http://poloclub.gatech.edu/cse6242

CSE6242 / CX4242: Data & Visual Analytics

Data Cleaning

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Partly based on materials by
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Data Cleaning

Why data can be dirty?

How dirty is real data?

Examples

- Jan 19, 2016
- January 19, 16
- 1/19/16
- 2006-01-19
- 19/1/16

http://blogs.verdantis.com/wp-content/uploads/2015/02/Data-cleansing.jpg

How dirty is real data?

Examples

- duplicates
- empty rows
- abbreviations (different kinds)
- difference in scales / inconsistency in description/ sometimes include units
- typos
- missing values
- trailing spaces
- incomplete cells
- synonyms of the same thing
- skewed distribution (outliers)
- bad formatting / not in relational format (in a format not expected)

“80%” Time Spent on Data Cleaning

Cleaning Big Data: Most Time-Consuming, Least Enjoyable Data Science Task, Survey Says [Forbes]
http://www.forbes.com/sites/gilpress/2016/03/23/data-preparation-most-time-consuming-least-enjoyable-data-science-task-survey-says/#73bf5b137f75

Big Data's Dirty Problem [Fortune]
http://fortune.com/2014/06/30/big-data-dirty-problem/

For Big-Data Scientists, ‘Janitor Work’ Is Key Hurdle to Insights [New York Times]

http://www.nytimes.com/2014/08/18/technology/for-big-data-scientists-hurdle-to-insights-is-janitor-work.html?_r=0

Data Janitor

Data Cleaners

Watch videos

- Data Wrangler (research at Stanford)
- Open Refine (previously **Google Refine**)

in Alabama	Alabama
in Alaska	Alaska
in Arizona	Arizona
in Arkansas	Arkansas

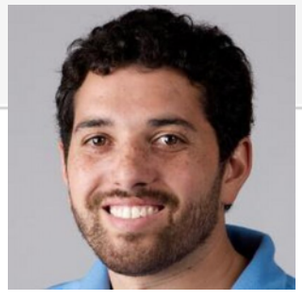
Write down

- Examples of **data dirtiness**
- Tool's **features** demo-ed (or that you like)

Will collectively summarize similarities and differences afterwards

Open Refine: http://openrefine.org
Data Wrangler: http://vis.stanford.edu/wrangler/

DataWrangler alpha




Wrangler is an interactive tool for data cleaning and transformation.
Spend less time formatting and more time analyzing your data.

