

...Valentine's Day is around the corner and love is in the air... but, shock horror, nearly every second marriage ends in a divorce! Unfortunately, I can tell you first hand that this is an experience you'd rather not have. In this post, we see how *data science*, in the form of the `OneR` package and an interesting new data set, might potentially help you to avoid that tragedy... so read on!

In a scientific study last year in Turkey, nearly 200 participants (married as well as divorced) were being asked to rate how important they find the following statements (some of them seem to have got a little lost in translation from the original Turkish version):

1. When one of our apologies apologizes when our discussions go in a bad direction, the issue does not extend.
2. I know we can ignore our differences, even if things get hard sometimes.
3. When we need it, we can take our discussions with my wife from the beginning and correct it.
4. When I argue with my wife, it will eventually work for me to contact him.
5. The time I spent with my wife is special for us.
6. We don't have time at home as partners.
7. We are like two strangers who share the same environment at home rather than family.
8. I enjoy our holidays with my wife.
9. I enjoy traveling with my wife.
10. My wife and most of our goals are common.
11. I think that one day in the future, when I look back, I see that my wife and I are in harmony with each other.
12. My wife and I have similar values in terms of personal freedom.
13. My husband and I have similar entertainment.
14. Most of our goals for people (children, friends, etc.) are the same.
15. Our dreams of living with my wife are similar and harmonious
16. We're compatible with my wife about what love should be
17. We share the same views with my wife about being happy in your life
18. My wife and I have similar ideas about how marriage should be
19. My wife and I have similar ideas about how roles should be in marriage
20. My wife and I have similar values in trust
21. I know exactly what my wife likes.
22. I know how my wife wants to be taken care of when she's sick.
23. I know my wife's favorite food.
24. I can tell you what kind of stress my wife is facing in her life.
25. I have knowledge of my wife's inner world.
26. I know my wife's basic concerns.
27. I know what my wife's current sources of stress are.
28. I know my wife's hopes and wishes.
29. I know my wife very well.
30. I know my wife's friends and their social relationships.
31. I feel aggressive when I argue with my wife.
32. When discussing with my wife, I usually use expressions such as "you always" or "you never".
33. I can use negative statements about my wife's personality during our discussions.
34. I can use offensive expressions during our discussions.
35. I can insult our discussions.
36. I can be humiliating when we argue.
37. My argument with my wife is not calm.
38. I hate my wife's way of bringing it up.
39. Fights often occur suddenly.
40. We're just starting a fight before I know what's going on.
41. When I talk to my wife about something, my calm suddenly breaks.
42. When I argue with my wife, it only snaps in and I don't say a word.
43. I'm mostly thirsty to calm the environment a little bit.
44. Sometimes I think it's good for me to leave home for a while.

45. I'd rather stay silent than argue with my wife.
46. Even if I'm right in the argument, I'm thirsty not to upset the other side.
47. When I argue with my wife, I remain silent because I am afraid of not being able to control my anger.
48. I feel right in our discussions.
49. I have nothing to do with what I've been accused of.
50. I'm not actually the one who's guilty about what I'm accused of.
51. I'm not the one who's wrong about problems at home.
52. I wouldn't hesitate to tell her about my wife's inadequacy.
53. When I discuss it, I remind her of my wife's inadequate issues.
54. I'm not afraid to tell her about my wife's incompetence.

Now, the question is whether one can decide – on the basis of their ratings alone – whether a person will actually get divorced. Let us see if data science can help us in this love related matter!

The data and a link to the corresponding article can be found here: [Divorce Predictors data set](#), I unpacked the data for your convenience, you can download it here: [divorce.csv](#). Let us now use the `OneR` package (on CRAN) to analyse it:

```
library(OneR)

divorce <- read.csv("data/divorce.csv", sep = ";")
divorce$Class <- factor(ifelse(divorce$Class == 0, "married", "divorced"))
data <- optbin(divorce)
model <- OneR(data, verbose = TRUE) # 18. My wife and I have similar ideas about
how marriage should be
##
##      Attribute Accuracy
## 1 * Atr18      98.24%
## 2   Atr11      97.65%
## 2   Atr17      97.65%
## 2   Atr19      97.65%
## 5   Atr9       97.06%
## 5   Atr16      97.06%
## 5   Atr20      97.06%
## 5   Atr40      97.06%
## 9   Atr26      96.47%
## 10  Atr12      95.88%
## 10  Atr14      95.88%
## 10  Atr15      95.88%
## 10  Atr25      95.88%
## 10  Atr30      95.88%
## 15  Atr29      95.29%
## 15  Atr36      95.29%
## 15  Atr39      95.29%
## 18  Atr4       94.71%
## 18  Atr8       94.71%
## 18  Atr21      94.71%
## 18  Atr27      94.71%
## 22  Atr5       94.12%
## 22  Atr37      94.12%
## 22  Atr38      94.12%
## 25  Atr41      93.53%
## 25  Atr44      93.53%
## 27  Atr1       92.94%
## 27  Atr2       92.94%
## 27  Atr10      92.94%
## 27  Atr24      92.94%
```

