# STAR PERFORMING EMPLOYEES:

**Statistical Analysis of What Qualities Make an Outstanding Employee**

# Who are Star Performers?

- Large International Tax Company

- Only 15% of District Managers meet sales goals

- What characteristics does that 15 have that the other 85% did not?



"We've invested heavily — if not alwayswisely — in talent."

HARDIN

# The Sample

- Three Groups of District Managers
  - Australia
  - Canada
  - United States

- Double-blind study

- Tested in four areas
  - Occupation Personality Questionnaire
  - Emotional Intelligence
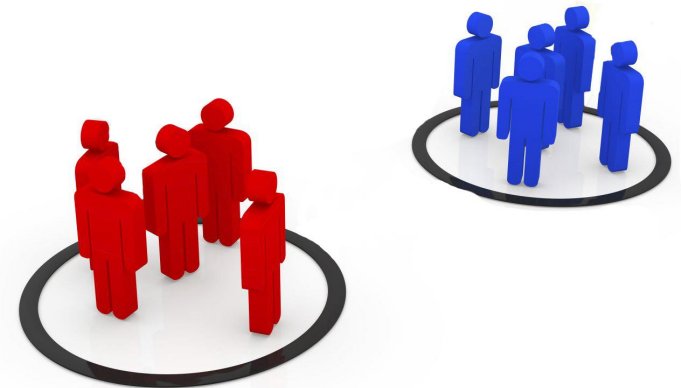  - Years of Job Experience
  - Level of Education

# Independent T-Test

- Does the mean of one group differ significantly from the mean of the other group?

# Null vs. Alternative Hypotheses

- The NULL states there is no significant difference between groups

- Null is presumed to be TRUE

- Statistically seeking to discredit the NULL hypothesis

# Alternative Hypotheses

- When compared to Non-Star Performers, Star Performers will posses:

  - Greater Achievement Orientation

  - Higher Emotional Intelligence
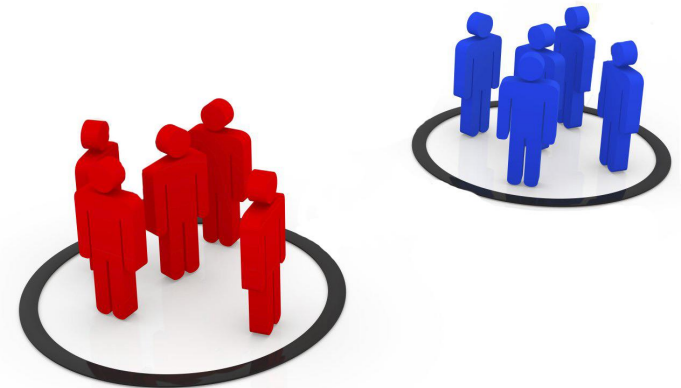
  - More Experience

  - Higher Levels of Education

# Results - Achievement Orientation

- The Math...
  - *t(58) =3.75, p<.05 (.000)*
  - *Obtained t-value is greater than t-critical value (1.67)*
  - *REJECT the Null and ACCEPT our Alternative*

- *Star Performers will have a GREATER ACHIEVEMENT ORIENTATION score than Non-Star Performers.*
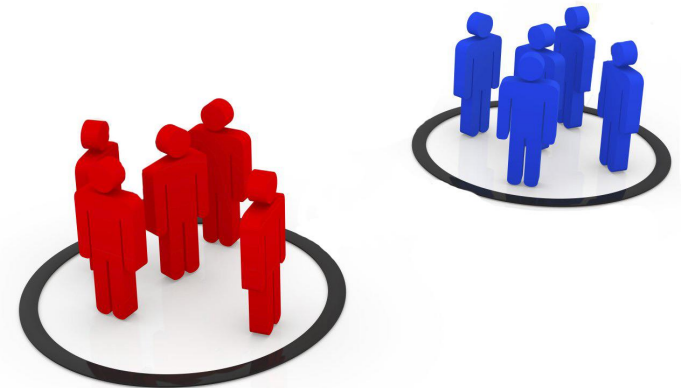
# Results – Emotional Intelligence

