

# Oliver Wyman Expert Search Models

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## Set Up

```
knitr::opts_chunk$set(  
  echo = TRUE,  
  fig.align = "center",  
  message = FALSE,  
  warning = FALSE,  
  collapse = TRUE  
)
```

## Load Packages into R

```
library(knitr)  
library(tinytex)  
library(latexpdf)  
library(magrittr)  
library(readxl)  
library(writexl)  
library(tidyr)  
library(purrr)  
library(lmtest)  
library(sandwich)  
library(fixest)  
library(modelsummary)  
library(lattice)  
library(AER)  
library(cellranger)  
library(dplyr)  
library(ggplot2)  
library(lubridate)
```

## Expert Search Models

```
A=1.5  
B=2  
C=0
```

```

D=1
E=5
F=.5
G=8
H=6
I=1
J=.5
K=15
DD=1
ED=5
FD=.1
GD=6
HD=4

```

## Add Functions

```

teamsize<-function(a) {
  print(1-((1+C)/(1+A^(B-a))))
}

timelapse<-function(a){
  print(2^(-a/K))
}

authors<-function(a){
  print(1-(1-C)/(1+A^(B-(a))))
}

docnum<-function(a){
  print(1-1/(a))
}

```

Now, import your dataframe into R: Import-> From Excel\_ -> Browse(find file) -> sheet(whichever you'd like, but eventually import all),

Skip=1, first row as names.

Make sure to label different sheets differently.

It will be better for you to repeat all these steps with each dataframe. You could set up a for loop for this once you're sure you've copied everything down and your software is running properly for 1 iteration—this is a heavy process for your computer, so you don't want to overload it because of one misplaced parenthetical.

```

library(readxl)
Expert_Search_Models_1_ <- read_excel("C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/Expert Search M
  sheet = "Person 1", skip = 1)
Expert_Search_Models_2_ <- read_excel("C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/Expert Search M
  sheet = "Person 2", skip = 1)

```

```
Expert_Search_Models_3_ <- read_excel("C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/Expert Search M
  sheet = "Person 3", skip = 1)
Expert_Search_Models_4_ <- read_excel("C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/Expert Search M
  sheet = "Person 4", range = "A2:S12")
```

## Aggregate your dataframe

```
Hours<-Expert_Search_Models_1_ %>% select(starts_with("Hours"))
Teams<-Expert_Search_Models_1_ %>% select(ends_with("Size"))
```

## Run Calculations

```
TeamSize1<-as.data.frame(apply(Teams,c(1, 2), FUN=teamsize))
Timelapse1<-as.data.frame(timelapse(Expert_Search_Models_1_$TimeLapse))
Authors1<-as.data.frame(authors(Expert_Search_Models_1_$Authors))
DocsNum1<-as.data.frame(docnum(Expert_Search_Models_1_$Docs))

ProjScore1 <- vector("numeric", length = ncol(TeamSize1))
for(i in 1:ncol(TeamSize1)){
  ProjScore1[i] <- as.data.frame(TeamSize1[,i]+Timelapse1)
}
ProjScore1<-as.data.frame(ProjScore1)
DocScore1<-DocsNum1+Authors1+Timelapse1

ExpertScore1 <- vector("numeric", length = 6)
for(i in 1:6) {
  ExpertScore1[i] <- as.data.frame(ProjScore1[[i]]+DocScore1)
}
ExpertScore1<-as.data.frame(ExpertScore1)
```

## Export your data

```
write_xlsx(ProjScore1, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ProjPerson_1_Final.xlsx")
write_xlsx(DocScore1, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/DocPerson_1_Final.xlsx")
write_xlsx(ExpertScore1, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ExpertPerson_1_Final.xlsx")
```

## Repeat!

```
Hours3<-Expert_Search_Models_3_ %>% select(starts_with("Hours"))
Teams3<-Expert_Search_Models_3_ %>% select(ends_with("Size"))
TeamSize3<-as.data.frame(apply(Teams3,c(1, 2), FUN=teamsize))
Timelapse3<-as.data.frame(timelapse(Expert_Search_Models_3_$TimeLapse))
Authors3<-as.data.frame(authors(Expert_Search_Models_3_$Authors))
DocsNum3<-as.data.frame(docnum(Expert_Search_Models_3_$Docs))
```

```

ProjScore3 <- vector("numeric", length = ncol(TeamSize3))
for(i in 1:ncol(TeamSize3)){
  ProjScore3[i] <- as.data.frame(TeamSize3[,i]+Timelapse3)
}
ProjScore3<-as.data.frame(ProjScore3)
DocScore3<-DocsNum3+Authors3+Timelapse3

ExpertScore3 <- vector("numeric", length = 6)
for(i in 1:6) {
  ExpertScore3[i] <- as.data.frame(ProjScore3[[i]]+DocScore3)
}
ExpertScore3<-as.data.frame(ExpertScore3)

write_xlsx(ProjScore3, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ProjPerson_3_Final.xlsx")
write_xlsx(DocScore3, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/DocPerson_3_Final.xlsx")
write_xlsx(ExpertScore3, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ExpertPerson_3_Final.xlsx")

Hours4<-Expert_Search_Models_4_ %>% select(starts_with("Hours"))
Teams4<-Expert_Search_Models_4_ %>% select(ends_with("Size"))
TeamSize4<-as.data.frame(apply(Teams4,c(1, 2), FUN=teamsize))
Timelapse4<-as.data.frame(timelapse(Expert_Search_Models_4_$TimeLapse))
Authors4<-as.data.frame(authors(Expert_Search_Models_4_$Authors))
DocsNum4<-as.data.frame(docnum(Expert_Search_Models_4_$Docs))

ProjScore4 <- vector("numeric", length = ncol(TeamSize4))
for(i in 1:ncol(TeamSize4)){
  ProjScore4[i] <- as.data.frame(TeamSize4[,i]+Timelapse4)
}
ProjScore4<-as.data.frame(ProjScore4)
DocScore4<-DocsNum4+Authors4+Timelapse4

ExpertScore4 <- vector("numeric", length = 6)
for(i in 1:6) {
  ExpertScore4[i] <- as.data.frame(ProjScore4[[i]]+DocScore4)
}
ExpertScore4<-as.data.frame(ExpertScore4)

write_xlsx(ProjScore4, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ProjPerson_4_Final.xlsx")
write_xlsx(DocScore4, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/DocPerson_4_Final.xlsx")
write_xlsx(ExpertScore4, "C:/Users/muchh/OneDrive/Documents/R/Oliver Wyman/ExpertPerson_4_Final.xlsx")

```