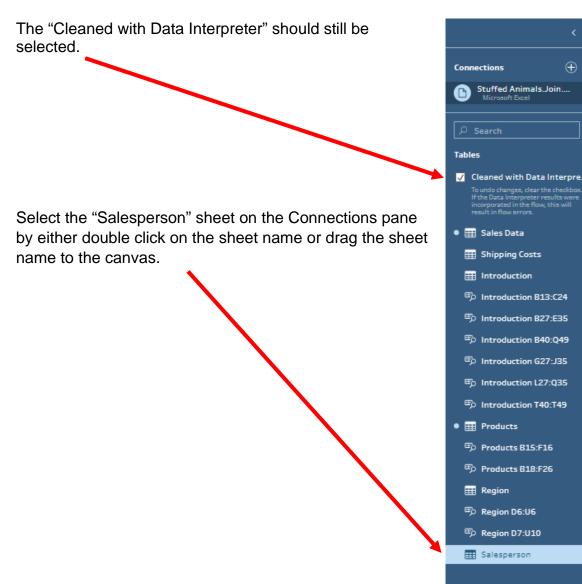
"Join 1" contains detailed product information.

Step 6: Extract the data from the "Salesperson" sheet. Review the data, join to the first two streams, and verify the number of rows.

1	С	D	E	F	G
0					
1					
2			Cuddly Stu	tted	Animals
13			Salesperso	n Infe	ormation
14	Code		Salesperson		Title
S					
6	1301		James Polk		Sales Associate I
17	1302		Ulysses Grant		Senior Sales Associate
18	1303		Thomas Jefferson		Senior Sales Associate
19	1304		James Madison		Sales Associate I
20	1305		James Monroe		Sales Associate I
21	1306		Grover Cleveland		Senior Sales Associate
22			roduction Sales Data Produc		

Data regarding the salesperson's name and title are stored in an Excel sheet titled "Salesperson". Notice that the column headings are in the fifteen row.

Select "Stuffed Animals.Join.Demo.xlsx" from the "Connections" panel.			<
	Conne	ections	\oplus
	۵	Stuffed Anima Microsoft Excel	als.Join

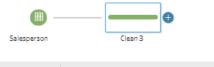


Step 7: Clean the data

Review the data that we just added.



Click the "View and clean data" tool and add step "Clean 3".



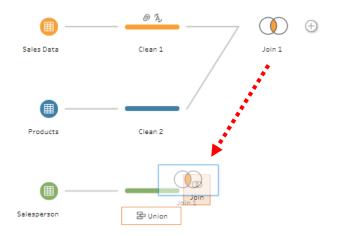
Clean 3	3 fields 6 rows 🛛 🍸 Filter Va	lues 📝 Rename Fields 🕞	Create Calculated Field
>	#	Abc	Abc
Changes (0)	Code 6	Salesperson 6	Title 2
Char	1,301	Grover Cleveland	Sales Associate I
	1,302 1.303	James Madison James Monroe	Senior Sales Associate
	1,304	James Polk	
	1,305	Thomas Jefferson	
	1,306	Ulysses Grant	

Everything looks correct. Join 1 with 5,017 records contains the field "Salesperson #" which contains the same data as the field "Code" in Clean 3.

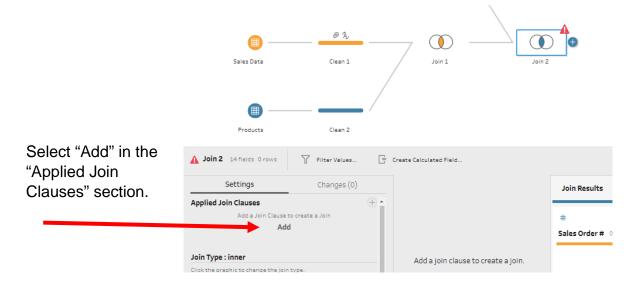
Join Results		
# Sales Order # 5K	# Salesperson # 6	
	 	-
35,005	1,301	
35,006 35,009	1,302 1,303	
35,011 35,014	1,304 1,305	
35,017	1,306	
35.025		

Step 8: Combine Data from first Two Streams on a Common Field

Now join the two the streams. Drag the "Join 1" step from the first and second stream to the "Clean 3" step from the third stream and a Join box will appear. Drop the "Join 1" step into the Join box.



As a result, step "Join 2", a combination of the two streams will appear. Tableau did not determine what fields should be used to join the two streams. Select the "Join 2" step.



Select the fields to join on, "Code" from Clean 3 and "Salesperson #" from "Join 1".

Applied Join Clauses	(±) •		
Clean 3 Join 1			
Clean 3	Search		
. # Code	Abc Product		
Abc Salesperson	# Product #		
Abc Title	# Product ID		
	# Profit Margin by Product		
	Abc Region		
5	# Sales Order #		
c	# Salesperson #		
	Abc State		
	# Unit Manufacturing Cost		
-	# Unit Selling Price		
	# Units Sold	Join 2 14 fields 5K rows	🍸 Filter Values
		Settings	Changes (0)
		Applied Join Clauses	(†
		Clean 3	Join 1
		Code =	Salesperson #
The default " Join Type" i	e "inner" which does not have		
	s "inner" which does not have		
to be changed.		Join Type : inner	
		Click the graphic to change the	join type.
		Clean 3 🤇	Join 1
		Summary of Join Results	
			the included and excluded values.
The join was successful	as 5,017 rows were combined.	₩ Mismatched v	
· , · · · · · · · · · · · · ·		///	
		Included	
		Clean 3	
		Clean 3	
		Join 1 5,017	
		Join Result 5,017	
		Join Clause Recommendat	tions

Step 9: Extract the data from the "Shipping Costs" sheet. Review the data, join to Join 2 and verify the number of rows.

