

# Head to Height Proportions in a Sample Population

## STAT 419: Project Measure

**Kathleen Rivas**     *Washington State University*

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In this article we compare the *empirical characteristic function* (Tukey 1977; Becker et al. 1988) to a *moment-generating-functional form* to compute the proportion of hypotheses  $m$  that are rejected under the null hypothesis.

Here is a second paragraph of the abstract (if necessary), and with the pipe notation it doesn't break. Notice it still needs to be indented.

Generally, we write this abstract last. Often it is called the executive summary. It should succinctly summarize the entire document. You can include references such as this one to the Appendices section 6 if necessary.

**Keywords:** multiple comparisons to control; summary statistics; correlation

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November 08, 2020

### 1 Introduction

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[ONE GRAPHIC]

[TWO GRAPHICS AS ONE]

Write something here.

### 2 Research Question: What is my primary question

#### 2.1 *What is my secondary question*

#### 2.2 *What is my other secondary question*

### 3 Data Description

Very brief introduction to the data, how it was collected, and so on. Remember that everything is covered (who, what, when, where, why, how, so what, and so on). Reference the section in the Appendix with greater detail about the data provenance. This section should be about two paragraphs, and the Appendix should have more information.

#### 3.1 *Summary of Sample*

#### 3.2 *Summary Statistics of Data*

### 4 Key Findings

### 5 Conclusion

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This is a newline.  
Here is some more text.  
Below are some example code that may benefit you in preparing your document.

Please state your name: \_\_\_\_\_  
I was born on \_\_\_\_\_ in \_\_\_\_\_

$$Y_{jt} = \alpha + \beta X_{jt} + v_j + \varepsilon_{jt},$$

(1)

where  $\alpha$  is the grand mean,  $v_j$  is the fixed-time country mean,  $X_{jt}$  (country  $j$  at time  $t$ ) is the matrix of country-level observations for the vector of aforementioned parameters  $\beta$ , and  $\varepsilon_{jt}$  represents the residual idiosyncratic disturbance. Our panel data set consists of repeated observations of countries over time. Therefore, we employ cross-section time-series models. This approach redefines Equation~1 by subtracting time-demeaned values. This *within* transformation subtracts constant country effects for the dependent variable  $\bar{Y}_j$ , the predictor variables  $\bar{X}_j$ , and the intercept  $\bar{v}_j$ :

$$(Y_{jt} - \theta \bar{Y}_j) = (1 - \theta)\alpha + \beta(X_{jt} - \bar{X}_j) + (v_{jt} - \theta \bar{v}_j),$$

(2)

If  $\theta = 0$ , the model reduces to a basic pooled ordinary-least-squares (OLS) model; if  $\theta = 1$ , the model reduces to a fixed-effects model; otherwise the model represents a random-effects model. The pooled OLS estimation is biased if country effects exist (?). The random-effects model may be susceptible to omitted-variable bias (?): bias because a predictor was excluded from the model specification. Conversely, the fixed-effects model is not susceptible to this bias as it captures unobserved intracountry variation around its average country-level "fixed effect." Panel-data analysis commonly has issues with heteroskedasticity, serial autocorrelation, and cross-sectional autocorrelation.