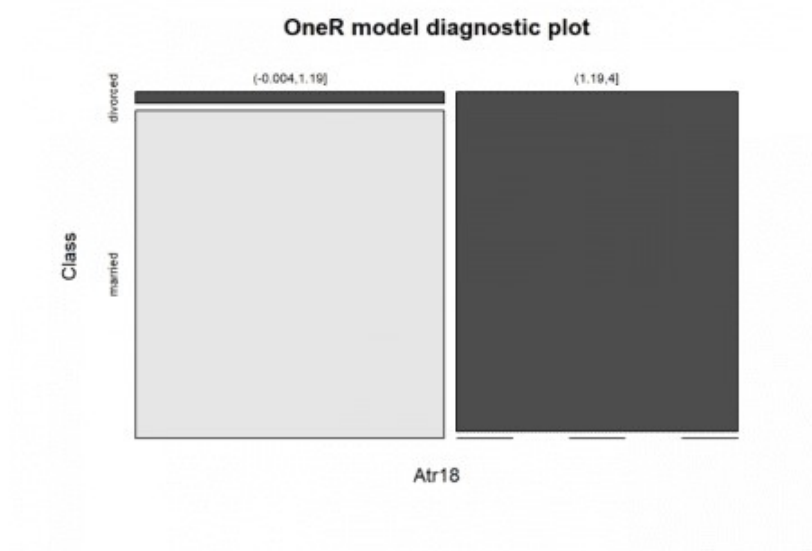
```

## 31  Atr22      92.35%
## 31  Atr28      92.35%
## 31  Atr31      92.35%
## 31  Atr33      92.35%
## 35  Atr13      91.76%
## 35  Atr32      91.76%
## 35  Atr35      91.76%
## 38  Atr23      91.18%
## 38  Atr34      91.18%
## 40  Atr54      90.59%
## 41  Atr50      89.41%
## 42  Atr3       88.82%
## 43  Atr42      87.65%
## 44  Atr51      87.06%
## 45  Atr49      84.71%
## 45  Atr53      84.71%
## 47  Atr7       82.35%
## 48  Atr47      81.76%
## 49  Atr48      80.59%
## 50  Atr52      80%
## 51  Atr43      78.82%
## 52  Atr45      77.06%
## 53  Atr6       74.12%
## 54  Atr46      68.24%
## ---
## Chosen attribute due to accuracy
## and ties method (if applicable): '*'

summary(model)
##
## Call:
## OneR.data.frame(x = data, verbose = TRUE)
##
## Rules:
## If Atr18 = (-0.004,1.19] then Class = married
## If Atr18 = (1.19,4]      then Class = divorced
##
## Accuracy:
## 167 of 170 instances classified correctly (98.24%)
##
## Contingency table:
##           Atr18
## Class      (-0.004,1.19] (1.19,4] Sum
## divorced              3      * 81  84
## married              * 86          0  86
## Sum                  89      81 170
## ---
## Maximum in each column: '*'
##
## Pearson's Chi-squared test:
## X-squared = 154.56, df = 1, p-value < 2.2e-16

plot(model)

```



```
prediction <- predict(model, data)
eval_model(prediction, data)
##
## Confusion matrix (absolute):
##           Actual
## Prediction divorced married Sum
##   divorced      81      0  81
##   married       3     86  89
##   Sum           84     86 170
##
## Confusion matrix (relative):
##           Actual
## Prediction divorced married Sum
##   divorced    0.48    0.00 0.48
##   married     0.02    0.51 0.52
##   Sum         0.49    0.51 1.00
##
## Accuracy:
## 0.9824 (167/170)
##
## Error rate:
## 0.0176 (3/170)
##
## Error rate reduction (vs. base rate):
## 0.9643 (p-value < 2.2e-16)
```

So, the best predictor is the rating on statement 18. The question you should ask your partner before marrying him or her is, therefore, the following:

What is a good marriage for you?

A simple question but one that might reveal some major differences between your conceptions of what a good marriage is. In that case, the outlook is not good. The accuracy of the prediction is a whopping 98.24%! By the way, this is even slightly better than the 98.23% given in the paper (which is achieved by an artificial neural network).

Had I only known this 20 years ago...

Happy Valentine's Day and stay tuned as we will take a little break and hopefully see you back on March 17th!