Dataproofer

Spell check for data

Spell check identifies potential spelling errors.

Dataproofer identifies potential data errors.

Primary Use Case

Quick check of data quality
immediately following data collection

Strengths

- Fast, automated quality checks
- Cross-platform (Window, OS X, Linux)
- Supports XLSX, XLS, TSV, CSV, PSV, and Google Spreadsheets
- Customizable checks

Weaknesses

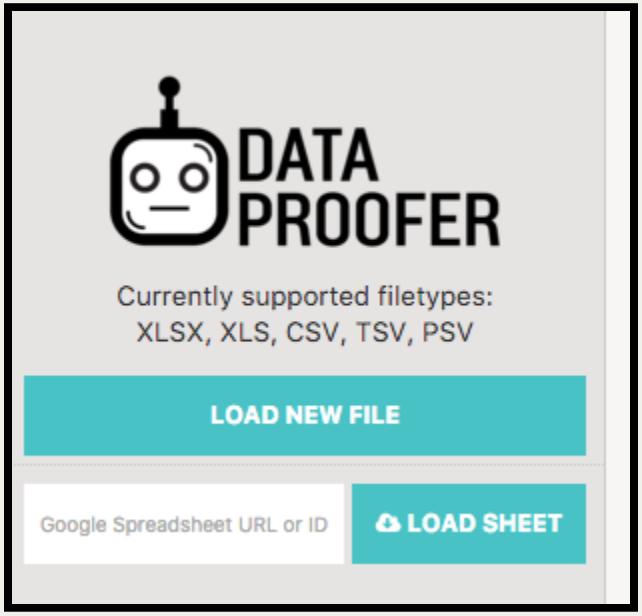
- Creating custom checks requires some programming experience
- Not for editing
- Does not like large data (> 500 KB)
- Does not support statistical software data formats

