Untitled

#Loading all the necessary packages

```
Loading required package: gsubfn

Loading required package: proto

Loading required package: RSQLite

Registered S3 method overwritten by 'mosaic':
  method                           from
  fortify.SpatialPolygonsDataFrame ggplot2


The 'mosaic' package masks several functions from core packages in order to add
additional features.  The original behavior of these functions should not be affected by this


Attaching package: 'mosaic'

The following objects are masked from 'package:dplyr':

    count, do, tally

The following object is masked from 'package:Matrix':

    mean

The following object is masked from 'package:ggplot2':

    stat
```

```
The following objects are masked from 'package:stats':

    binom.test, cor, cor.test, cov, fivenum, IQR, median, prop.test,
    quantile, sd, t.test, var

The following objects are masked from 'package:base':

    max, mean, min, prod, range, sample, sum

#BlackLivesMatter

corrplot 0.92 loaded


Attaching package: 'table1'

The following objects are masked from 'package:base':

    units, units<-

Loading required package: abd

Loading required package: nlme


Attaching package: 'nlme'

The following object is masked from 'package:dplyr':

    collapse

Loading required package: grid

Welcome to tigerstats!
To learn more about this package, consult its website:
    http://homerhanumat.github.io/tigerstats
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v forcats   1.0.0     v stringr   1.5.1
v lubridate 1.9.3     v tibble    3.2.1
v purrr     1.0.2     v tidyr     1.3.1
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x nlme::collapse() masks dplyr::collapse()
x mosaic::count()  masks dplyr::count()
x purrr::cross()   masks mosaic::cross()
x mosaic::do()     masks dplyr::do()
x tidyr::expand()  masks Matrix::expand()
x dplyr::filter()  masks stats::filter()
x dplyr::lag()     masks stats::lag()
x tidyr::pack()    masks Matrix::pack()
x mosaic::stat()   masks ggplot2::stat()
x mosaic::tally()  masks dplyr::tally()
x tidyr::unpack()  masks Matrix::unpack()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becom

Attaching package: 'psych'


The following objects are masked from 'package:mosaic':

    logit, rescale


The following objects are masked from 'package:ggplot2':

    %+%, alpha
```

#Loading all the datasets

Report a list of the employee IDs for those employees who responded with Strongly Agree (5) to the following item: "During the next 12 months, I will probably look for a new job outside of Recreation Unlimited." (TI2).

EmployeeID	TI2
EE1802	5
EE1828	5
EE1846	5
EE1853	5
EE1939	5

EE1954	5
EE1969	5
EE1992	5

Report information about the internal consistency reliabilities (Cronbach's alphas) of each of the multi-item survey measures; explain and justify which items you selected to create a composite variable (i.e., overall scale score variable) for each of the multi-item measures. The executives would like you to report which items you removed from each measure (if any) prior to creating a composite variable (i.e., overall scale score variable). Moreover, they would like for you to justify those decisions by referencing Cronbach's alphas and the actual item content (see survey items above or in link to online survey).

#Internal consistency reliabilities (Cronbach's alphas) of job satisfaction items

```
Reliability analysis
Call: alpha(x = SurveyData[, c("JS1", "JS2", "JS3", "JS4")])

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
      0.78      0.77    0.75      0.46 3.4 0.029  3.5 0.67     0.45

    95% confidence boundaries
         lower alpha upper
Feldt     0.71  0.78  0.83
Duhachek  0.72  0.78  0.83

 Reliability if an item is dropped:
    raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
JS1      0.69      0.68    0.65      0.41 2.1    0.044 0.0629  0.28
JS2      0.84      0.84    0.78      0.64 5.3    0.022 0.0032  0.61
JS3      0.66      0.66    0.61      0.39 1.9    0.047 0.0366  0.31
JS4      0.67      0.66    0.60      0.40 2.0    0.047 0.0310  0.31

 Item statistics
      n raw.r std.r r.cor r.drop mean   sd
JS1 155  0.82  0.82  0.73   0.65  3.4 0.86
JS2 155  0.58  0.60  0.36   0.32  3.7 0.82
JS3 155  0.84  0.84  0.79   0.69  3.3 0.87
JS4 155  0.84  0.83  0.79   0.68  3.4 0.92

Non missing response frequency for each item
       1    2    3    4    5 miss
```

```
JS1 0.02 0.10 0.39 0.41 0.08    0
JS2 0.00 0.06 0.36 0.42 0.15    0
JS3 0.01 0.17 0.39 0.35 0.08    0
JS4 0.01 0.15 0.35 0.36 0.12    0
```

