

Open Refine

For efficient data cleaning

Step 1

Open the Orders.csv text file using a text editor and take a look. Does everything make sense? Are there going to be any special formatting issues? What else do you see?

Okay now open the file in Google Sheets.

Step 2

Let's use the skills we learned in Derek's Evaluating Data lecture to assess this data. What problems do you observe?

Step 3

Clearly we need to standardize some of the fields.

- Names
- Addresses
- Cities

Example:

ABRON CHARLES	317 W 101ST PL
ABRON CHARLES	317 W 101ST PLACE

Step 4

Go to the applications folder and click Open Refine to open. This should automatically launch a browser window. If it doesn't you can go here: <http://127.0.0.1:3333/>

(Refine can sometimes be a bit buggy.)

Step 5

Import the Orders.csv dataset.

 A power tool for working with messy data.

Create Project Open Project Import Project Language Settings

Create a project by importing data. What kinds of data files can I import?
TSV, CSV, *SV, Excel (.xls and .xlsx), JSON, XML, RDF as XML, and Google Data documents are all supported extensions.

Get data from

This Computer Choose Files No file chosen

Web Addresses (URLs) Next »

Clipboard

Google Data

Step 6

Once uploaded, you should see a preview. Check it out:
Does it look right?

Note the options in the lower right-hand corner of the screen.
Has Open Refine selected the right ones?

Step 6



A power tool for working with messy data.

Create Project

Open Project

Import Project

Language Settings

Configure Parsing Options									Project name	Orders.csv	Create Project »
	NAME	STREET	CITY	STATE	ZIP	DOB	ORD_DAT	DEBT	NUM_KIDS		
1.	ABAY MAXIMO	6226 W 64TH PLACE	CHICAGO	IL	60638	09/08/57 00:00:00	05/24/93 00:00:00	3877	1		
2.	ABBED JIMMY	509 RICHLAND	MAHOMET	IL	61853	04/02/48 00:00:00	07/01/92 00:00:00	20959.61	2		
3.	ABBOTT STUART	110 WATHAN RD	HARRISBURG	IL	62946	06/04/60 00:00:00	09/08/92 00:00:00	405	1		
4.	ABDULLAH FREDNANDO	1010 GARDNER	JOLIET	IL	60433	03/19/49 00:00:00	11/10/92 00:00:00	20	3		
5.	ABRAMS JAMES	7607 S VERNON	CHICAGO	IL	60619	05/24/29 00:00:00	11/19/92 00:00:00	14538.61	1		
6.	ABRAMS TOMMY	8705 BELLEVILLE	EAST ST LOUIS	IL	62204	07/17/65 00:00:00	08/10/92 00:00:00	4725	1		
7.	ABREU DILAN	2633 W HADDON 2ND FLR	CHICAGO	IL	60622	05/07/59 00:00:00	12/21/92 00:00:00	1615	1		
8.	ABRON CHARLES	317 W 101ST PL	CHICAGO	IL	60628	06/24/54 00:00:00	06/01/92 00:00:00	7350	1		
9.	ABRON CHARLES	317 W 101ST PLACE	CHICAGO	IL	60628	06/26/54 00:00:00	05/12/92 00:00:00	1812	1		
10.	ABSTON RONALD	660 W DIVISION #808	CHICAGO	IL	60610	04/16/54 00:00:00	07/15/92 00:00:00	1457.04	1		
11.	ACEVEDO SERAFIN	2702 N LAMON	CHICAGO	IL	60630	07/29/65 00:00:00	12/29/92 00:00:00	970.5599999999999	2		
12.	ACKERMAN RAYMOND	13837 S HALSTED	RIVERDALE	IL	60627	07/05/46 00:00:00	01/05/93 00:00:00	90	1		
13.	ACOFF DWIGHT	6149 S ST LARWARNCE	CHICAGO	IL	60637	01/25/58 00:00:00	11/10/92 00:00:00	20969.11	3		
14.	ADAMS JR JERRY	917 GLEN FOREST DR 14	MACHESNEY PARK	IL	61115	12/31/69 00:00:00	08/12/92 00:00:00	323	2		
15.	ADAMS ANDY	6935 WASHTENAW	CHGO	IL	60629	01/16/58 00:00:00	09/28/92 00:00:00	14115.37	1		
16.	ADAMS DWAIN	7545 S WABASH	CHICAGO	IL	60619	08/13/58 00:00:00	10/22/92 00:00:00	14297	1		
17.	ADAMS DWAYNE	5633 N. KENMORE	CHICAGO	IL	60660	08/24/63 00:00:00	12/09/92 00:00:00	2150	1		
18.	ADAMS FRED	5628 S HOYNE AVE	CHICAGO	IL	60636	08/28/53 00:00:00	01/30/90 00:00:00	2068.5	2		
19.	ADAMS GLENN	3628 MARKET	ALORTON	IL	62207	09/09/65 00:00:00	09/03/92 00:00:00	2160	1		
20.	ADAMS JESSIE	1940 GLNW RD #611	CHG HTS	IL	60411	09/19/50 00:00:00	02/25/93 00:00:00	268.87	5		

Parse data as

Character encoding

Update Preview

CSV / TSV / separator-based files

Columns are separated by

commas (CSV)

tabs (TSV)

custom ,

Escape special characters with \

Ignore first 0 line(s) at beginning of file

Parse next 1 line(s) as column headers

Discard initial 0 row(s) of data

Load at most 0 row(s) of data

Parse cell text into numbers, dates, ...