Using Dataproofer

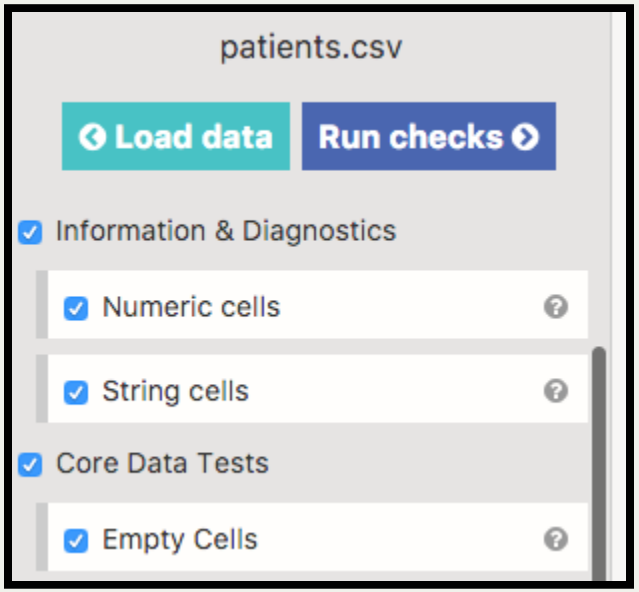
Install Dataproofer

dataproofer.org

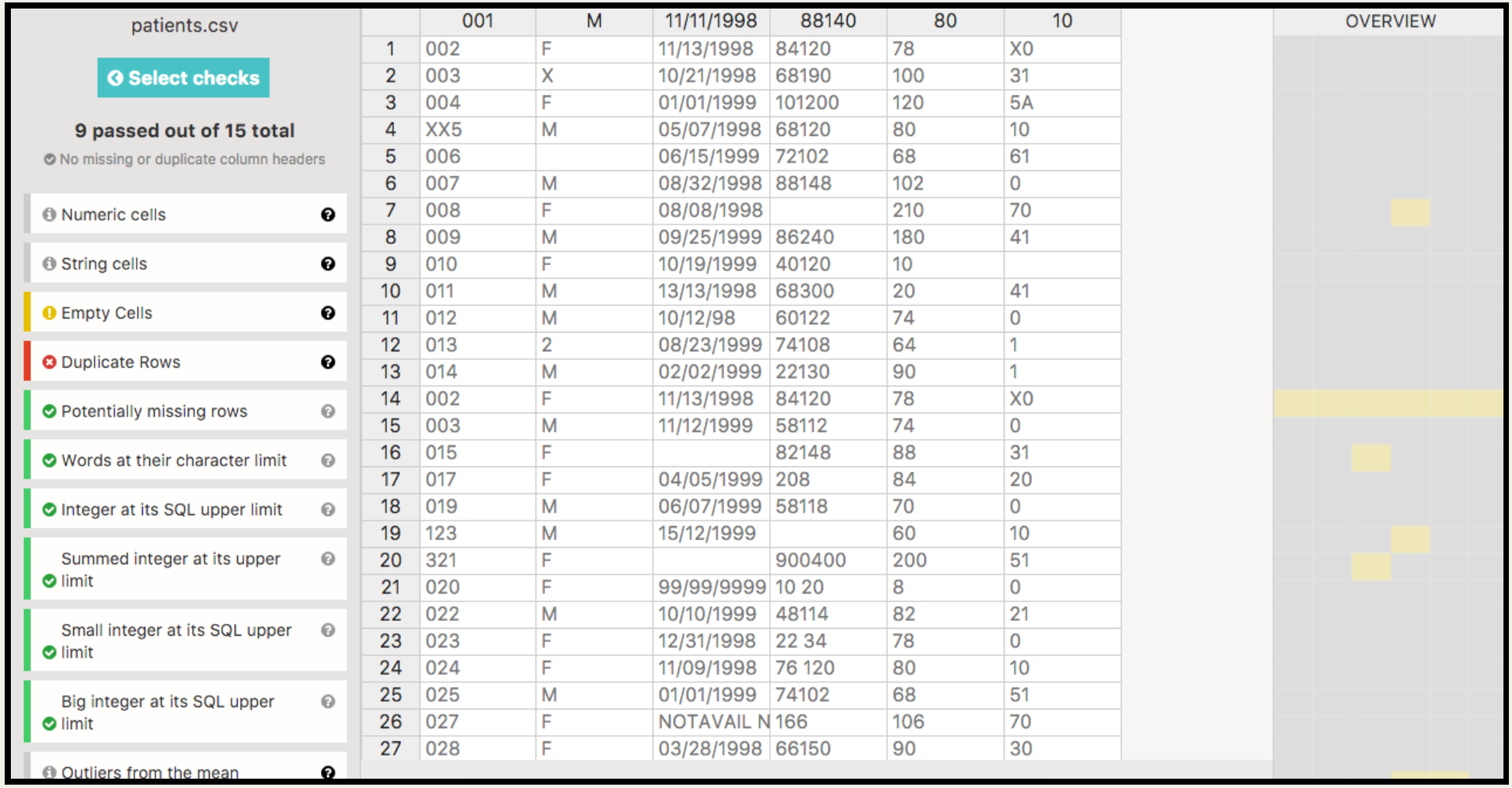
Load Raw Data



Run Default Checks



Review Results



patients.csv

Select checks

9 passed out of 15 total

No missing or duplicate column headers

- Numeric cells
- String cells
- Empty Cells
- Duplicate Rows
- Potentially missing rows
- Words at their character limit
- Integer at its SQL upper limit
- Summed integer at its upper limit
- Small integer at its SQL upper limit
- Big integer at its SQL upper limit
- Outliers from the mean

	001	M	11/11/1998	88140	80	10
1	002	F	11/13/1998	84120	78	X0
2	003	X	10/21/1998	68190	100	31
3	004	F	01/01/1999	101200	120	5A
4	XX5	M	05/07/1998	68120	80	10
5	006		06/15/1999	72102	68	61
6	007	M	08/32/1998	88148	102	0
7	008	F	08/08/1998		210	70
8	009	M	09/25/1999	86240	180	41
9	010	F	10/19/1999	40120	10	
10	011	M	13/13/1998	68300	20	41
11	012	M	10/12/98	60122	74	0
12	013	2	08/23/1999	74108	64	1
13	014	M	02/02/1999	22130	90	1
14	002	F	11/13/1998	84120	78	X0
15	003	M	11/12/1999	58112	74	0
16	015	F		82148	88	31
17	017	F	04/05/1999	208	84	20
18	019	M	06/07/1999	58118	70	0
19	123	M	15/12/1999		60	10
20	321	F		900400	200	51
21	020	F	99/99/9999	10 20	8	0
22	022	M	10/10/1999	48114	82	21
23	023	F	12/31/1998	22 34	78	0
24	024	F	11/09/1998	76 120	80	10
25	025	M	01/01/1999	74102	68	51
26	027	F	NOTAVAIL N	166	106	70
27	028	F	03/28/1998	66150	90	30

OVERVIEW

Demo

patients.csv

Custom Checks

Motivation

Working with survey data, we want to quickly identify the following missing values:

