

# Convert Table from Wide to Long with dplyr

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## 1 Wide to Long

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Using the [pivot\\_wider](#) function in [tidyr](#) to reshape panel or other data structures

### 1.1 Wide to Long Panel

We have a matrix of values, the values are *ev*. Each row corresponds to a different value of the *a* variable, each column represents a different value of the *z* variable.

Based on this matrix, we create a table where each unit of observation is for a specific *a* and *z* variable combination. So the matrix is turned from wide to long.

The resulting long table has 5 variables

1. *a*: values of the *a* variable, the original matrix row labels
2. *ai*: an index from 1, indicating the original matrix row index
3. *z*: values of the *z* variable, the original matrix column labels
4. *zi*: an index from 1, indicating the original matrix column index

First, we create the matrix.

```
# Generate A Matrix
set.seed(123)
ar_a <- c(1.1, 5.1)
ar_z <- seq(-2.5, 2.53, length.out=11)
mt_ev = matrix(rnorm(ar_a*ar_z), nrow=length(ar_a), ncol=length(ar_z))

# Name Matrix
rownames(mt_ev) <- paste0('ai', seq(1:length(ar_a)))
colnames(mt_ev) <- paste0('zi', seq(1:length(ar_z)))

# to tibble
tb_ev <- as_tibble(mt_ev) %>% rowid_to_column(var = "ai")

# Print
print(mt_ev)
```

```
##           zi1           zi2           zi3           zi4           zi5           zi6           zi7           zi8           zi9
## ai1 -0.5604756 1.55870831 0.1292877  0.4609162 -0.6868529  1.2240818 -0.2301775 0.07050839 1.7150650
## ai2 -0.2301775 0.07050839 1.7150650 -1.2650612 -0.4456620 -0.5604756  1.5587083 0.12928774 0.4609162
```

```
# Display
```

```
kable(tb_ev, caption = "Wide table") %>% kable_styling_fc()
```

Wide table

ai	zi1	zi2	zi3	zi4	zi5	zi6	zi7	zi8	zi9
1	-0.5604756	1.5587083	0.1292877	0.4609162	-0.6868529	1.2240818	-0.2301775	0.0705084	1.7150650
2	-0.2301775	0.0705084	1.7150650	-1.2650612	-0.4456620	-0.5604756	1.5587083	0.1292877	0.4609162

Second, we convert the table wide to long.

```
# longer
```

```
tb_ev_long <- tb_ev %>%
  pivot_longer(cols = starts_with('zi'),
               names_to = c('zi'),
               names_pattern = paste0("zi(.*)"),
               values_to = "ev") %>%
  mutate(zi = as.numeric(zi))
```

```
# Merge with a and z values
```

```
tb_ev_long <- tb_ev_long %>%
  left_join(as_tibble(ar_a) %>%
            rowid_to_column(var = "ai") %>%
            rename(a = value)
            , by = 'ai') %>%
  left_join(as_tibble(ar_z) %>%
            rowid_to_column(var = "zi") %>%
            rename(z = value),
            by = 'zi') %>%
  select(a, ai, z, zi, ev)
```

```
# Display
```

```
kable(tb_ev_long, caption = "Long table") %>% kable_styling_fc()
```

Long table

a	ai	z	zi	ev
1.1	1	-2.500	1	-0.5604756
1.1	1	-1.997	2	1.5587083
1.1	1	-1.494	3	0.1292877
1.1	1	-0.991	4	0.4609162
1.1	1	-0.488	5	-0.6868529
1.1	1	0.015	6	1.2240818
1.1	1	0.518	7	-0.2301775
1.1	1	1.021	8	0.0705084
1.1	1	1.524	9	1.7150650
1.1	1	2.027	10	-1.2650612
1.1	1	2.530	11	-0.4456620
5.1	2	-2.500	1	-0.2301775
5.1	2	-1.997	2	0.0705084
5.1	2	-1.494	3	1.7150650
5.1	2	-0.991	4	-1.2650612
5.1	2	-0.488	5	-0.4456620
5.1	2	0.015	6	-0.5604756
5.1	2	0.518	7	1.5587083
5.1	2	1.021	8	0.1292877
5.1	2	1.524	9	0.4609162
5.1	2	2.027	10	-0.6868529
5.1	2	2.530	11	1.2240818