- The Math…
  - *t(58) =10.34, p<.05 (.000)*
  - *Obtained t-value is greater than t-critical value (1.67)*
  - *REJECT the Null and ACCEPT our Alternative*

- *Star Performers will have a HIGHER EMOTIONAL INTELLIGENCE score than Non-Star Performers.*

- *Substantially larger T-Value than other tests*

# Results – Years of Experience and Education

- The Math…
  - *t(58) =3.10, p<.05 (.000)*
  - *Obtained t-value is greater than t-critical value (1.67)*
  - *REJECT the Null and ACCEPT our Alternative*

- *Star Performers will have a MORE YEARS of EXPERIENCE score than Non-Star Performers.*

- *Years of Education DID NOT show a significant difference between Star Performers and Non-Star Performers.*
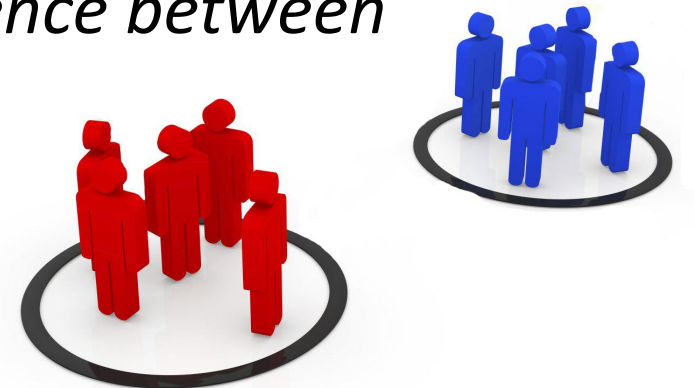
# Correlation

- Is there a relationship between two variables?

- Positive Correlation indicates that the scores of two variables move together. As one increases, so does the other.

- Negative Correlation indicates that the scores of two variables move opposite of each other. As one decreases, the other increases.

# Correlation Results

| Variable | Correlation Coefficient | Relationship |
|---|---|---|
| Achievement Orientation | .44 | Moderate Positive |
| Emotional Intelligence | .81 | Strong Positive |
| Years of Experience | .37 | Weak Positive |
| Level of Education | .19 | Weak/No Relationship |

*Alternative Hypothesis assumed a Strong Positive Relationship between all four variables and becoming a Star Performer

# Simple Linear Regression

- Predicts the value of one variable based on the value of another



**Regression analysis**

FITS A STRAIGHT LINE TO THIS MESSY SCATTERPLOT. $x$ IS CALLED THE INDEPENDENT OR PREDICTOR VARIABLE, AND $y$ IS THE DEPENDENT OR RESPONSE VARIABLE. THE REGRESSION OR PREDICTION LINE HAS THE FORM

$$y = a + bx$$

# Regression Results

| Variable | $R^2$ | Result | Significant or Not |
|---|---|---|---|
| Achievement Orientation | .195 | $F(1,58) = 14.046$, $p < .05$ | Significant |
| Emotional Intelligence | .648 | $F(1,58) = 106.96$, $p < .05$ | Significant |
| Years of Experience | .142 | $F(1,58) = 9.603$, $p < .05$ | Significant |
| Level of Education | .038 | $F(1,58) = 2.32$, $p > .05$ | Not Significant |

*$R^2$ suggests that x% of the variance in whether or not someone is a Star Performer is due to their score on that variable. For example 19% of the variance in whether or not someone is a Star Performer is due to their score on Achievement Orientation.

# ANOVA

- Analysis of Variance

- Is there a significant difference between three or more groups?