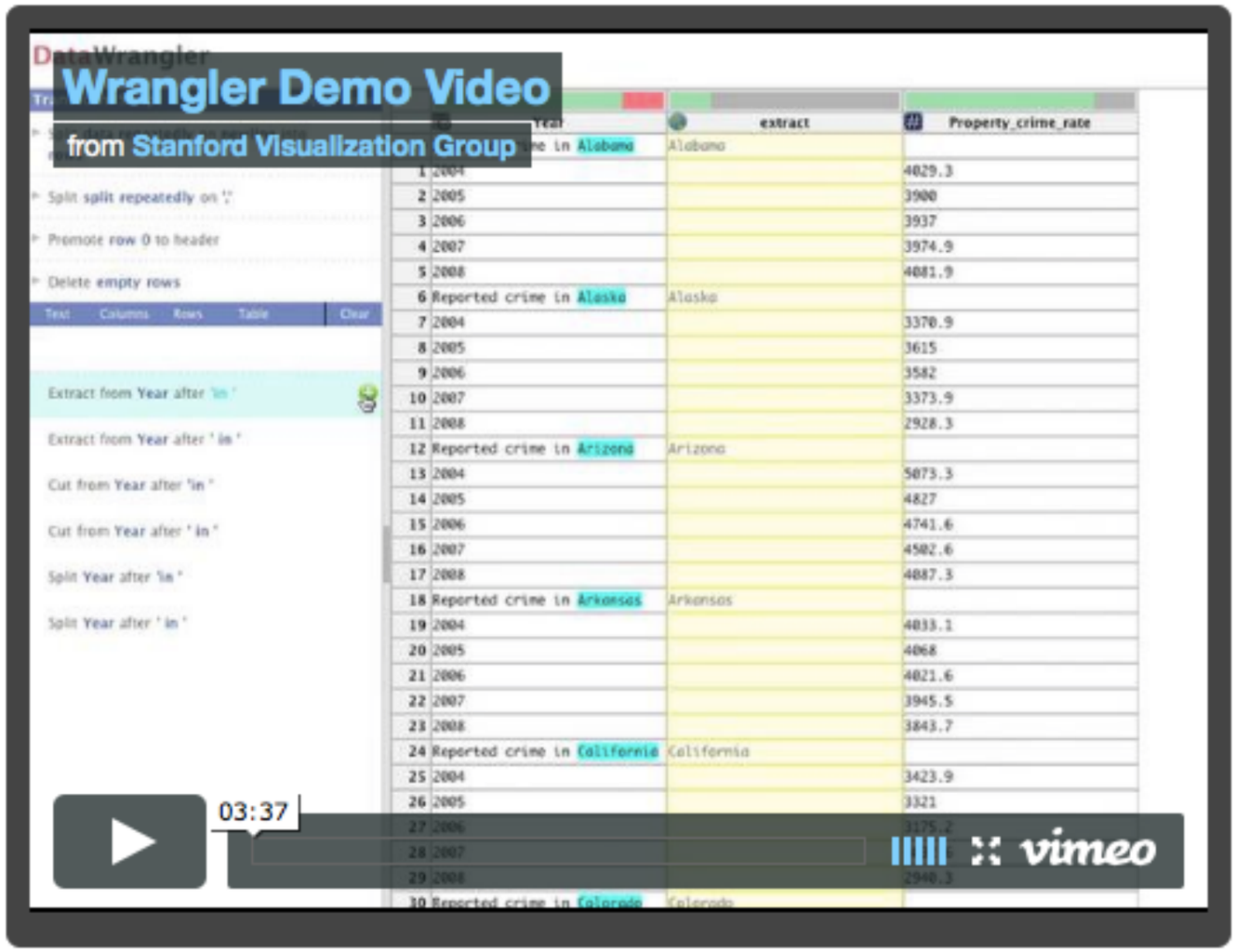
UPDATE: The Wrangler research project is complete, and the software is no longer actively supported. The team behind Wrangler has moved on to work on a commercial venture, Trifacta.

TRIFACTA

Why wrangle?

- Too much time is spent manipulating data just to get analysis and visualization tools to read it. Wrangler is designed to accelerate this process: spend less time fighting with your data and more time learning from it.
- Wrangler allows interactive transformation of messy, real-world data into the data tables analysis tools expect. Export data for use in Excel, R, Tableau, Protovis, ...
- Want to learn more about Wrangler's design? Take a look at our research paper.
- Wrangler is still a work-in-progress. Please share your feedback and feature requests!

TRY IT NOW



OpenRefine

A free, open source, powerful tool for working with messy data

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A Governance Model for OpenRefine

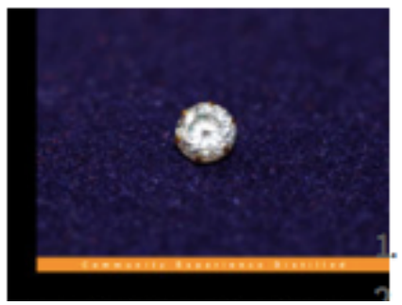
Using OpenRefine: a manual

Welcome!

OpenRefine (formerly Google Refine) is a powerful tool for working with messy data: cleaning it; transforming it from one format into another; extending it with web services; and linking it to databases like Freebase.

Please note that since October 2nd, 2012, Google is not actively supporting this project, which has now been rebranded to OpenRefine. Project development, documentation and promotion is now fully supported by volunteers. Find out more about the history of OpenRefine and how you can help the community.

Using OpenRefine - The Book



Using OpenRefine, by Ruben Verborgh and Max De Wilde, offers a great introduction to OpenRefine. Organized by recipes with hands on examples, the book covers the following topics:

1. Import data in various formats
2. Explore datasets in a matter of seconds

What can the tools do?

- [W, G] output transformation as scripts
- [G] clustering
- [G] trim data (due with typos, etc.)
- [G, W] undo
- [W] visualization, usability features
- [W] suggestions — “predictive interaction”
- [G] data in more than one format

G = Google Refine
W = Data wrangler

The videos only show *some* of the tools' features. Try them out.

Google Refine: http://code.google.com/p/google-refine/
Data Wrangler: http://vis.stanford.edu/wrangler/