⊿ C	D	E	F	G	Н	I.	J
7			Cudd	ly Stuffed Ar	nimals		
8			Ship	ping Cost Pe	er Unit		
9							
10							
11							
12				Regi	ion		
13		Product ID	Midwest	Northeast	South	West	
14		101	2.15	2.12	2.08	2.02	
15		102	2.11	2.08	2.04	1.98	
16		103	2.14	2.11	2.07	2.01	
17		104	2.12	2.09	2.05	1.99	
18		105	2.07	2.04	2.00	1.94	
19		106	2.02	1.99	1.95	1.89	
20	•	Salesperso	n Products Re	gion Shipping	Costs (+)	•	

Notice that the column headings are in the thirteenth row.

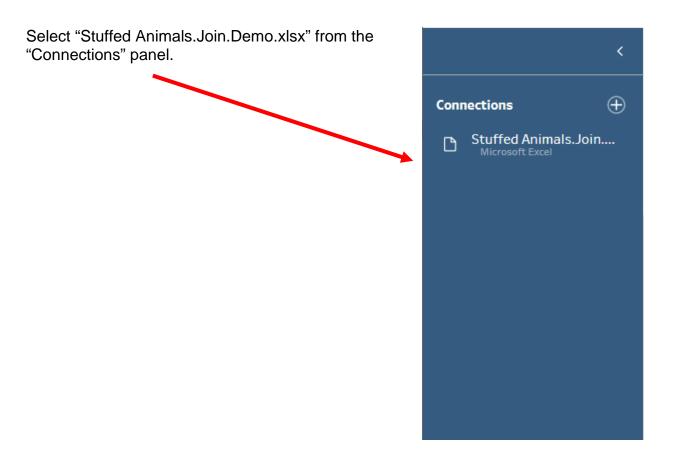
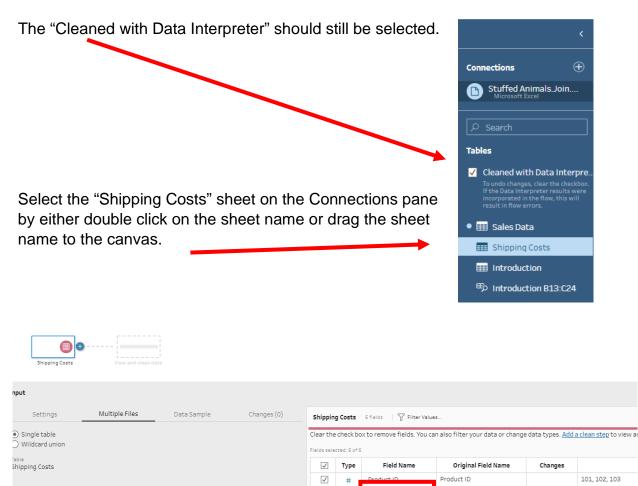


Tableau Prep Join

2.15, 2.11, 2.14



Change the field name from "Region Midwest" to "Midwest".

Shipping	g Costs	5 fields 🍸 Filter Val	ues		
	check bo		can also filter your data or chang	ge data types. <u>Add</u>	<u>a clean step</u> to view a
elos selec	cted: 5 or s				
	Type	Field Name	Original Field Name	Changes	
✓ ✓	Type #	Field Name	Original Field Name Product ID	Changes	101, 102, 103

V #

Region Midwest

Region Midwest

.

Step 10: Clean the data

Review the data that we just added.

Click the "View and clean data" tool and add step "Clean 4".

4 5 fields 6	ows Filter	Clean 4	D 2 D 2	ame Fields	Create Calculated Field		
- STIELUS OF	ows U Piter	r values	Lg Ken	ame Fleids	Create Calculated Field		
#		#			#	#	#
Product ID	6		n Midwes	st 6	Northeast 6	South 6	West 6
101		2.02			1.99	1.95	1.89
102		2.07			2.04	2	1.94
103		2.11			2.08	2.04	1.98
104		2.12			2.09	2.05	1.99
105		2.14			2.11	2.07	2.01
106		2.15			2.12	2.08	2.02
	Region Midwest	Northeast	South	West			
Product ID		2.12	2.08	2.02			
	2.15						
101			2.04	1.98			
101 102	2.11	2.08	2.04	1.98 2.01			
Product ID 101 102 103 104			2.04 2.07 2.05	1.98 2.01 1.99			

Data in a matrix format cannot be joined to the previous inputs in the current format. Each record must be converted into multiple records.

Step 11: Pivot the data.

Add a "Pivot" step to the "Clean 4" step.



Select all four region columns and drag them to Pivoted Fields Area.