- Australia vs. Canada vs. US

- T-Tests to determine where?
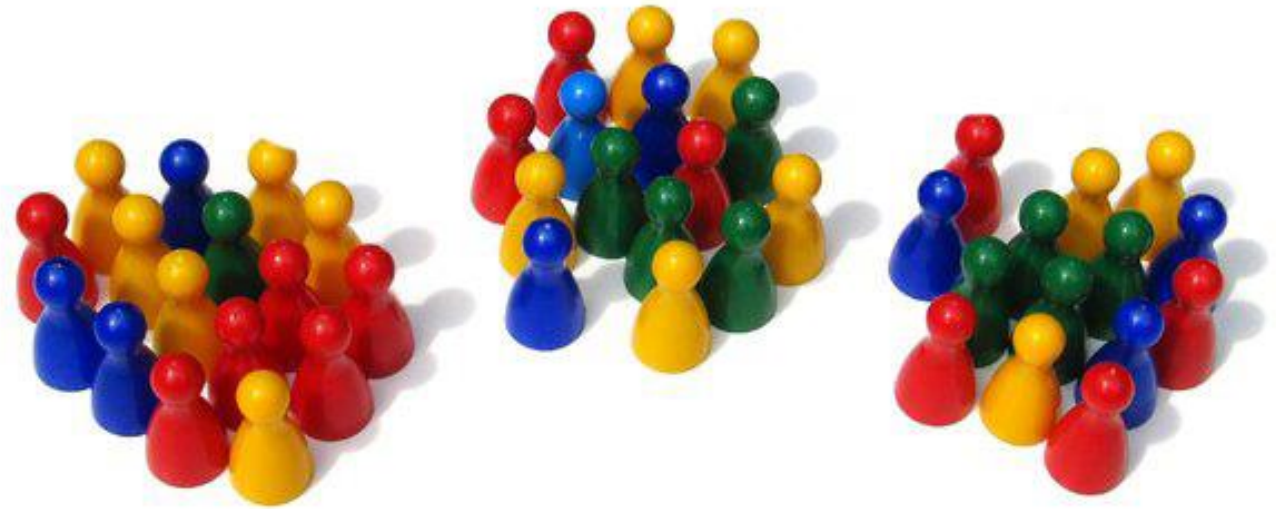
# Alternative Hypotheses

- There will be a significant difference between Star Performing Managers in Australia, Canada, and the United States in the following measures:

  - Annual Revenues

  - Annual Tax Returns

# Results – ANNUAL REVENUE

- The Math…
    - *F(2,87) 53.942, p=.000*
    - *SIGNIFICANT DIFFERENCE found via ANOVA.*
    - *FAIL TO REJECT the Null Hypothesis*

- *T-Tests determined SIGNIFICANT DIFFERENCES found between all three countries.*

- *United States held the highest mean Annual Revenue*
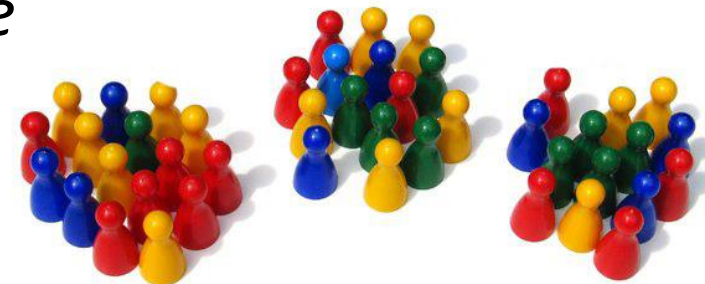
# Results – ANNUAL TAX RETURNS

- The Math…
    - *F(2,87)=5.13, p=.013*
    - *SIGNIFICANT DIFFERENCE found via ANOVA.*
    - *FAIL TO REJECT the Null Hypothesis*