The raw alpha (raw_alpha) based on job satisfaction (JS1,JS3,JS4) items falls under the questionable category in descriptors for Cronbach's alpha while job satisfaction (JS2) exceeds the acceptable threshold of 0.70. - Therefore, We will retain all four items when computing the composite variable for job satisfaction because: . Cronbach's alpha for all four items is above 0.60 ; . Removing an item would decrease Cronbach's alpha; and . The content of all 3 items seems to fit within the conceptual definition of job satisfaction. *#Internal consistency reliabilities (Cronbach's alphas) of engagement items*

```
Reliability analysis
Call: alpha(x = SurveyData[, c("Eng1", "Eng2", "Eng3")])

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
      0.87      0.87    0.82      0.69 6.7 0.018  3.7 0.74      0.7

    95% confidence boundaries
         lower alpha upper
Feldt     0.83  0.87  0.90
Duhachek  0.83  0.87  0.91

 Reliability if an item is dropped:
     raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
Eng1      0.82      0.82    0.70      0.70 4.7    0.028    NA  0.70
Eng2      0.78      0.78    0.65      0.65 3.6    0.035    NA  0.65
Eng3      0.84      0.84    0.73      0.73 5.4    0.025    NA  0.73

 Item statistics
       n raw.r std.r r.cor r.drop mean   sd
Eng1 155  0.88  0.89  0.80   0.75  3.7 0.79
Eng2 155  0.91  0.91  0.85   0.79  3.6 0.85
Eng3 155  0.88  0.88  0.77   0.72  3.7 0.85

Non missing response frequency for each item
        1    2    3    4    5 miss
Eng1 0.00 0.05 0.37 0.43 0.16    0
Eng2 0.01 0.08 0.31 0.46 0.14    0
Eng3 0.00 0.07 0.35 0.40 0.18    0
```

The raw alpha (raw_alpha) based on all three engagement items exceeds the acceptable threshold of 0.70. - Therefore, We will retain all three items when computing the composite variable for engagement because: . Cronbach's alpha for all 3 items is above 0.70 (and thus acceptable); . Removing an item would decrease Cronbach's alpha; and . The content of all 3 items seems to fit within the conceptual definition of engagement. *#Internal consistency reliabilities (Cronbach's alphas) of turnover intentions items*

```
Reliability analysis
Call: alpha(x = SurveyData[, c("TI1", "TI2", "TI3")])

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
      0.69      0.69    0.63      0.43 2.2 0.043    3 0.72     0.35

    95% confidence boundaries
         lower alpha upper
Feldt     0.60  0.69  0.77
Duhachek  0.61  0.69  0.78

 Reliability if an item is dropped:
    raw_alpha std.alpha G6(smc) average_r  S/N alpha se var.r med.r
TI1      0.51      0.52    0.35      0.35 1.06    0.078    NA  0.35
TI2      0.48      0.48    0.32      0.32 0.92    0.084    NA  0.32
TI3      0.76      0.76    0.61      0.61 3.18    0.038    NA  0.61

 Item statistics
      n raw.r std.r r.cor r.drop mean   sd
TI1 155  0.82  0.82  0.71   0.57  3.0 0.90
TI2 155  0.84  0.83  0.73   0.59  2.9 0.96
TI3 155  0.70  0.71  0.43   0.37  3.0 0.89

Non missing response frequency for each item
       1    2    3    4    5 miss
TI1 0.05 0.21 0.48 0.21 0.05    0
TI2 0.06 0.27 0.41 0.21 0.05    0
TI3 0.03 0.26 0.35 0.34 0.01    0
```

The raw alpha (raw_alpha) based on turnover intentions (TI1,TI2) items falls under Unacceptable category in descriptors for Cronbach's alpha while turnover intentions (TI3) exceeds the acceptable threshold of 0.70. - Therefore, We will only retain TI3 item when computing the composite variable for turnover intentions because: . its Cronbach's alpha is above the

acceptable threshold of 0.70 ; . The content of TI3 item seems to fit within the conceptual definition of turnover intentions.