- NA
- N/A
- -99
- -98

Before the Custom Check

field.csv

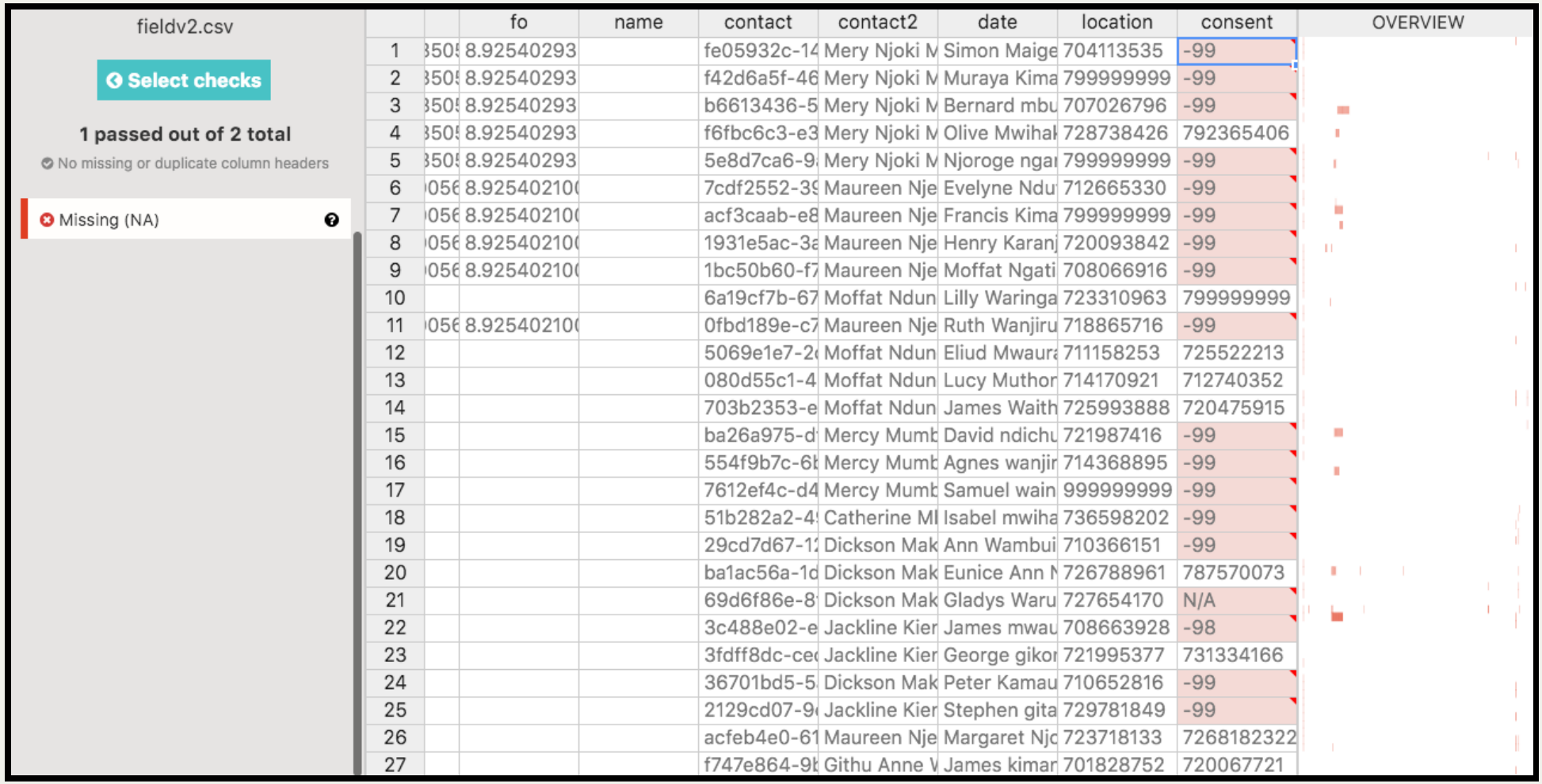
Anatomy of a Custom Check

```
customDataprooferTest.name("Missing (NA)")
    .description("If a cell contains an NA value.")
    .conclusion("Check for any patterns in missing values.")
    .methodology(cellMethod(isMissingCheck))
```

isMissingCheck Function

```
var isMissingCheck = function(cell) {
    if (cell === 'NA' || cell === 'N/A' ||
        cell  == -99  || cell  == -98) {
        return true;
    }
    return false;
}
```

