Putting it all together

CLEANING DATA IN PYTHON

Daniel Chen
Instructor

Putting it all together

- Use the techniques you've learned on Gapminder data

- Clean and tidy data saved to a file
  - Ready to be loaded for analysis!

- Dataset consists of life expectancy by country and year

- Data will come in multiple parts
  - Load

  - Preliminary quality diagnosis

  - Combine into single dataset

Useful methods

- `import pandas as pd`

- `df = pd.read_csv('my_data.csv')`

- `df.head()`

- `df.info()`

- `df.columns`

- `df.describe()`

- `df.column.value_counts()`

- `df.column.plot('hist')`

Data quality

```python
def cleaning_function(row_data):
        # data cleaning steps
        return ...

df.apply(cleaning_function, axis=1)

assert (df.column_data > 0).all()
```

Combining data

- `pd.merge(df1, df2, …)`

- `pd.concat([df1, df2, df3, …])`

Let's practice!

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Initial impressions of the data

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Principles of tidy data

- Rows form observations

- Columns form variables

- Tidying data will make data cleaning easier

- `melt()` turns columns into rows

- `pivot()` will take unique values from a column and create new columns

Checking data types

```
df.dtypes
```

```
df['column'] = pd.to_numeric(df['column'])
```

```
df['column'] = df['column'].astype(str)
```

Additional calculations and saving your data

```python
df['new_column'] = df['column_1'] + df['column_2']
```

```python
df['new_column'] = df.apply(my_function, axis=1)
```

```python
df.to_csv('my_data.csv')
```

Let's practice!

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Final thoughts

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You've learned how to...

- Load and view data in `pandas`

- Visually inspect data for errors and potential problems

- Tidy data for analysis and reshape it

- Combine datasets

- Clean data by using regular expressions and functions

- Test your data and be proactive in finding potential errors

Let's practice!

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