



WORKING WITH WEB DATA IN R

Web Scraping 101

Charlotte Wickham
Instructor



Selectors

- Little browser extensions
- Identify the specific bit(s) you want
- Give you a unique ID to grab them with
- Not used in this course (but worth grabbing after)



rvest

- rvest is a dedicated web scraping package
- Makes things shockingly easy
- Read HTML page with `read_html(url = __)`



Parsing HTML

- `read_html()` returns an XML document
- Use `html_node()` to extract contents with XPATHs



Parsing HTML

```
> wiki_r <- read_html(  
+   "https://en.wikipedia.org/wiki/R_(programming_language)"  
+ )  
> wiki_r  
{xml_document}  
<html class="client-nojs" lang="en" dir="ltr">  
[1] <head>\n<meta http-equiv="Content-Type" content="text/html; c ...  
[2] <body class="mediawiki ltr sitedir-ltr mw-hide-empty-elt ns-0 ...
```

Parsing HTML

```
> wiki_r <- read_html(
+   "https://en.wikipedia.org/wiki/R_(programming_language)"
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> wiki_r
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<html class="client-nojs" lang="en" dir="ltr">
[1] <head>\n<meta http-equiv="Content-Type" content="text/html; c ...
[2] <body class="mediawiki ltr sitedir-ltr mw-hide-empty-elt ns-0 ...

> html_node(wiki_r, xpath = "//ul")
{xml_node}
<ul>
[1] <li><a href="/wiki/Common_Lisp" title="Common Lisp">Common Li ...
[2] <li><a href="/wiki/S_(programming_language)" title="S (progra ...
[3] <li>\n<a href="/wiki/Scheme_(programming_language)" title="Sc ...
[4] <li><a href="/wiki/XLispStat" title="XLispStat">XLispStat</a> ...
```



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Let's practice!



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HTML Structure

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Tags

- HTML is content within tags
- Like XML
- `<p> this is a test </p>`



Attributes

```
<a href = "https://en.wikipedia.org/"> this is a test </a>
```



Extracting information

- `html_text(x = __)` - get text contents
- `html_attr(x = __, name = __)` - get specific attribute
- `html_name(x = __)` - get tag name



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Reformatting Data

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HTML tables

- HTML tables are dedicated structures: `<table>...</table>`
- They can be turned into data.frames with `html_table()`
- Use `colnames(table) <- c("name", "second_name")` to name the columns



Turning things into data.frames

- Non-tables can also become data.frames
- Use `data.frame()`, with the vectors of text or names or attributes



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Let's practice!