Create composite variables (i.e., overall scale score variables) for the three multi-item survey measures (see above request/bullet for information regarding how to explain/justify which items to retain). *#Internal consistency reliabilities (Cronbach's alphas) of turnover intentions items*

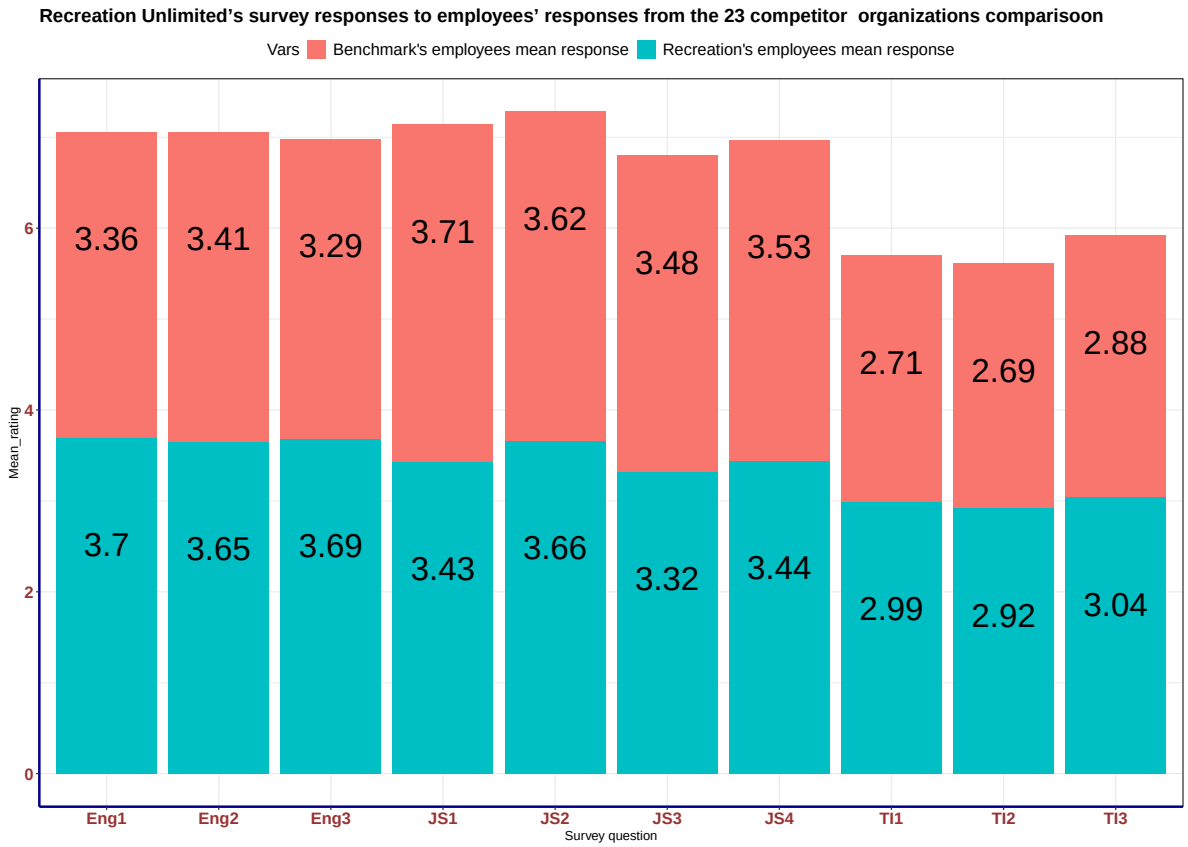
Report and interpret appropriate measures of central tendency and dispersion for the three composite variables (based on their measurement scales) you created for the job satisfaction items, engagement items, and turnover intentions items. *Measures of central tendency and dispersion for the three composite variables*

Composite_Variable	min	Q1	median	Q3	max	mean	sd	n	missing
JS_Overall	2.000000	3	3.500000	4.000000	5	3.464516	0.6726563	155	0
Eng_Overall	1.666667	3	3.666667	4.333333	5	3.679570	0.7403870	155	0
TI_Overall	1.000000	2	3.000000	4.000000	5	3.038710	0.8892129	155	0