Pivot 1 5 fields 6 rows	🍸 Filter Values 📄 Crea	ate Calculated Field	
Settings	Changes (0)	Pivoted Fields	🖓 Columns to Rows 🔹
Fields			
✓ Automatically rename	e pivoted fields and values	Drop fiel	ds here to pivot them Or
# Midwest		Midwestse wild	dcard search to pivot
# Northeast			
# Product ID			
# South			
# West			

Select the "Pivot Results" section, double click on "Pivot1 Values", and rename the column "Shipping Costs ". Then

column "Shipping Cost rename "Pivot1 Names			Pivot Re	esults				
"Region".		1	Abc Pivot1 N	James 4	# Pivot1 V	alues 19	# Product ID 6	
			Midwes Northea South West		1.8		101 102 103 104 105 106	
	Pivot Res	sults						
	Abc Region 4	= = ×	2	# Shipping Costs 19	ľ	# Product ID 6		
	Midwest Northeas South West			1.89 1.94 1.95 1.98 1.99 1.99 2 2.01 2.02 2.02 2.02 2.05 2.07		101 102 103 104 105 106		
	Region Northeast	Shipping Costs	Produ	ict ID				
	South	2.08	101					
	West	2.02	101					
	Midwest	2.15	101					
	Northeast		102					
	South	2.04	102					

To combine two streams of data there must be a unique key. That unique field is referred to as the primary key in the one side of the join. The primary field will be created by combining the "Product ID" field with a "." and the "Region" field. The primary key for the first record will be "101.Northeast". Since a numeric field "Product ID" is being combined with a string field, "Region" the numeric field must be converted to a string field.

Step 12: Create a Primary Key Field

Add step "Clean	5" to step "Pivot 1".			
Shipping Costs	Clean 4	Pivot 1	Clean 5	
Clean 5 3 fields 24 rows	Filter Values	📝 Rename Fields	Create Calculated Field	

To create a Primary Key field, select "Create Calculated Field".

Add Fiel	d			
Field Nan		 	 	
Calcula	ation1			

Change the "Field Name" to "Product ID and Region".

	Add Field
	Field Name
	Product ID and Region
	<pre>str([Product ID])+"."+[Region]</pre>
Type: STR([Product ID]) + "." + [Region]	
then click Save.	
	Apply Save

The "SPID and Region" field has been populated.

	Shipping Costs	c	ean 4	V Pivot 1		Clean 5	
Clean !	5 4 fields 24 rows 🗸 K	eep Only	r 🗙 Exclude	A Edit Value	Ø Repla	ce with Null	
ges (1) V	Abc Product ID and Region 24		Abc Region 4		# Shipping Cos	ts 19	# Product ID 6
Changes (1)	101.Midwest 101.Northeast 101.South 102.Midwest 102.Northeast 102.South 102.West 103.Midwest 103.Northeast 103.South 103.West		Midwest Northeast South West		1.89 1.94 1.95 1.98 1.99 2 2.01 2.02 2.04 2.05 2.07		101 102 103 104 105 106

Step 13: Create a Foreign Key Field

The combined first, second and third stream of data, now combined in step Join 2, also needs a field that combines the "Product ID" and the "Region" in the same exact format that was used in the fourth stream. This new field is referred to as a foreign key and will be used to link to the data in the third stream.

Add step "Clean 6" to the "Join 2" step.

		#1	O	Ciean 6			
an 6	14 falos Screen	alves. [Rename Fields. [Create Calculated Field			Q 2 Recommendations *	🖀 🖩 🖉 Search
1	*		Ale	Abe	*	*	*
	Sales Order # SK	Salespers 6 E • D ···	Region #	State 50	Product # 4	Units Sold 18	Product ID 6
	35,005	1.301	Midwest	AK 📑	101	36	101
	35,006	1,302	Northeast	AL AD	102	48	102
	35,009	1 202	South	60	1000	60	103

Since step "Join 2" contains both "Product #" and "Product ID" either can be used in creating the new field.

To create a Foreign Key field, select "Create Calculated Field".

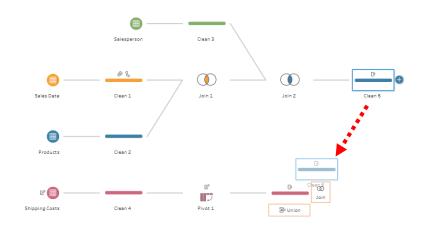
Add Field					
Field Name					
Calculation1					
Clean 5 7 Fields 94 Rows	√ Filter Values	📮 Create Calculated	l Field		
Change the "Field Na	me" to "Product ID	and Region".			
		Add Field	đ		
		Field Name	e		
Type: STR([Product	ID]) + "." + [Regio	on]	t ID and Region		
			roduct ID])+"."+[[Region]	
then click Save.					
			Apply	Save	

The "SPID and Region" field has been populated with 24 different values for "Product ID and Region".