After Custom Check



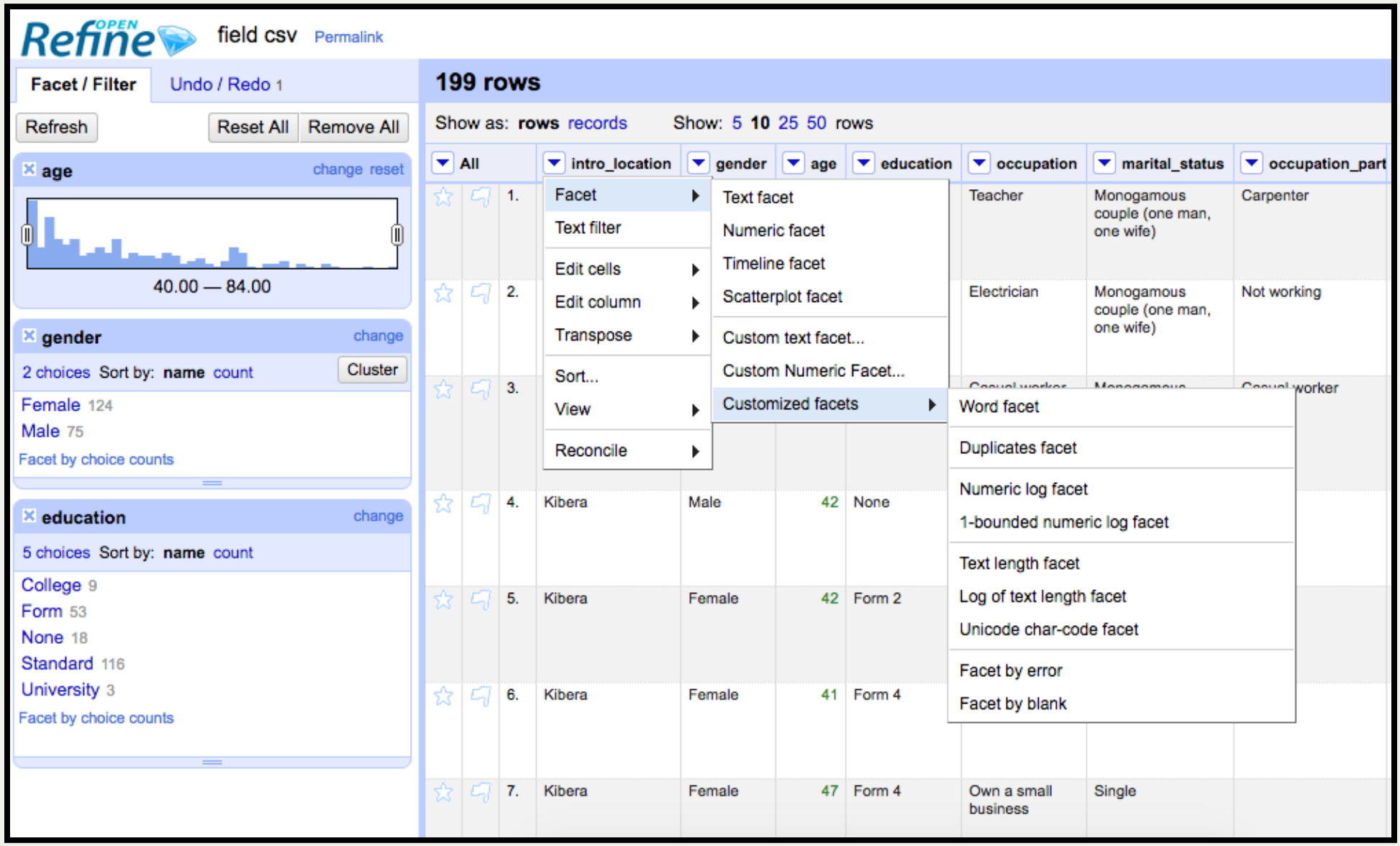
Alternative tools

OpenRefine

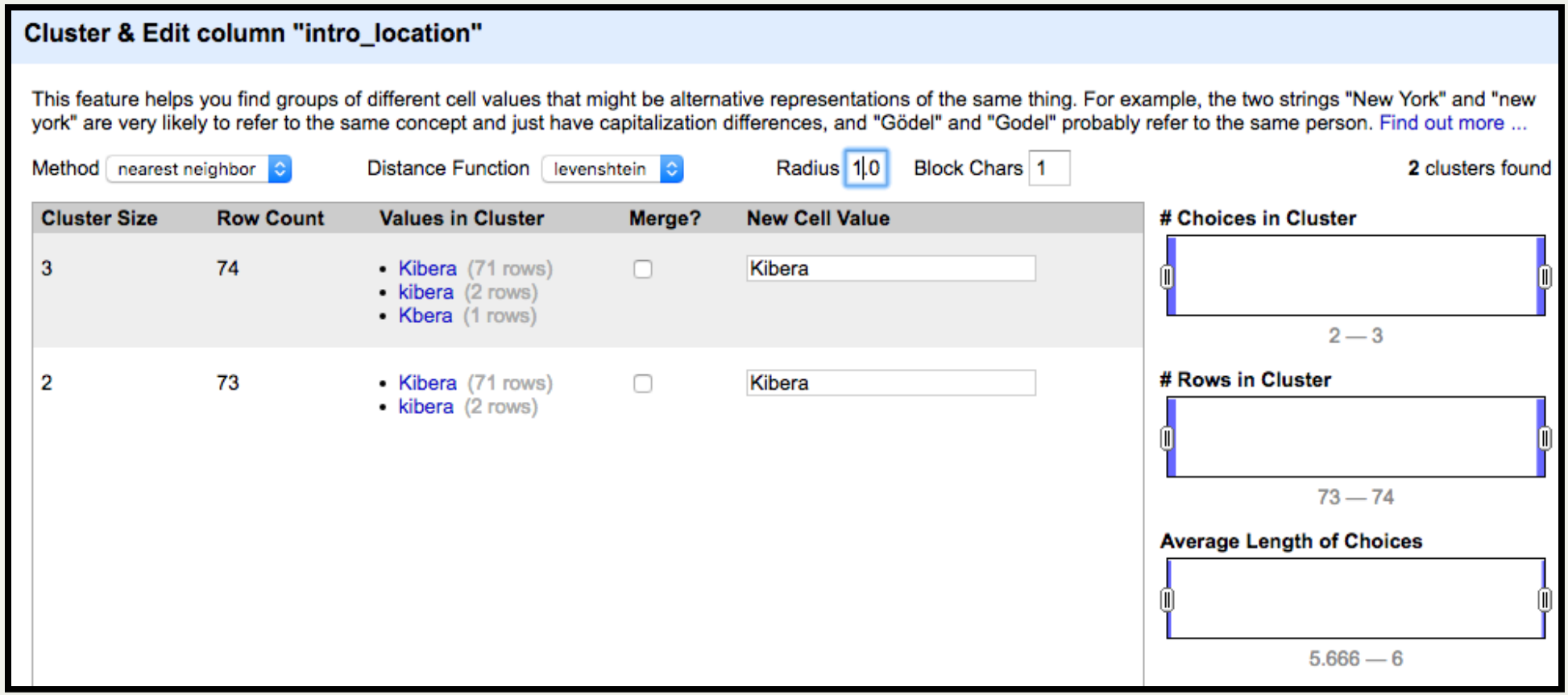
openrefine.org

Formerly Google Refine

OpenRefine Facets



OpenRefine Clusters



