**Basketball standings**

After every day of competition during the regular season, the National Basketball Association (NBA) updates the standings (or rankings) of every team in the league based on their relative number of wins and losses. An NBA analyst saves the latest standings for each team in a variable called standings. To which family of variables does standings belong?

**Instructions**

**50 XP**

**Possible answers**

Nominal

Ordinal

Interval

Ratio

Submit Answer

**Nominal variables in R**

Imagine that you surveyed several members of your family on what they think of each other. Originally, you store the names of all participants in a character vector in R, but because the information you obtained could cause disputes within the family, you decide to replace these names with arbitrarily chosen numbers. This way, no one will be able to see who said what in the survey and (hopefully) no disputes will arise.

To implement this correctly, you will have to perform an additional step. If you were to leave this numeric vector as is, R would treat it as a vector of numbers. But multiplying your grandfather and your father does not make much sense, does it? To make R treat these values as **nominal variables** instead of numbers, you should use the [**factor()**](http://www.rdocumentation.org/packages/base/functions/factor) function. This function takes the name of the vector to transform and converts its elements into nominal factor variables.

In general, telling R precisely what type of variable you are working with is a good practice that can save you time and prevent careless mistakes. If you're ever unsure of what type of variable you're dealing with, you can use the [**class()**](http://www.rdocumentation.org/packages/base/functions/class) function to find out.

**Ordinal variables in R**

The [**factor()**](http://www.rdocumentation.org/packages/base/functions/factor) function also allows you to assign an order to the nominal variables, thus making them ordinal variables. This is done by setting the order parameter to TRUE and by assigning a vector with the desired level hierarchy to the argument levels. Since we do not want to force you to rank order your family members, we'll illustrate this with a different example.

Consider the categorical variable temperature\_vector with the categories "Low" , "Medium" and "High". Here it's obvious that "Medium" stands above "Low", and that "High" stands above "Medium". Let's use R to create this rank ordering among weather observations.

**Two nominal variables**

It's important to understand which questions can be asked of different types of variables. In general, you can assess relationships between variables using comparison operators such as == and < and arithmetic operators such as - and \*.

The == operator tests equality between two variables (e.g. "Tom" == "Mark" returns FALSE). Be careful not to confuse this with =, which can be used to assign values! The < operator asks whether one variable is less than another (e.g. 4 < 6 returns TRUE). Finally, the minus sign (-) calculates the difference between two variables (e.g. 5 - 3 returns 2). Of course, **not all of these operations are valid for every variable type**.

Recall the survey example from earlier in the chapter. The labels you created to mask the identities of family members, participants2, are nominal variables. We've extracted the first two elements of participants2 and made them available in your workspace in lab1 and lab2.

Which of questions can you ask of the *nominal variables* lab1 and lab2?

**Histograms and Distributions**

0%

You will look here at distributions in graphs called histograms. A histogram is one of the simplest graphs used in statistics, but they are very useful and very informative. Studying histograms will help you to overcome the tendency to put too much of a focus on summary statistics.

[Histograms and distributions50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=1)

[Creating histograms in R100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=2)

[Reading histograms50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=3)

[Looking at distributions by using histograms (1)50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=4)

[Positive and negative skew50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=5)

[Looking at distributions by using histograms (2)50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=6)

[Red wine tasting100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=7)

[White wine tasting100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=8)

[A uniform distribution50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=9)

[A negatively skewed distribution50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=10)

[Leptokurtic distribution50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=11)

[Quick summary50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-two-histograms-and-distributions?ex=12)

**Scales of Measurement**

0%

When working with data it is very important to keep in mind what type of scale you are dealing with, hence this chapter on scales of measurement. This chapter will introduce you to the different types of scales with a specific focus on the standard scale, the z-scale.

[Scales of measurement50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-three-scales-of-measurement?ex=1)

[Converting a value to its Z-score50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-three-scales-of-measurement?ex=2)

[Interpretation of a Z-score50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-three-scales-of-measurement?ex=3)

[Converting a distribution to Z-scale100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-three-scales-of-measurement?ex=4)

[Quick summary50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-three-scales-of-measurement?ex=5)

**Measures of Central Tendency**

0%

In the previous chapters you looked at distributions and the importance of these. In this chapter the focus is more on summarizing all available information and drafting summary statistics. To make it a little bit more fun, the examples will be based on a wine tasting experiment :-).

[Measures of central tendency50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=1)

[The mean of a Fibonacci sequence100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=2)

[Three measures of central tendency (1)50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=3)

[Measures of central tendency: mode50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=4)

[Choosing a measure of central tendency50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=5)

[Three measures of central tendency (2)50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=6)

[Setting up histograms100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=7)

[Types of distribution50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=8)

[Robustness to outliers100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=9)

[Get intuitive!50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=10)

[Quick summary50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-four-measures-of-central-tendency?ex=11)

Measures of central tendency try to capture the center point of a distribution. Measures of variability want to capture how much spread there is, or how wide the distribution is. The two measures you will look at in this final chapter will be standard deviation and variance.

[Measures of variability50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=1)

[Sample variance formula50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=2)

[Calculating variance in practice50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=3)

[Purpose of measures of variability50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=4)

[Michael Jordan's first NBA season100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=5)

[Calculate the variance manually100 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=6)

[Get intuitive!50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=7)

[Quick summary50 XP](https://campus.datacamp.com/courses/intro-to-statistics-with-r-introduction/chapter-five-measures-of-variability?ex=8)