Federal Reserve Step-by-Step Guide to using Excel to Identify Gender and Ethnicity (August 2013)

An Excel spreadsheet that contains separate columns for first and last names of borrowers and co-borrowers can be used to determine gender and ethnicity. We will determine the gender and ethnicity of each borrower using the "vlookup" function.

Step 1:

Create loan data with the first and last names of borrowers and co-borrowers stored in separate columns. Be sure that if there is no Co-Borrower the Co-Borrower fields are clear of data.

Below is an Example of the Data

	A	B	C	D	E	F	G	H	I
1	Loan Number	Loan Type	Interest Rate	Borrower First Name	Borrower Last Name	Co-Borrower First Name	Co Borrower Last Name		
2	1	Auto	7	Liam	Smith	Emma	Smith		
3	2	Auto	7	Olivia	Johnson				
4	3	Auto	5.5	Mason	Williams	Emily	Williams		
5	4	Auto	8	Jackson	Jones	Charlotte	Rodriguez		
6	5	Auto	6	Pat	Brown				
7	6	Auto	7	Benjamin	Davis	Abigail	Davis		
8	7	Auto	7.5	Chloe	Miller				
9	8	Auto	6	James	Wilson	Lily	Wilson		
10	9	Auto	6	Alexander	Taylor	Avery	Taylor		
11	10	Auto	8	Harper	Anderson				
12	11	Auto	6	Daniel	Thomas	Sofia	Thomas		
13	12	Auto	5.5	Henry	Jackson				

Step 2:

Store the sex and ethnicity lookups in another tab in the Excel workbook so that they are easily accessible.

vlookup how-to.xlsx

	A	B	C	D	E
1	Name	Sex		Name	Ethnicity
2	ABBEY	FEMALE		Abeyta	Hispanic
3	ABBIE	FEMALE		Abrego	Hispanic
4	ABBY	FEMALE		Abreu	Hispanic
5	ABIGAIL	FEMALE		Acevedo	Hispanic
6	ADA	FEMALE		Acosta	Hispanic
7	ADAH	FEMALE		Acuna	Hispanic
8	ADALINE	FEMALE		Adame	Hispanic
9	ADDIE	FEMALE		Adame	Hispanic

Lookups | Loan Data

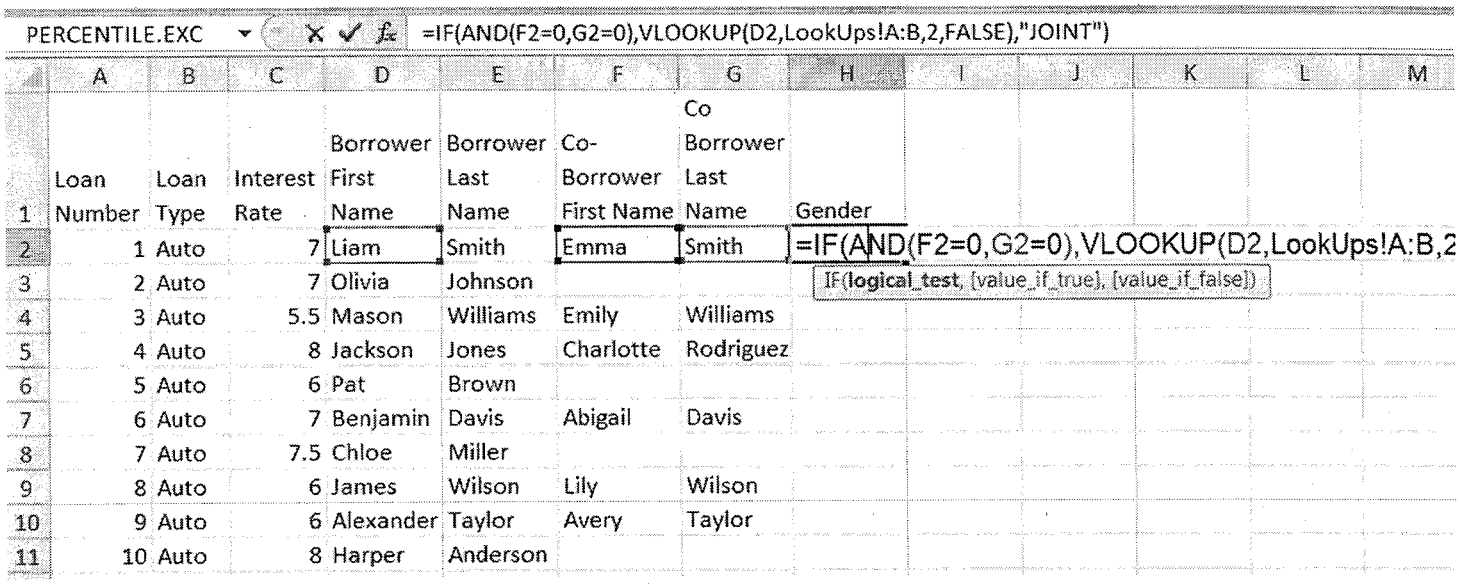
Step 3:

Type and copy the following formula into a new column of the loan data tab to determine gender/joint status. The columns may need to be adjusted. In the formula below F2 = the Co-Borrower's First Name, G2 = the Co-Borrower's Last Name, D2 = the Borrower's First Name

=IF(AND(F2=0,G2=0),VLOOKUP(D2,Lookups!A:B,2,FALSE),"JOINT")

Explanation:

This formula is saying, "If the co-borrower first name **and** co-borrower last name are blank, assume that the loan is **not** to joint borrowers, and then look up the sex associated with the borrower's first name, and say it here. Otherwise, the text contained in the co-borrower's first **and/or** last name cells means that the loan has a co-borrower and the cell should indicate that the sex is "Joint." The screenshot below shows how the formula refers to cells in the loan data table.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Loan Number	Loan Type	Interest Rate	Borrower First Name	Borrower Last Name	Co-Borrower First Name	Co Borrower Last Name	Gender					
2	1	Auto	7	Liam	Smith	Emma	Smith	=IF(AND(F2=0,G2=0),VLOOKUP(D2,LookUps!A:B,2					
3	2	Auto	7	Olivia	Johnson								
4	3	Auto	5.5	Mason	Williams	Emily	Williams						
5	4	Auto	8	Jackson	Jones	Charlotte	Rodriguez						
6	5	Auto	6	Pat	Brown								
7	6	Auto	7	Benjamin	Davis	Abigail	Davis						
8	7	Auto	7.5	Chloe	Miller								
9	8	Auto	6	James	Wilson	Lily	Wilson						
10	9	Auto	6	Alexander	Taylor	Avery	Taylor						
11	10	Auto	8	Harper	Anderson								

F2 and **G2** are the co-borrower's first and last names. If there are no names stored in either cell (F2=0 AND G2=0), the vlookup function is used. If either cell does contain a name, the vlookup function is skipped because it is assumed that there is a co-borrower and the formula returns "Joint."

D2 is the borrower's first name. If the formula determines that there is no co-borrower, the name here will be looked up in the list stored in the "Lookups" tab. If it is included on the list, the formula will return the corresponding "Male" or "Female" value. Some names, such as "Jean," are common among both males and females and will appear as "Unknown." Other names are not common enough to appear on the list and in these cases, the formula returns an error because the sex of the borrower cannot be determined.

Lookups!A:B refers to the tab and columns within which the list of names is stored. The number **2** specifies that the value we want returned by the formula ("Male", "Female" or "Unknown") is in the second column from the left in range of columns specified. **FALSE** instructs the formula to find only exact matches, not approximate matches.