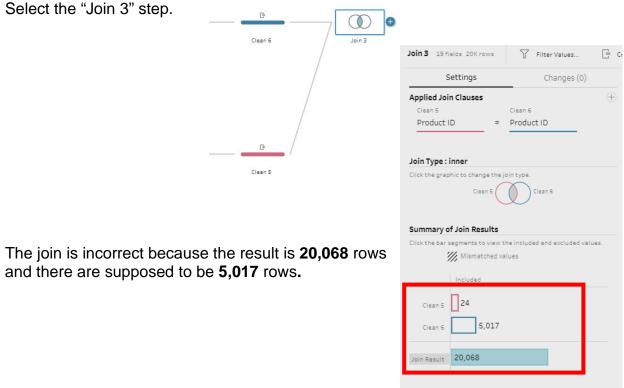
101.Midwest 101.Northeast 101.South 101.West 102.Midwest 102.Northeast 102.South 102.West 103.Midwest 103.Northeast	Abc Product ID and Region	24	G
103.South	101.Northeast 101.South 101.West 102.Midwest 102.Northeast 102.South 102.West 103.Midwest 103.Northeast		

Step 14: Combine First Three Streams of Data to the Fourth Stream of Data

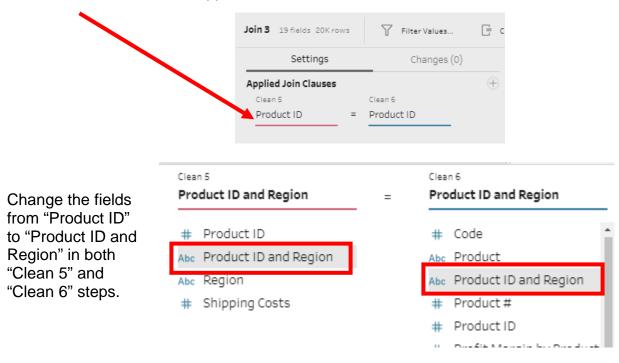
Now that we have a primary key and a foreign key, we can join the fourth stream of data with the combined first three streams. Drag the "Clean 6" step from the combined first, second and third stream to the "Clean 5" step in the fourth stream. Drop the "Clean 6" step into the Join box.



Step "Join 3" will appear. If the Join is named differently, double click on the name and change it.



Join Clause Recommendations



Select "Product ID" in the "Applied Join Clauses" section.

The default "Join Type" is "inner" which does not have to be changed.

The join was successful as 5,017 rows were combined.

lick the bar s	segments to view the included and excluded values.
3	Mismatched values
	Included
	24
Clean 5	L ²⁴
Clean 6	5,017
Join Result	5,017

Settings C	hanges (0)	Join Clauses Show only	/ mism	atched values 🔻	Join Results	
pplied Join Clauses	\oplus		_			
Clean 5 Clean 6		Clean 5	Q	Clean 6 🖉	Abc	
Product ID and R = Product ID	and R	† Product ID and Region		† Product ID and Region	Product ID and Regio	n 24
		101.Midwest		101.Midwest		
in Type : inner		101.Northeast		101.Northeast	404.44	Ξ
lick the graphic to change the join type. Clean 5 Clean 6		101.South		101.South	101.Midwest 101.Northeast	
Clean 5 Clean	6	101.West		101.West	101.South	
		102.Midwest		102.Midwest	101.West	
mmary of Join Results		102.Northeast		102.Northeast	102.Midwest	
ck the bar segments to view the included an	d excluded values.	102.South		102.South	102.Northeast	
Mismatched values		102 West		102 West	102.South 102.West	
		103 Midwest		103 Midwest	102.West	
Included		103 Northeast		103 Northeast	103.Northeast	
Clean 5		103 South		103.South	103.South	
		103.West		103.West	103.West	
Clean 6 5,017		104 Midwest		104.Midwest	4	
		104.Northeast		104.Northeast	Product ID and Region	Pro
in Result 5,017		104.South		104.South	103.West	103
		104.West		104.West	101.West	101.
in Clause Recommendations		105.Midwest		105.Midwest	102.West	102
Product ID = Product ID		105.Northeast		105.Northeast	101.West	101
Region = Region		105.South		105.South	106.Midwest	106
Product ID = Product #		105.West		105.West	103.West	103.
		106.Midwest		106.Midwest	106.Northeast	106.
		106.Northeast	100	106.Northeast	105.West	105

Step 15: Calculate the Sales and the Shipping Cost on Every Sales Order

Add a step "Clean 7" after the step "Join 3" and calculate the sales for every sales order.

	Join 3 Clean 7									
Clean 7 19 fields 5K rows	7 Filter Values 📝 Rename Fields 📑 Create Calculated Field									
Click on "Create Calculated Field"										
Enter "Sales" as the "Field Name".	Add Field									
	Field Name									
	Sales									
Round([Units Sold]*[Unit Selling Price],2)										
Type the formula Round([Units Sold]*[Unit Se	elling Price],2))									

then click Save.