OpenRefine: Strengths

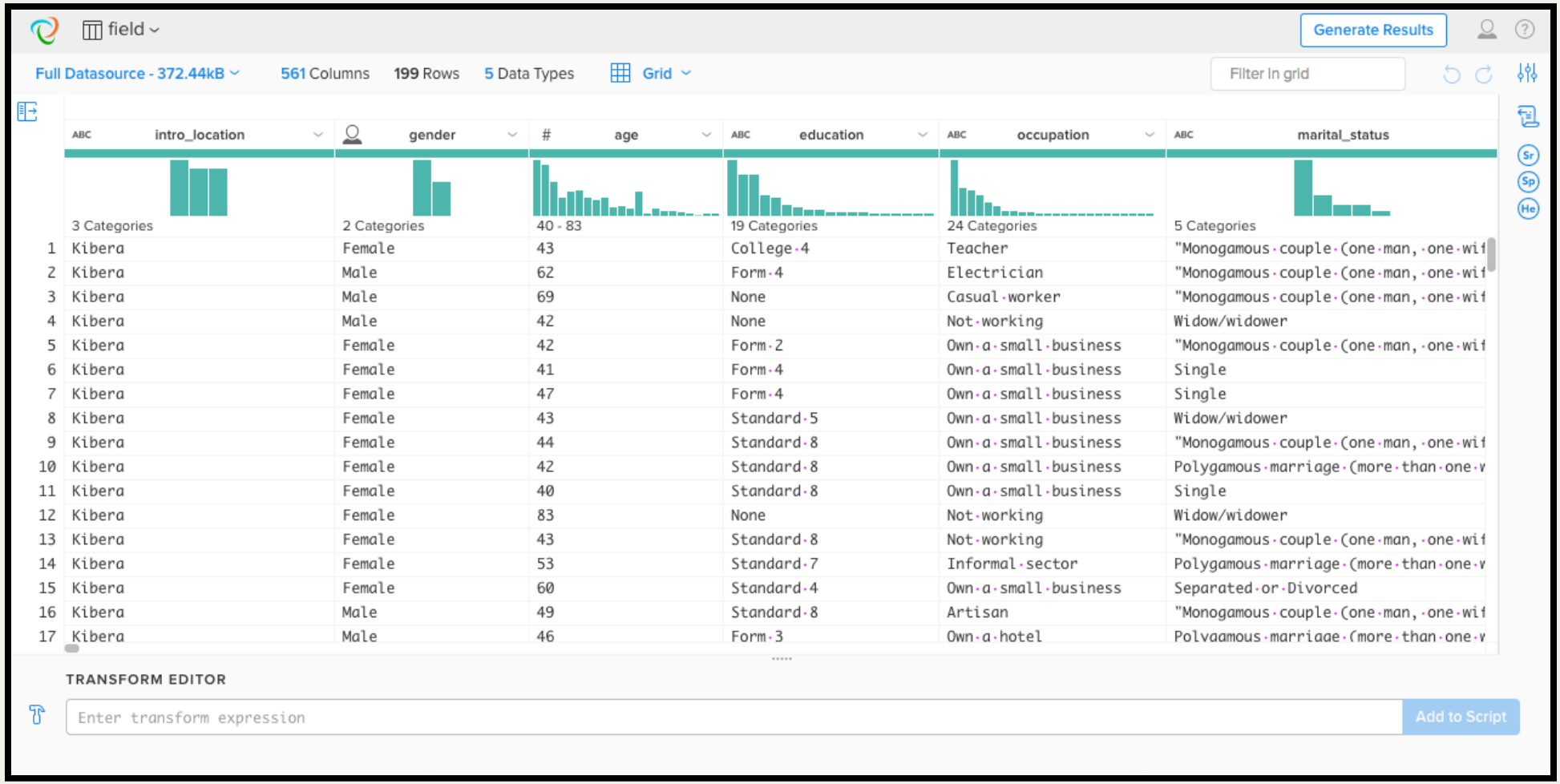
- Open source software
- Extensible
  custom checks/filters can be written in Clojure, Python/Jython, or Refine's own expression language.

