Online CDS 101 *Introduction to Computational and Data Sciences*

Data reshaping

The `gather` function

Structure of the `gather` function

`gather` takes columns and turns them into rows.

```
name_of_dataset %>%
  gather(
    column_one,
    column_two,
    key = "category",
    value = "value"
  )
```

```
name_of_dataset %>%
  gather(
    column_one:column_three,
    key = "category",
    value = "value"
  )
```

- The first set of inputs are the columns you wish to turn into rows.
- The `key =` input is the name you will give to the new column that will contain the names of the gathered columns.
- The `value =` input is the name you will give to the new column that will contain the values of the gathered columns.

Untidy data example

Problem: Untidy data frame stored in `table4a` and `table4b`

`table4a`

country	1999	2000
Afghanistan	745	2666
Brazil	37737	80488
China	212258	213766

`table4b`

country	1999	2000
Afghanistan	19987071	20595360
Brazil	172006362	174504898
China	1272915272	1280428583

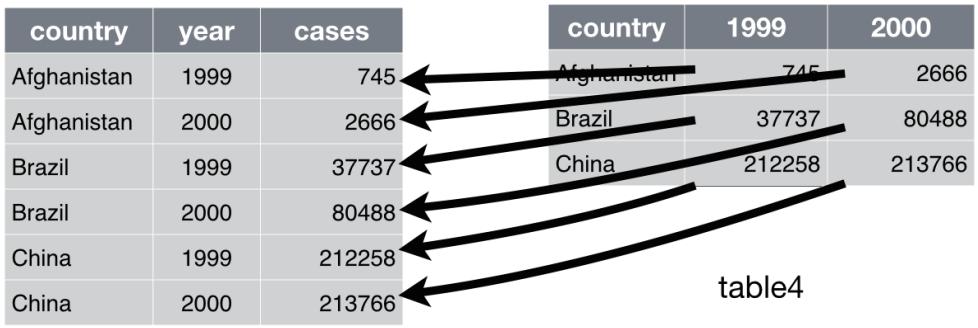
Untidy data example

Goal: *Use* `gather` *to transform* `table4a` *and* `table4b` *back to this:*

country	year	cases	population
Afghanistan	1999	745	19987071
Afghanistan	2000	2666	20595360
Brazil	1999	37737	172006362
Brazil	2000	80488	174504898
China	1999	212258	1272915272
China	2000	213766	1280428583

`gather` schematic

`gather` takes columns and turns them into rows.



Source: Figure 12.2 in *R for Data Science* by Garrett Grolemund and Hadley Wickham.

gather example

```
tidy4a <- table4a %>%
  gather(
    `1999`:`2000`,
    key = "year",
    value = "cases"
  )
```

```
tidy4b <- table4b %>%
  gather(
    `1999`:`2000`,
    key = "year",
    value = "population"
  )
```

gather example

```
tidy4a <- table4a %>%
  gather(
    `1999`:`2000`,
    key = "year",
    value = "cases"
  )
```

country	year	cases
Afghanistan	1999	745
Brazil	1999	37737
China	1999	212258
Afghanistan	2000	2666
Brazil	2000	80488
China	2000	213766

```
tidy4b <- table4b %>%
  gather(
    `1999`:`2000`,
    key = "year",
    value = "population"
  )
```

country	year	population
Afghanistan	1999	19987071
Brazil	1999	172006362
China	1999	1272915272
Afghanistan	2000	20595360
Brazil	2000	174504898
China	2000	1280428583

`gather` example

To fully restore `table1`, we use the `left_join` function from the `dplyr` package:

```
left_join(tidy4a, tidy4b)
```

country	year	cases	population
Afghanistan	1999	745	19987071
Brazil	1999	37737	172006362
China	1999	212258	1272915272
Afghanistan	2000	2666	20595360
Brazil	2000	80488	174504898
China	2000	213766	1280428583

Credits

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Acknowledgments

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