Quotation marks are Store blank rows

Store blank cells as nulls

Store file

Line-based text files

Fixed-width field text files

PC-Axis text files

JSON files

RDF/N3 files

XML files

Open Document Format spreadsheets (.ods)

RDF/XML files



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Help
About

Step 7

If everything looks right, click ‘Create Project’ in the upper right corner to continue.

Step 8

Open Refine relies on things called ‘facets’ to help us clean up data.

Click on the triangle next to the column header ‘CITY’ and select ‘Text Facet’ from the dropdown menu.

The screenshot shows the Open Refine interface with a table of data. The columns are labeled CITY, STATE, ZIP, DOB, and O. The 'CITY' column has a dropdown arrow icon. A context menu is open at this location, listing several options: Facet, Text filter, Edit cells, Edit column, Transpose, Sort..., View, and Reconcile. The 'Facet' option is currently selected. A submenu is displayed under 'Facet', containing: Text facet, Numeric facet, Timeline facet, Scatterplot facet, Custom text facet..., Custom Numeric Facet..., and Customized facets. The 'Text facet' option is highlighted with a blue selection bar. The main table data includes rows for CHICAGO, IL, 60628, 06/26/54 00:00:00, 05/12; 60610, 04/16/54 00:00:00, 07/15; and 60639, 07/29/65 00:00:00, 12/29.

CITY	STATE	ZIP	DOB	O
CHICAGO	IL	60628	06/26/54 00:00:00	05/12
		60610	04/16/54 00:00:00	07/15
		60639	07/29/65 00:00:00	12/29

Step 9

A ‘facet box’ will appear on the left side of your workspace. Click the cluster button to use one of Refine’s most powerful features.

The screenshot shows a 'Facet / Filter' interface. At the top, there are buttons for 'Facet / Filter' (highlighted in blue), 'Undo / Redo' (with a count of 25), 'Refresh', 'Reset All', and 'Remove All'. Below this is a section titled 'CITY' with a 'change' link. It displays '549 choices' and 'Sort by: name count'. A 'Cluster' button is also present. The main area lists cities with their counts: ABINGDON (4), ADDIEVLE (1), ADDISON (8), ALBANY (1), ALEDO (1), ALGONQUIN (1), ALMA (1), ALORTON (3), ALSIP (1), ALTON (19), ALTONA (1), and ANDALUSIA (1). The entire interface has a light blue background.

City	Count
ABINGDON	4
ADDIEVLE	1
ADDISON	8
ALBANY	1
ALEDO	1
ALGONQUIN	1
ALMA	1
ALORTON	3
ALSIP	1
ALTON	19
ALTONA	1
ANDALUSIA	1

Step 10

Clustering involves using different characteristics of words to group likely identical ones together. Some clustering techniques rely on having letters in common. Others group together words that sound alike even if they are spelled differently. Each method has strengths and weaknesses, so it's useful to try more than one.

Step 10

The default clustering method doesn't get us that many matches.

Cluster & Edit column "CITY"

This feature helps you find groups of different cell values that might be alternative representations of the same thing. For example, the terms "New York" and "Newyork" are very likely to refer to the same concept and just have capitalization differences, and "Gödel" and "Godel" probably refer to the same person.

Method key collision

Keying Function fingerprint

Cluster Size	Row Count	Values in Cluster	Merge?	New Cell Value
2	12	<ul style="list-style-type: none">PARK FOREST (10 rows)FOREST PARK (2 rows)	<input type="checkbox"/>	PARK FOREST

Step 10

Is this a match we want? Hard to say. If you hover, you get the option to ‘Browse this Cluster’. Click that. A new window will pop open showing just the rows that would be included in that potential cluster.

In this case we can see that the two cities have different zip-codes. They’re probably not actually a match.

Close the additional window to return to the complete data.

Step 11

Let's click 'Cluster' again, and try a different clustering method:

Cluster & Edit column "CITY"

This feature helps you find groups of different cell values that might be alternative representations of the same thing. For example, "New York" and "new york" are very likely to refer to the same concept and just have capitalization differences, and "Gödel" and "Godel" probably...

Method key collision 

Keying Function metaphone3 

Cluster Size	Row Count	Values in Cluster	Merge?	New Cell Value
4	67	<ul style="list-style-type: none">CHGO (64 rows)CHGO #208 (1 rows)CHICAO (1 rows)CHOKIA (1 rows)	<input type="checkbox"/>	CHGO

Step 12

Browse the suggested clusters. Some will look good. Some won't. If you see one that makes sense, check the 'merge' checkbox. Then make sure the 'New cell value' is appropriate. If not, you can edit it.

When you're finished with a cluster, or clusters, you can click 'Merge selected and re-cluster' or 'Merge selected and close.'

It's a good idea to work your way through the different clustering options.

Step 13

Refine also has some other useful functions you can explore.

- Splitting cells
- Trimming white space
- Changing field data types.