

Reshape2

- <http://seananderson.ca/2013/10/19/reshape.html>
- Data transformation between wide and long formats

Wide-Format				Long-Format		
#	ozone	wind	temp	#	variable	value
# 1	23.62	11.623	65.55	# 1	ozone	23.615
# 2	29.44	10.267	79.10	# 2	ozone	29.444
# 3	59.12	8.942	83.90	# 3	ozone	59.115
# 4	59.96	8.794	83.97	# 4	ozone	59.962
				# 5	wind	11.623
				# 6	wind	10.267
				# 7	wind	8.942
				# 8	wind	8.794
				# 9	temp	65.548
				# 10	temp	79.100
				# 11	temp	83.903
				# 12	temp	83.968

- **melt** = takes wide-format data and melts it into long-format data.
- **cast** = takes long-format data and casts it into wide-format data.
- Think of working with metal: if you melt metal, it drips and becomes long. If you cast it into a mould, it becomes wide.

Melt

For each month and day. We can do that with melt by telling it that we want month and day to be “ID variables”. ID variables are the variables that identify individual rows of data.

Ex: `melt(airquality, id.vars = c("month", "day"), variable.name = "climate_variable", value.name = "climate_value")`

#	month	day	climate_variable	climate_value
# 1	5	1	ozone	41
# 2	5	2	ozone	36
# 3	5	3	ozone	12
# 4	5	4	ozone	18
# 5	5	5	ozone	NA
# 6	5	6	ozone	28

Cast

dcast uses a formula to describe the shape of the data. The arguments on the left refer to the ID variables and the arguments on the right refer to the measured variables. Coming up with the right formula can take some trial and error at first.

Ex: `dcast(aql, month+day ~ climate_variable, value.var="climate_value")`

Ex: `dcast(aql, month ~ variable, fun.aggregate = mean, na.rm = TRUE)`

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dcast formula dcast(aql, month + day ~ variable, value.var = "value")
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ID variables (left side of formula)	Variable to swing into column names (right side of formula)	Values (value.var)
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Long-format data

month	day	variable	value
5	1	ozone	41
5	2	ozone	36
5	3	ozone	12
5	4	ozone	18
5	5	ozone	NA
5	6	ozone	28

Wide-format data

month	day	ozone	solar.r	wind	temp
5	1	41	190	7.4	67
5	2	36	118	8.0	72
5	3	12	149	12.6	74
5	4	18	313	11.5	62
5	5	NA	NA	14.3	56
5	6	28	NA	14.9	66