Save

						_									
Sales	Product ID and Region	Product ID and Region	Region	Shipping Costs	Sales Order #	Salesperson #	Region-1	State	Product #	Units Sole	Product ID-1	Product	Unit Selling Price		
2,880	.03.West	103.West	West	2.01	35,005	1,303	West	WA	103	120	103	Stuffed Elephan	24		
120	120 x 24 = 2,880.														
Cle	Clean 7 19 fields 5K rows Y Filter Values Rename Fields														
Clic	k on "Cre	ate Calcula	ated	Field".											
Edit Field															
	"ol · · ·		•				Field Name								
Enter "Shipping by Sales Order" as the "Field Name".								Shipping by Sales Order							
							Round	l ([Uni	its Solo	i]*[Shir	pping Co:	sts],2)			
Type the formula Round([Units Sold]*[Unit Selling Price],2))															
then click Save.															
Shipp	ing by Sales Order Sa	ales Product ID and Re	gion Pro	oduct ID and Regi	on Region	Shipping Cos	ts Bales O)rder #	Salesperso	n # Region	-1 State	Produc # Unit	s Sold Foduct ID-1		
241.2		880 103.West	-	3.West	West	2.01	5,005		1,303	West		103 120	1 3		

120 x 2.01 = 241.2

Step 16: Create a "Units Sold, Sales and Shipping Costs by Salesperson" Report

Add a step "Aggregate 1" after the step "Clean 7".	p E	Add:	Σ	Ð
	Clean 7	+ Clean Step	Aggregate 1	
		E New Rows		
Select the "Aggregate 1" step, then se	lect "Settings".	Σ Aggregate		
Aggregate 1 O Fields O Rows 7 Filter Mades				
Settings Changes (0)	Grouped Fields			
∑ Aggregate 0 Fields				

Drag the "Salesperson" field to the "Grouped Fields" area and "Sales", "Shipping Costs by Sales Order" and "Units Sold" fields to the "Aggregated Fields" area.

Aggreg	ate 1 Ofields	√ Filter Values		Search
	Settings	Changes (0)	Grouped Fields	Aggregated Fields
Additio	onal Fields			
Drag fi	ields to aggrega	te or group them.		
ρse	parch			
~ 50	earch			
	Add All	Remove All		
			Drop fields here to group them	Drop fields here to aggregate them
#	SUM	Code		
Abc	GROUP	Product	4	
Abc	GROUP	Product ID and Region		
#	SUM	Product #		
#	SUM	Product ID		
Abc	GROUP	Product ID and Region		
#	SUM	Product ID-1		
#	SUM	Profit Margin by Product		
Abc	GROUP	Region		
Abc	GROUP	Region-1		
#	SUM	Sales		
#	SUM	Sales Order #		
Abc	GROUP	Salesperson		
#	SUM	Salesperson #		
# #	SUM	Shipping by Sales Order		
	SUM	Shipping Costs State		
Abc	GROUP GROUP			
Abc #	SUM	Title Unit Manufacturing Cost		
#	SUM	Unit Manufacturing Cost Unit Selling Price		
#	SUM	Units Sold		
#				
#	SUM	Number of Rows (Aggregated)		

The decimal places in the "Shipping by Sales Order" field are not uniform.

Aggregated Fields		
# SUM	# SUM	# SUM
Shipping by Sales Order 6	Sales 6	Units Sold 6
87,710.63999999996	985,560	43,200
117,878.3999999997	1,317,384	57,924
120,158.04	1,349,352	59,136
156,215.9999999968	1,733,088	76,680
246,882.3599999989	2,748,540	121,236
287,129.75999999995	3,210,924	141,156

Step 17: Round the Shipping Costs

Add a step "Clean 8" after the step "Aggregate 1".

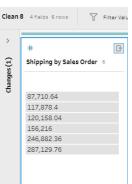
	Σ ——	
Select "Create a Calculated Field"	Aggregate 1	Clean 8
Clean 8 4 fields 6 rows 🛛 🖓 Filter Values 📝 Renam	e Fields Create Calculated Field	d
Add Field		
Field Name		
Calculation1		

Put the result back in the "Shipping Cost" field by naming the field "Shipping Cost".

Edit Field			×
Field Name	Reference		
Shipping by Sales Order	All	•	ABS(number)
<pre>round([Shipping by Sales Order],2)</pre>	₽ Search		Returns the absolute value of the
	< ABS	*	given number.
	ACOS		Example: ABS(-7) = 7
	AND		Example: XEO())
	ASC		
	ACCU		

Type in the formula, Round([Shipping by Sales Order],2) and select "Save".

The data in the "Shipping by Sales Order" field now has two decimal places.



Step 18: Export Report to Excel

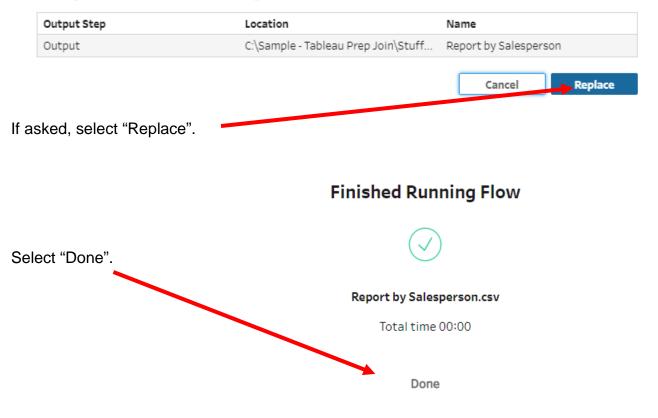
Add a step "Output" after the step "Cle	ean 8".	Ē		ŀĐ	\triangleright
		Clean 8		Output	
Select the step "Output".	\triangleright		 + Add Step ∑ Add Aggreg □□ Add Pivot ∞ Add Join 금→ Add Union ☞ Add Output 		
		Output 2 Fields			
Select the "Output type" drop down.		Save output to file Save to file Publish as a data source Browse Name			
		Output			
		Location C:\\Datasources			
		Output type Tableau Data Extract (.tde)	Ţ	/	
Select the Microsoft Excel (.xlsx) file type.	Output type Tableau Da	: ta Extract (.hyper)	¥		
	Microsoft	ata Extract (.hyper) : Excel (.xlsx) eparated Values (.csv)			
Type the name of the worksheet, Rep	Workshe	et	¥		
by Salesperson.	P Re	port by Salesperson e new worksheet "Report b	× y Salespe		
Select "Create new worksheet "Repor by Salesperson".	_				

