Data Cleaning

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Partly based on materials by
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Data Cleaning

How dirty is real data?
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Examples

• Jan 19, 2016
• January 19, 16
• 1/19/16
• 2006-01-19
• 19/1/16
How dirty is real data?

Discuss with your neighbors (group of 2-3)

60 seconds

Comes up with 5+ kinds of “data dirtiness”
How dirty is real data?

- spelling errors
- missing data
- different units/measurements
- leading zeros...
- wrong data types
- cases lower/upper
- inconsistent (last name/first name order exchange)
- duplication
- language writing order
- different “null”
- white spaces
- big/little endian (maybe)
Importance of Data Cleaning
“80%” Time Spent on Data Preparation

Cleaning Big Data: Most Time-Consuming, Least Enjoyable Data Science Task, Survey Says [Forbes]
Data Janitor
Writing “Clean Code”

- Be careful with **trailing whitespaces**
- Indent code (**spaces vs tabs**) following coding practices in your team/company
  
  https://google.github.io/styleguide/javaguide.html#s4.2-block-indentation

...there’s *no way* I'm going to be with someone who uses spaces over tabs...


Trailing whitespace is evil. Don't commit evil into your repo.

http://codeimpossible.com/2012/04/02/trailing-whitespace-is-evil-don-t-commit-evil-into-your-repo/
Data Cleaners

Watch videos

• Data Wrangler (research at Stanford)
• Open Refine (previously Google Refine)

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/
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.

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
Welcome!

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

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
3. Apply basic and advanced cell transformations
4. Deal with cells that contain multiple values
5. Contain to a new column or use as data source

OpenRefine News:
- Spring 2016
- OpenRefine News: December 2015
- OpenRefine News: November 2015
What can Open Refine and Wrangler do?

O = Open Refine
W = Data wrangler
The videos only show *some* of the tools’ features. Try them out.

Open Refine: [http://openrefine.org](http://openrefine.org)
Data Wrangler: [http://vis.stanford.edu/wrangler/](http://vis.stanford.edu/wrangler/)