

# ENGAGE data independence testing

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## Solution vs. Stakeholder Engagement

Chi Square and Fishers Exact Test on contingency table with Solution/No Solution as the explanatory, and engaged stakeholder/did not engage stakeholder as the response.

Both chi square and fishers exact test were insignificant/borderline, with a chi square approximation of ~44, which is well above the critical value. Fishers exact test returned an odds ratio of ~18. The alternative hypothesis: true odds ratio is not equal to 1.

The FET defaults to associating the odds ratio with the first cell. In this instance “The odds of having a solution is 18.25 times that for an engaged stakeholder”. You could flip the response and explanatory, but the odds ratio would stay the same.

```
##          stakeholder
## solution  E  NE
##          S  14   4
##          NS 76 400

## Number of cases in table: 494
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 44.48, df = 1, p-value = 2.576e-11
##  Chi-squared approximation may be incorrect

##
##  Fisher's Exact Test for Count Data
##
## data:  solution_stakeholder
## p-value = 2.968e-08
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##   5.538514 78.189983
## sample estimates:
## odds ratio
##   18.25981
```

## Solution vs. Model

Chi Square and Fishers Exact Test on contingency table with Solution/No Solution as the explanatory, and Model/No Model as the response.

Both chi square and fishers exact test were insignificant/borderline, with a chi square approximation of ~3.7, which is close to the critical value. Fishers exact test returned an odds ratio of under 1. The alternative hypothesis: true odds ratio is not equal to 1

The FET defaults to associating the odds ratio with the first cell. In this instance “The odds of having a solution is .39 times that for having a model”. You could flip the response and explanatory, but the odds ratio would stay the same.

```
##           model
## solution  M NM
##          S  11 7
##          NS 377 94

## Number of cases in table: 489
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 3.792, df = 1, p-value = 0.05151
##  Chi-squared approximation may be incorrect

##
## Fisher's Exact Test for Count Data
##
## data:  solution_model
## p-value = 0.07051
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##  0.134767 1.228801
## sample estimates:
## odds ratio
##  0.3927391
```

## Solution vs. Engagement (reversed cells)

```
##           stakeholder
## solution  E  NE
##           NS 76 400
##           S 14  4

## Number of cases in table: 494
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 44.48, df = 1, p-value = 2.576e-11
##  Chi-squared approximation may be incorrect

##
## Fisher's Exact Test for Count Data
##
## data:  nosolution_stakeholder
## p-value = 2.968e-08
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##  0.01278936 0.18055386
## sample estimates:
## odds ratio
## 0.05476509
```

## Solution vs. Model (reversed cells)

```
##      solution
## model   M NM
##      NS 377 94
##      S   11  7

## Number of cases in table: 489
## Number of factors: 2
## Test for independence of all factors:
##  Chisq = 3.792, df = 1, p-value = 0.05151
##  Chi-squared approximation may be incorrect

##
## Fisher's Exact Test for Count Data
##
## data:  nomodel_solution
## p-value = 0.07051
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##  0.8138014 7.4202155
## sample estimates:
## odds ratio
##  2.546219
```