Select the "Full refresh" drop down	n.	Write Option Select an option Full refresh Append to t	to create or update your ou	utput table.	
Select "Replace data".	Append to tab Add data to th Replace data	ole ne existing tab			when the flow is first run. ted when the flow is first run.
"Save output to" should be "File".	-	-	Save output to		•
Select "Browse" button.			Browse		
📅 Save Extract As				×	
← → · · ↑ 📕 « Local Disk (C:) > Sample - Tableau Pre	p Join	v ت	🔎 Search Samp	ole - Tableau Pre	
Organize - New folder					
Downloads	^ Name		^	Date modified	
Music	Stu	ffed Animals.Jo	in.Demo.xlsx	5/29/2022 10:58	
Pictures					
Videos	d - 1				
Ucal Disk (C:)	~ <			>	
File name: Stuffed Animals.Join.Demo.xlsx				\sim	
Save as type, Excel Files (*.xls;*.xlsx;*.xlsm)				~	
▲ Hide Folgers			Accept	Cancel	
Select the location for the file, spe	cify the f	ile nam	e and select	"Accept".	
	n Save As Stuffed Anin Do you want	nals.Join.Dem t to replace it	o.xlsx already exists.		
Confirm.			Yes	No	
		/			

Save output to	Save t	to St	uffed Animals.Join.Demo.xlsx			
	. 8	Fron	n: Flow		То: 1	Table
Name Stuffed Animals.Join.Demo	Ţ	/pe	Field Name		Туре	Field Name
		#	Shipping by Sales Order	\rightarrow	#	Shipping by Sales Order
Location		#	Sales	\rightarrow	#	Sales
C:\Sample - Tableau Prep Join		Abc	Salesperson	\rightarrow	Abc	Salesperson
		#	Units Sold	\rightarrow	#	Units Sold
Output type Microsoft Excel (.xlsx)	-					
Worksheet						
Report by Salesperson	w.					
Write Options						
Select an option to create or update your output table.	Jt					
un Flow".						
Replace data						

Outputs with the same names already exist. Do you want to replace them?

Running the flow will replace these existing outputs with new outputs.



Open the *Stuffed Animals.Join.Demo.xlsx* file and select the Report by Salesperson sheet.

	А	В	С	D	E
1	Shipping by Sale	Sales	Salesperso	Units Sold	
2	117878.4	1317384	Ulysses Gr	57924	
3	246882.36	2748540	James Mor	121236	
4	120158.04	1349352	James Mad	59136	
5	87710.64	985560	James Polk	43200	
6	287129.76	3210924	Thomas Je	141156	
7	156216	1733088	Grover Cle	76680	
8					
9					
10					
•	⊢	ort by Salesper	son (-	9 : 🖪	

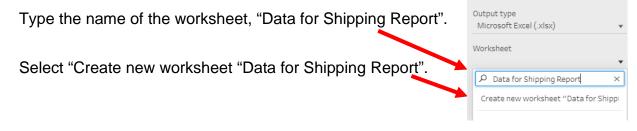
Make any format changes and change the name of the tab so that it will not be automatically overwritten by Tableau.

	А	В		C		D	E
		-		C .		0	L
1	Salesperson	Units Sold		Sales	Sh	ipping Costs	
2	Ulysses Grant	57,924	\$	1,317,384.00	\$	117,878.40	
3	James Monroe	121,236	\$	2,748,540.00	\$	246,882.36	
4	James Madison	59,136	\$	1,349,352.00	\$	120,158.04	
5	James Polk	43,200	\$	985,560.00	\$	87,710.64	
6	Thomas Jefferson	141,156	\$	3,210,924.00	\$	287,129.76	
7	Grover Cleveland	76,680	\$	1,733,088.00	\$	156,216.00	
8	Total	499,332	\$	11,344,848.00	\$1	L,015,975.20	
9							
10							
	Format	ed Report by	/ Sa	lesperson (Ð	± •	

Save and close the Excel file and return to Tableau.

Step 19: Create a Shipping Cost report by Salesperson by Region.