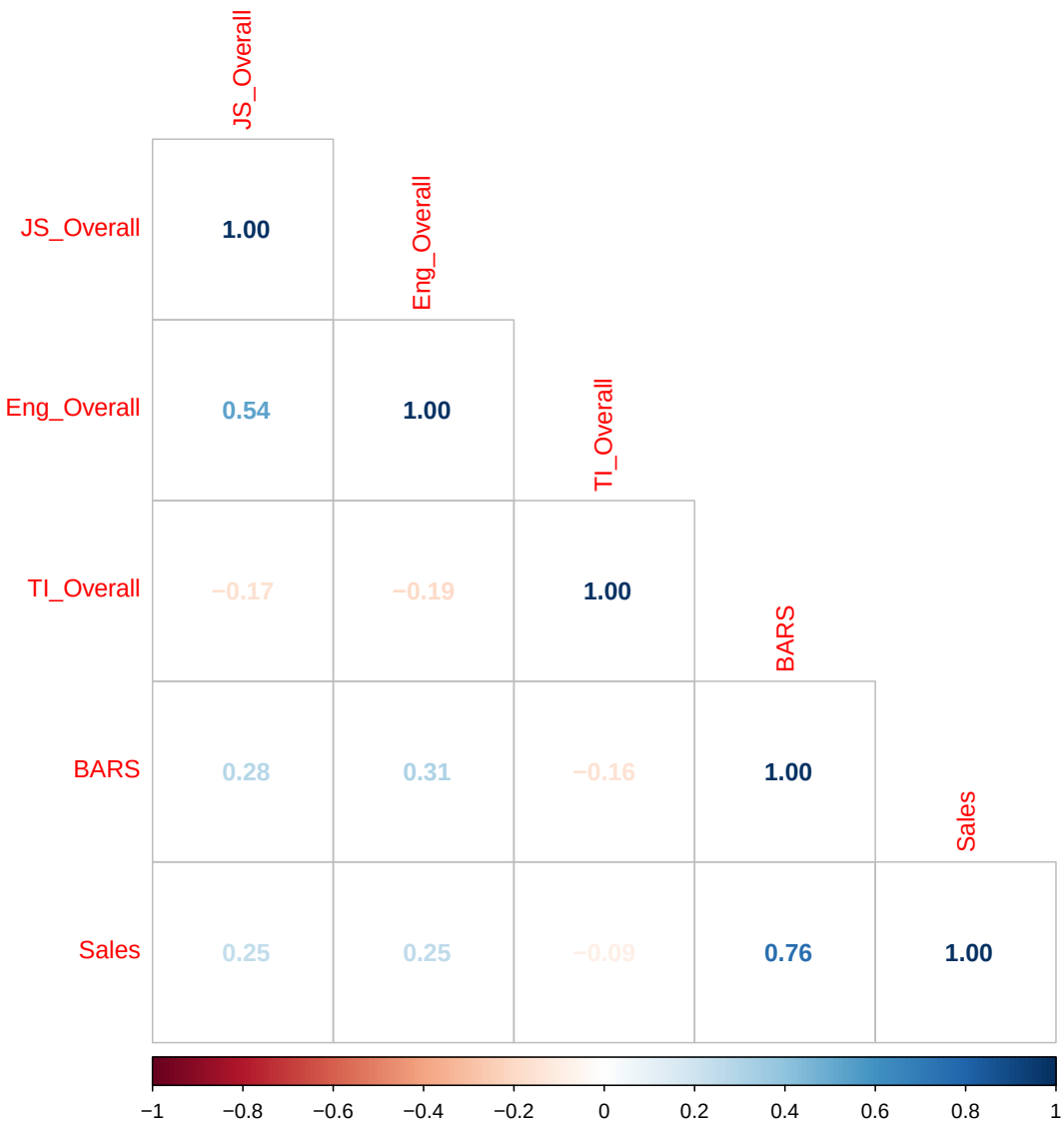
Compare Recreation Unlimited's survey responses to employees' responses from the 23 competitor organizations. The means across the 23 competitor organizations can be found in the data file called BenchmarkData.csv.

Survey question	Recreation's employees mean response	Benchmark's employees mean response
Eng1	3.70	3.36
Eng2	3.65	3.41
Eng3	3.69	3.29
JS1	3.43	3.71
JS2	3.66	3.62
JS3	3.32	3.48
JS4	3.44	3.53
TI1	2.99	2.71
TI2	2.92	2.69
TI3	3.04	2.88

```
Warning: The `size` argument of `element_line()` is deprecated as of ggplot2 3.4.0.
i Please use the `linewidth` argument instead.
```



Report the criterion-related validities of the job satisfaction, engagement, and turnover intentions composite variables. The behavioral anchored rating scale (BARS) and sales revenue generated (Sales) variables will serve as your two criterion variables, and they are saved in a file called PerformancdData.csv. Specifically, please estimate, interpret, and report six correlations involving the following combinations of variables: 1. Job satisfaction composite variable & BARS scores (BARS) 2. Job satisfaction composite variable & sales revenue generated (Sales) 3. Engagement composite variable & BARS scores (BARS) 4. Engagement composite variable & sales revenue generated (Sales) 5. Turnover intentions composite variable & BARS scores (BARS) 6. Turnover intentions composite variable & sales revenue generated (Sales)



Make recommendations for the organization that are informed by your findings from the previous bullet points.

Finally, for additional reporting guidance and requirements, be sure to refer to the grading rubric found at the end of this document.