Step 4:

Type and copy the following formula into a new column of the loan data tab to determine whether the borrower is Hispanic. The columns may need to be adjusted. In the formula below G2 = the Co-Borrower's Last Name and E2 = the Borrower's Last Name

=IF(AND(ISERROR(VLOOKUP(G2,Lookups!D:E,2,FALSE)),ISERROR(VLOOKUP(E2,Lookups!D:E,2,FALSE))),"Not Hispanic","Hispanic")

Explanation:

This is similar to the formula used to determine the gender of the borrower. If either the borrower's or the co-borrower's last name is found on the list, the formula calls the borrower(s) "Hispanic." To make the formula simpler, we tell it to identify all loans with surnames that are not on the surname list as "Not Hispanic" and everything else as "Hispanic." This way loans where the borrower's **and/or** co-borrower's last name is on the list are correctly identified as Hispanic.

This formula is saying, "if **both** last names are **not** on the list of Hispanic last names, say 'Not Hispanic.' In all other cases, say 'Hispanic.'" The vlookup functions refer to the list of Hispanic names stored in columns D and E in our lookup tab.

D	E	F	G	H	I	J	K	L	M	N	O	P
Borrower First Name	Borrower Last Name	Co-Borrower First Name	Co Borrower Last Name	Gender	Ethnicity							
Liam	Smith	Emma	Smith	JOINT	=IF(AND(ISERROR(VLOOKUP(G2,LookUps!D:E,2,FALSE)),							
Olivia	Johnson				ISERROR(VLOOKUP(E2,LookUps!D:E,2,FALSE))),"Not Hispanic",							
Mason	Williams	Emily	Williams		"Hispanic")							
Jackson	Jones	Charlotte	Rodriguez									
Pat	Brown				IF(logical_test, [value_if_true], [value_if_false])							
Benjamin	Davis	Abigail	Davis									
Chloe	Miller											
James	Wilson	Lily	Wilson									
Alexander	Taylor	Avery	Taylor									

If a name is not on the list, the vlookup function returns an error. If both the borrower and co-borrower's last names return errors, both names are not on the list and so the formula returns a value of "Not Hispanic." If both last names do not return errors, at least one name is on the list and the formula returns a value of "Hispanic." Copy the formula into the remaining rows.

FRB Example: Hypothetical Loan Data with LookUps and Formulas
(August 2013)

Loan Number	Loan Type	Interest Rate	Borrower First Name	Borrower Last Name	Co-Borrower First Name	Co Borrower Last Name	Gender	Ethnicity
1	Auto	7	Liam	Smith	Emma	Smith	JOINT	Not Hispanic
2	Auto	7	Olivia	Johnson			FEMALE	Not Hispanic
3	Auto	5.5	Mason	Williams	Emily	Williams	JOINT	Not Hispanic
4	Auto	8	Jackson	Jones	Charlotte	Rodriguez	JOINT	Hispanic
5	Auto	6	Pat	Brown			UNKNOV	Not Hispanic
6	Auto	7	Benjamin	Davis	Abigail	Davis	JOINT	Not Hispanic
7	Auto	7.5	Chloe	Miller			FEMALE	Not Hispanic
8	Auto	6	James	Wilson	Lily	Wilson	JOINT	Not Hispanic
9	Auto	6	Alexander	Taylor	Avery	Taylor	JOINT	Not Hispanic
10	Auto	8	Harper	Anderson			#N/A	Not Hispanic
11	Auto	6	Daniel	Thomas	Sofia	Thomas	JOINT	Not Hispanic
12	Auto	5.5	Henry	Jackson			MALE	Not Hispanic
13	Auto	7	Ryan	White	Evelyn	Clark	JOINT	Not Hispanic
14	Auto	8	Owen	Harris	Zoey	Harris	JOINT	Not Hispanic
15	Auto	8	Dylan	Martin			MALE	Not Hispanic
16	Auto	6	Conner	Thompson	Anna	Thompsor	JOINT	Not Hispanic
17	Auto	6	Max	Garcia	Natalie	Garcia	JOINT	Hispanic
18	Auto	8	Ellie	Marinez			FEMALE	Hispanic
19	Auto	5.5	Hunter	Robison	Claire	Robison	JOINT	Not Hispanic