It is going to be much easier to create the report in Excel since all the data has already been transformed.	e "Commission by Salesperson by Region"
Add a step "Output 2" after the step "Clean 7".	Join 3 Clean 7 Aggregate 1
Select the step "Output 2"	
	Output 2 Fields
Select the "Output type" drop down.	Save output to file Save to file Publish as a data source Browse Name Output Location C:\\Datasources
	Output type Tableau Data Extract (.tde)
Select the Microsoft Excel (.xlsx) file type.	Output type Tableau Data Extract (.hyper) Tableau Data Extract (.hyper) Microsoft Excel (.xlsx) Comma Separated Values (.csv)



Select the "Full refresh" drop dow	n.	Write Optic Select an opti Full refresh Append to	on to create or update your	output table.
Select "Replace data".	Append to tab Add data to th Replace data	ole ne existing t		n't exist, it's created when the flow is first run. pesn't exist, it's created when the flow is first run
"Save output to" should be "File".		-	Save output to	•
Select "Browse" button.			Browse	
🔀 Save Extract As				×
← → ∨ ↑ 📜 « Local Disk (C:) > Sample - Tableau Pre	ep Join	~	່ 🔎 Search San	nple - Tableau Pre
Organize Vew folder				₩= - ?
Downloads	^ Name		^	Date modified
Music		Iffed Animals.	Join.Demo.xlsx	5/29/2022 10:58
Pictures				
Videos 🔮 Local Disk (C:)				
Cocal Disk (C.)	~ <			>
File name: Stuffed AnimalsJoin.Demo.xlsx				~
Save as type. Excel Files (*.xls;*.xlsx;*.xlsm)				~
∧ Hide Folgers			Accept	Cancel
Select the location for the file, spe	cify the f	ile nan	ne and selec	t "Accept".
Confir	m Save As Stuffed Anir Do you wan	nals.Join.Der t to replace	no.xlsx already exists. t?	
Confirm.			Yes	No
		/		

Save output to	Save to St	uffed Animals.Join.Demo.xlsx			
	♀⊟ From	n: Flow	То: Т	able	
Name Stuffed Animals.Join.Demo	Туре	Field Name	Туре	Field Name	Status
	#	Shipping by Sales Order		No table field assigned	No match: Field is ignored.
ocation	#	Sales		No table field assigned	No match: Field is ignored.
C:\Sample - Tableau Prep Join	Abc	Product ID and Region		No table field assigned	No match: Field is ignored
	Abc	Product ID and Region		No table field assigned	No match: Field is ignored
Dutput type	Abc	Region		No table field assigned	No match: Field is ignored
Microsoft Excel (.xlsx) 🔹	#	Shipping Costs		No table field assigned	No match: Field is ignored
Vorksheet	#	Sales Order #		No table field assigned	No match: Field is ignored
Data for Shipping Report 🔹	#	Salesperson #		No table field assigned	No match: Field is ignored
	Abc	Region-1		No table field assigned	No match: Field is ignored
Nrite Options	Abc	State		No table field assigned	No match: Field is ignored
elect an option to create or update your output able.	#	Product #		No table field assigned	No match: Field is ignored
	#	Units Sold		No table field assigned	No match: Field is ignored
ull refresh	#	Product ID-1		No table field assigned	No match: Field is ignored
Replace data 🔹 👻	Abc	Product		No table field assigned	No match: Field is ignored
Run Flow	#	Unit Selling Price		No table field assigned	No match: Field is ignored

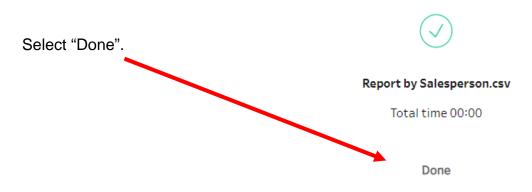
Select "Run Flow".

Outputs with the same names already exist. Do you want to replace them?

Running the flow will replace these existing outputs with new outputs.

Output Step	Location	Name
Output 2	C:\Sample - Tableau Prep Join\Stuff	Data for Shipping Report
		Cancel Replace
f asked, select "Replace"		

Finished Running Flow



Open the *Stuffed Animals.Join.Demo.xlsx* file and select the Data for Shipping Report sheet.

Select a cell, perhaps A1, in the data range on the "Data by Shipping Report".

	А	В	С	D	E	F	G	Н	- I	J	K	L	M
1	Shipping b	Sales	Product II	Product ID	Region	Shipping C	Sales Orde	Salesperso	Region-1	State	Product #	Units Sold	Produc
2	241.2	2880	103.West	103.West	West	2.01	35005	1303	West	WA	103	120	:
3	193.92	1920	101.West	101.West	West	2.02	35006	1302	West	AZ	101	96	1
4	308.88	3432	102.West	102.West	West	1.98	35009	1305	West	CA	102	156	1
5	290.88	2880	101.West	101.West	West	2.02	35011	1305	West	CO	101	144	1
6	169.68	2100	106.Midw	106.Midw	Midwest	2.02	35014	1302	Midwest	IN	106	84	1
7	144.72	1728	103.West	103.West	West	2.01	35017	1305	West	NV	103	72	1
8	167.16	2100	106.North	106.North	Northeast	1.99	35025	1301	Northeast	СТ	106	84	1
9	256.08	3036	105.West	105.West	West	1.94	35026	1306	West	WY	105	132	1
10	256.0		Shipping F	102 Midu	Midwoot	2.14	25027	1201	Midwoot	п	102	100	