Trifacta Wrangler

trifacta.com

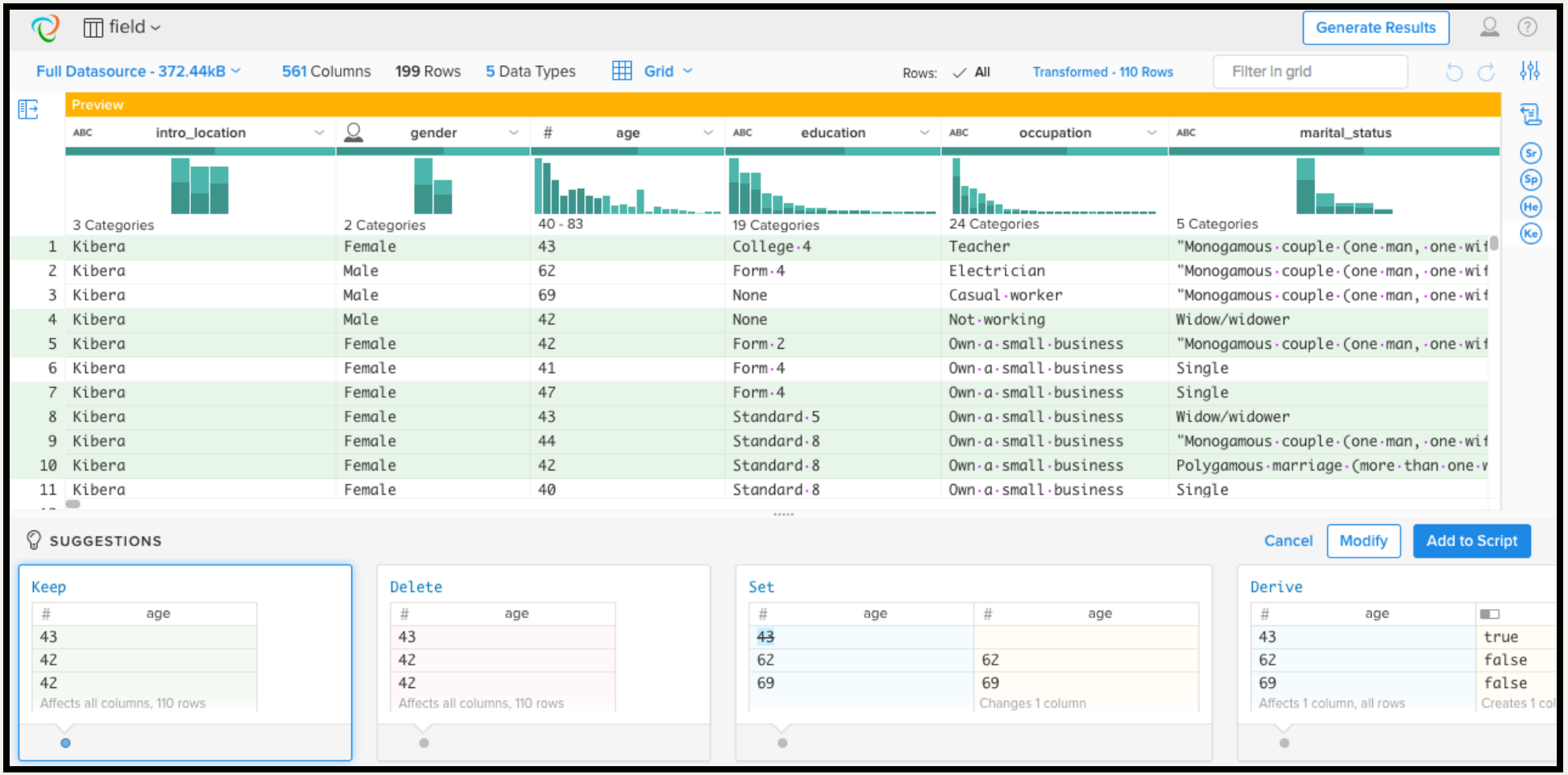
Formerly Stanford Data Wrangler

Trifacta: Overview

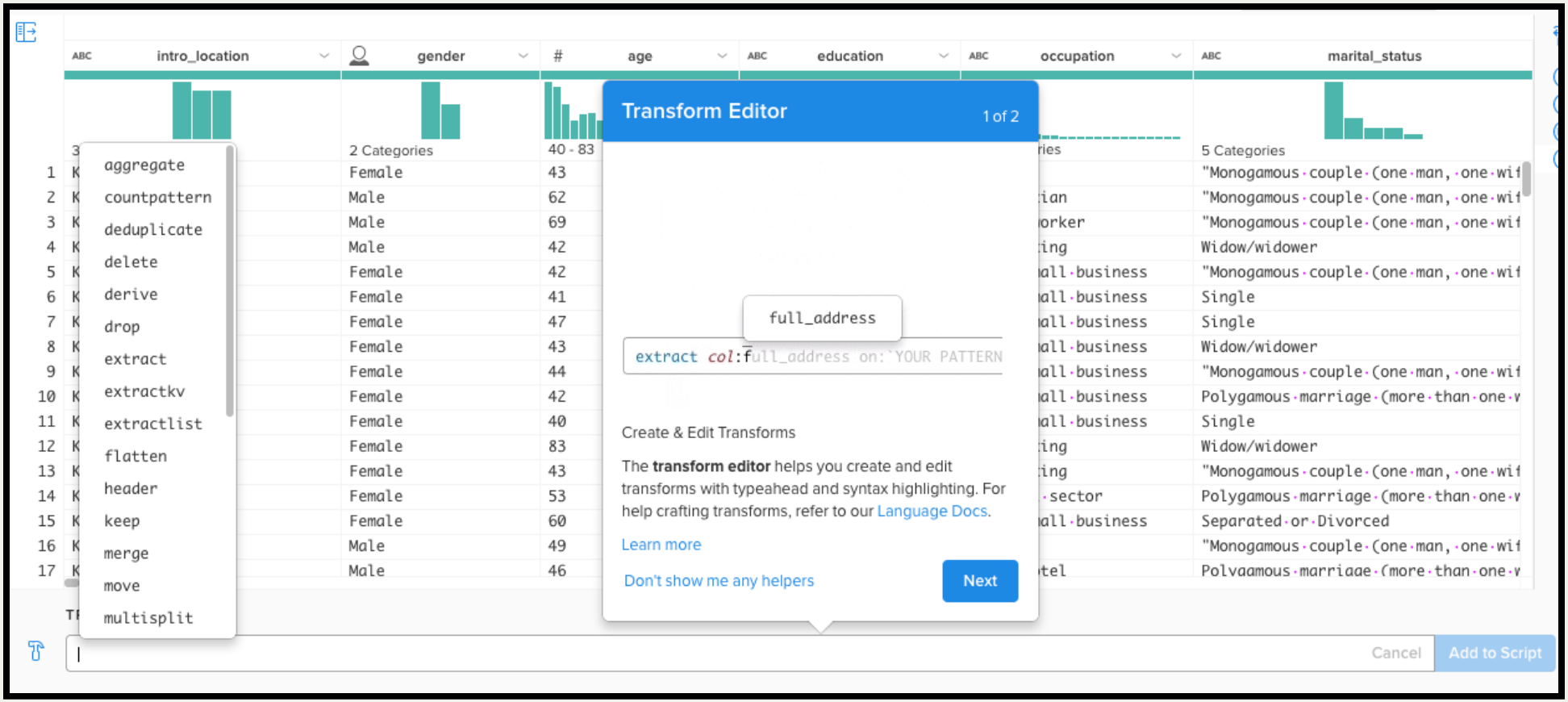


	intro_location	gender	age	education	occupation	marital_status
	3 Categories	2 Categories	40 - 83	19 Categories	24 Categories	5 Categories
1	Kibera	Female	43	College·4	Teacher	"Monogamous·couple·(one·man,·one·wi
2	Kibera	Male	62	Form·4	Electrician	"Monogamous·couple·(one·man,·one·wi
3	Kibera	Male	69	None	Casual·worker	"Monogamous·couple·(one·man,·one·wi
4	Kibera	Male	42	None	Not·working	Widow/widower
5	Kibera	Female	42	Form·2	Own·a·small·business	"Monogamous·couple·(one·man,·one·wi
6	Kibera	Female	41	Form·4	Own·a·small·business	Single
7	Kibera	Female	47	Form·4	Own·a·small·business	Single
8	Kibera	Female	43	Standard·5	Own·a·small·business	Widow/widower
9	Kibera	Female	44	Standard·8	Own·a·small·business	"Monogamous·couple·(one·man,·one·wi
10	Kibera	Female	42	Standard·8	Own·a·small·business	Polygamous·marriage·(more·than·one·w
11	Kibera	Female	40	Standard·8	Own·a·small·business	Single
12	Kibera	Female	83	None	Not·working	Widow/widower
13	Kibera	Female	43	Standard·8	Not·working	"Monogamous·couple·(one·man,·one·wi
14	Kibera	Female	53	Standard·7	Informal·sector	Polygamous·marriage·(more·than·one·w
15	Kibera	Female	60	Standard·4	Own·a·small·business	Separated·or·Divorced
16	Kibera	Male	49	Standard·8	Artisan	"Monogamous·couple·(one·man,·one·wi
17	Kibera	Male	46	Form·3	Own·a·hotel	Polygamous·marriage·(more·than·one·w