- *T-Tests determined SIGNIFICANT DIFFERENCES found between the US and Australia*
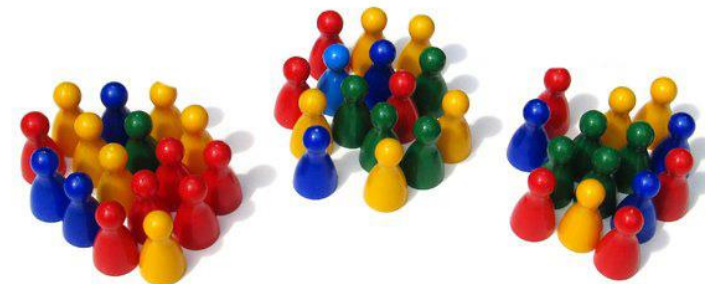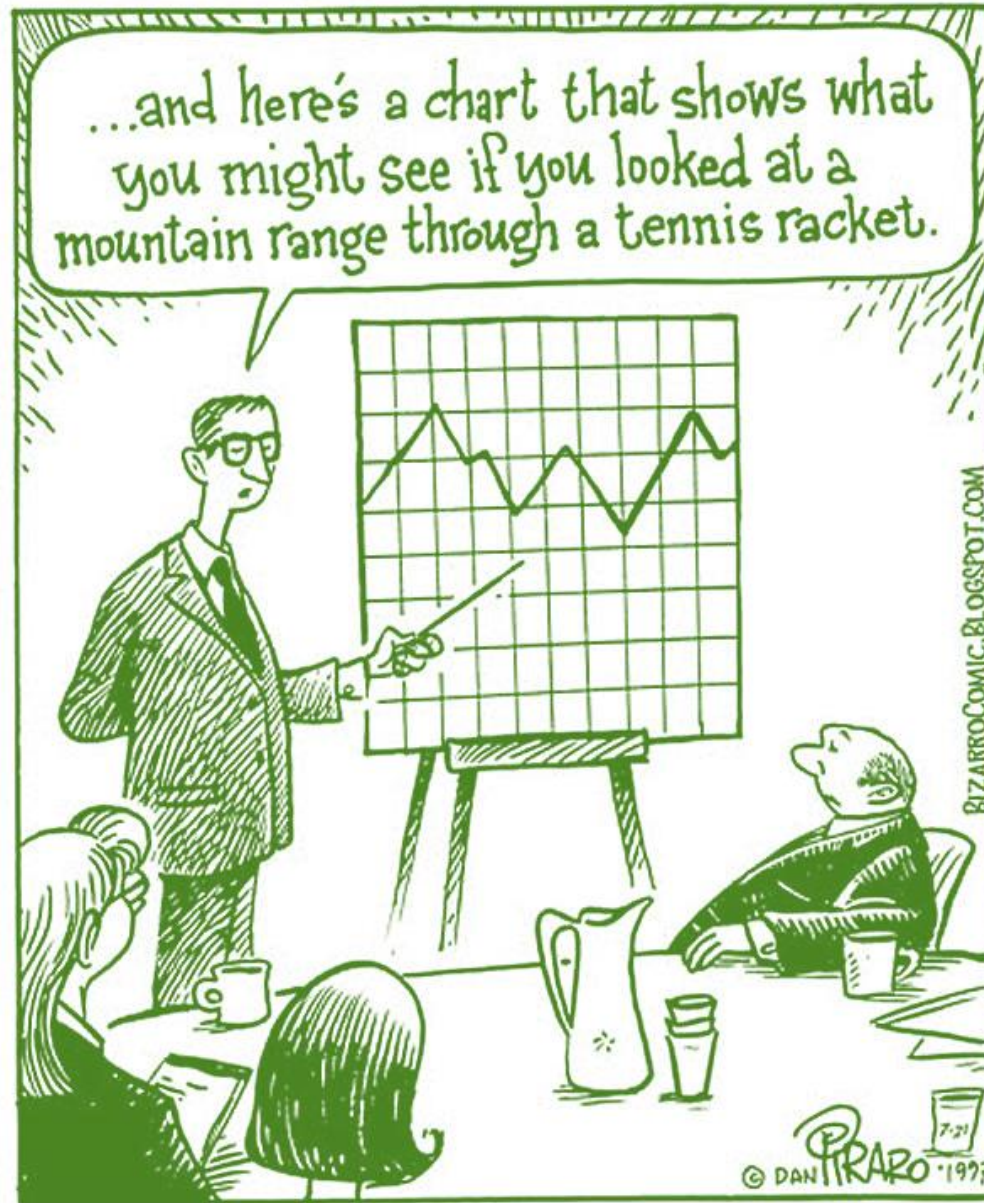
# CONCLUSIONS

- Consider Achievement Orientation score measured with Occupation Personality Questionnaire

- Consider years of Job Experience

- ANOVA and T-Tests indicate that further research may need to be done to determine why the United States tends to out perform Canada and Australia.

# CONCLUSIONS

- Emotional Intelligence seems to be the most important factor in determining a Star Performer

Thank you!