Select Insert.	AutoSave 💽 🕅 🖓 🖓 🖓 🕆 🗋 🤜 Stuffed Animals.Join.Demo.xlsx 🔹 👂 Search
Select Pivot table.	Inc Human Insert Page Layout Formulas Data Review View Developer He Image: State of the st
	PivotTables Tables Create PivotTable Create PivotTable ? X
	A1 Choose the data that you want to analyze Select a table or range
	A B Table/Range: Data for Shipping Report: SAS1:SUS5018 1 1 Shipping b Sales P Use an external data source Sta
	2 241.2 2880 1 Choose Connection W/ 3 193.92 1920 1 Choose Connection AZ
	4 308.88 3432 1 Connection name: CA 5 290.88 2880 1 Use this workbook's Data Model CO
	6 169.68 2100 1 Choose where you want the PivotTable report to be placed IN
This will insert a Pivot Table	8 167.16 2100 1 O Existing Worksheet CT
in a new sheet. Pivot tables help summarize the data in	9 256.08 3036 1 Location:
various formats.	Point Add this data to the Data Model
	OK Cancel

Select OK.

Once a Pivot table is inserted, the Pivot Table Fields are displayed.

Drag the fields

- 1. Product to Rows
- 2. Region-1 to Columns and
- 3. Shipping by Sales Order to Values

As indicated in the diagram.

PivotTable Fields	▼ ×
Choose fields to add to report:	@ -
Search	9
✓ Shipping by Sales Order Sales Product ID and Region Product ID and Region Sales Shipping Costs Sales Order # Salesperson # ✓ Region-1 State Product # Units Sold Product ID-1 ✓ Product Drag field between areas below: ▼ Filters	▼ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■
Rows	Σ Values
Product 💌	Sum of Shipping by Sales 🔻
Defer Layout Update	Update

If "Count of Shipping ..." appears instead of the "Sum of Shipping ...", left click on "Count of Shipping ...", select Value Field Setting > Sum > OK.

.....

	А	В	С	D	E	F
1						
2						
3	Sum of Shipping by Sales Order	Column Labels 🔻]			
4	Row Labels	Midwest	Northeast	South	West	Grand Total
5	Stuffed Elephant	47610.72	35625.24	50822.64	63990.36	198048.96
6	Stuffed Giraffe	76744.92	56958.72	80686.08	91095.84	305485.56
7	Stuffed Horse	26032.32	17062.56	25488	31916.88	100499.76
8	Stuffed Lamb	30263.4	19614.24	29877.12	38905.2	118659.96
9	Stuffed Pig	47898.24	30566.4	47361.6	59648.4	185474.64
10	Stuffed Unicorn	25999.68	18458.88	29987.4	33360.36	107806.32
11	Grand Total	254549.28	178286.04	264222.84	318917.04	1015975.2
12						
•	Sheet1 Data for S	hipping Report	(+)			

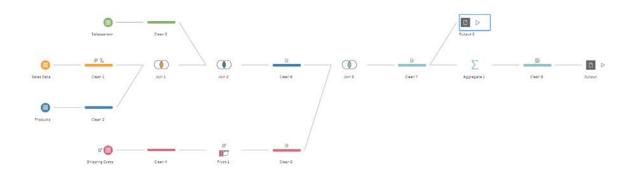
This summarizes the data in the following format:

Right click on cell A3, number format > currency > 2. Rename "Sheet1" to "Shipping Report"

	А	В	С	D	E	F	
° 1							
₅ 2							
3	Sum of Shipping by Sales Ord	er 🛛 Column Labels 🔽]				
4	Row Labels	 Midwest 	Northeast	South	West	Grand Total	
5	Stuffed Elephant	\$47,610.72	\$35,625.24	\$50,822.64	\$63,990.36	\$198,048.96	
6	Stuffed Giraffe	\$76,744.92	\$56,958.72	\$80,686.08	\$91,095.84	\$305,485.56	
7	Stuffed Horse	\$26,032.32	\$17,062.56	\$25,488.00	\$31,916.88	\$100,499.76	
8	Stuffed Lamb	\$30,263.40	\$19,614.24	\$29,877.12	\$38,905.20	\$118,659.96	
9	Stuffed Pig	\$47,898.24	\$30,566.40	\$47,361.60	\$59,648.40	\$185,474.64	
10	Stuffed Unicorn	\$25,999.68	\$18,458.88	\$29,987.40	\$33,360.36	\$107,806.32	
11	Grand Total	\$254,549.28	\$178,286.04	\$264,222.84	\$318,917.04	\$1,015,975.20	
12							
	Shipping Report	Data for Shipping	Report	(+)			

Save and close the Excel file.

Return to the Tableau Prep flow file.



Select File > Save As..

🔯 Save As				×
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Packaged Tableau Flow Files (*.tflx) Hide Folders				Save Cancel
A THUE FOLLERS				

Select the Packaged Tableau Flow Files (*.tflx) which bundles the data file with the flow.

Save Complete	\times
The following files have been saved and packaged with the flow. Only local files are included.	
Stuffed Animals.Join.Demo.xlsx	
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Select OK.

Close Tableau.