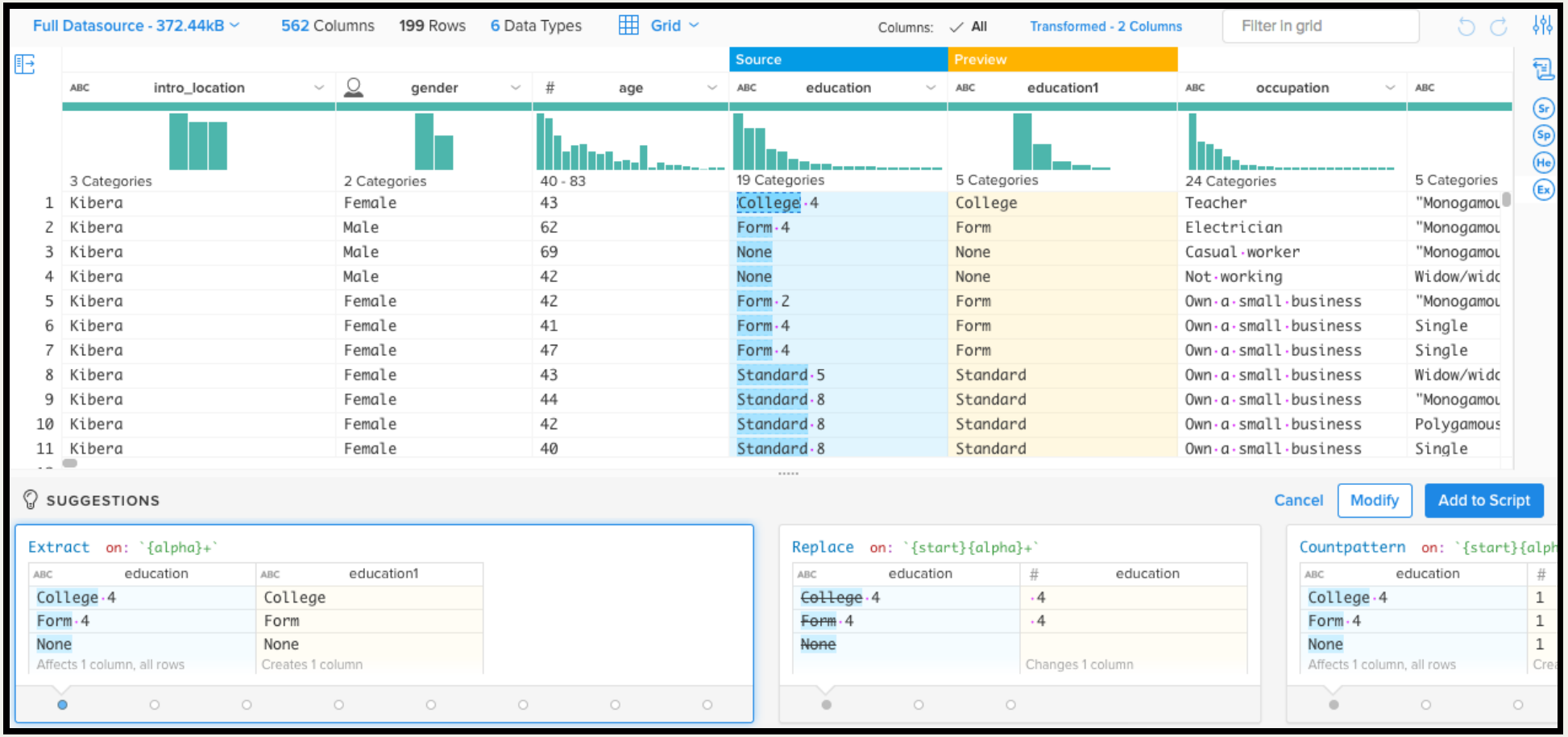
Trifacta: Filter



Trifacta: Scripts



Trifacta: Scripting Without Code



Trifacta: Strengths

- Filters provide suggested edits
- Interactive histograms are an elegant method of data exploration
- Very helpful script builder
- Scripts help you track your changes => reproducible data munging

Trifacta: Weaknesses

- Requires an internet connection
- May not be appropriate for confidential data

MS Excel

Excel Conditional Formatting

Conclusion

Useful for

- Data quality checks for data entry process
- Nice high-level overview of potential data errors
- First check after downloading or creating a new dataset.

OpenRefine and Trifacta Wrangler are more mature tools which also support editing of data and preliminary analysis of distributions.