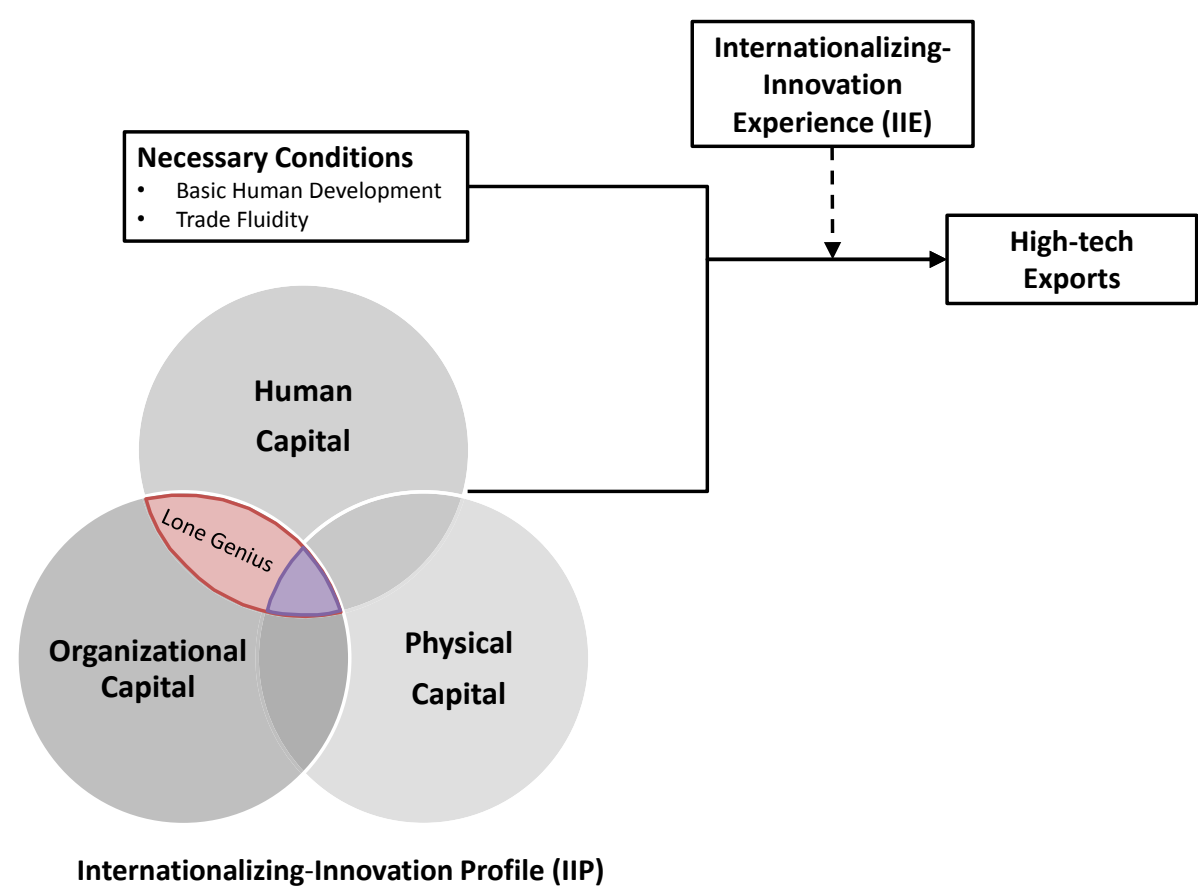
$i = 1$  and

$i = 1$

1	2	3	4	5
6	7	8	9	10

See Figure 1.

Figure 1: Conceptual Model



This is a footnote<sup>[1]</sup> that can be placed within a document.

Refer to the Appendices in section~6 where I am going to cite John (?, pp. 2-3).  
Here is a quote by ?, pp. 2-3:

For a long time I have thought I was a statistician, interested in inferences from the particular to the general. But as I have watched mathematical statistics evolve, I have had to cause to wonder and to doubt. [...] All in all, I have come to feel that my central interest is in *data analysis*, which I take to include among other things: procedures for analyzing data, techniques for interpreting the results of such procedures, ways of planning the gathering of data to make its analysis easier, more precise or more accurate, and all the machinery and results of (mathematical) statistics which apply to analyzing the data.

Large parts of data analysis are inferential in the sample-to-population sense, but these are only parts, not the whole. Large parts of data analysis are incisive, laying bare indications which we could not perceive by simple and direct examination of the raw data, but these too are only parts, not the whole. Some parts of data analysis, as the term is here stretched beyond its philology, are allocation, in the sense that they guide us in the distribution of effort and other valuable considerations in observation, experimentation, or analysis. Data analysis is a larger and more varied field than inference, or incisive procedures, or allocation.

Statistics has contributed much to data analysis. In the future it can, and in my view should, contribute more. For such contributions to exist, and be valuable, it is not necessary that they be direct. They need not provide new techniques, or better tables for old techniques, in order to influence the practice of data analysis.

Table 1: Descriptive Statistics and Correlation Analysis

	M	SD	1	2	3
1 Head to Height	6.7	.87	1		
2 Ethnicity	1.5	1.02	-.16*	1	
3 Age	34.4	17.68	-.02	-.12 <sup>†</sup>	1
4 Gender	1.5	.51	.07	-.01	-.08

**Notes:** Pearson pairwise correlations are reported;  
a two-side test was performed to report correlation significance.

<sup>†</sup> $p < .10$      $p < .05$      $p < .01$      $p < .001$

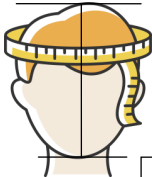
## 6 APPENDICES

### 6.1 *Data Provenance*

## 6.1.1 Data Collection Handout

Figure 2: Handout

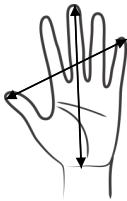
Name: \_\_\_\_\_ Age: \_\_\_\_\_ Gender: \_\_\_\_\_ Ethnicity: \_\_\_\_\_  
 Eye color: \_\_\_\_\_ Which hand do you write with: right / left  
 Which hand do you swing with: right / left Dominant eye: right / left



Head height:  
Head circumference:

How to find dominant eye:

- Extend arms out in front of you and create a triangular opening between thumb and forefingers
- With both eyes open, center this triangle on a distant object (like a clock)
- Close left eye
- If object stays centered, your right eye is the dominant eye. If the object moves out of the triangle made by fingers, your left eye is the dominant eye!



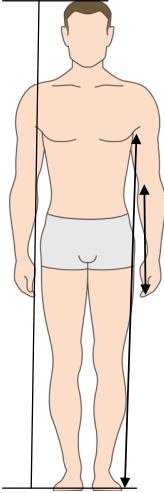
LEFT HAND:  
length (middle finger to wrist):  
width (fully extended, thumb to pinkie):

RIGHT HAND:  
length:  
width:

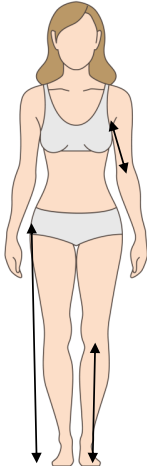
WHILE STANDING:

Height:  
Wingspan (middle finger, each hand fully stretched):  
Floor to navel:

**LEFT SIDE:**  
middle finger to elbow (on the inside):  
  
elbow to armpit:  
  
flat footed, how far can you reach on a wall with the tip of your finger?:  
  
foot length:  
  
**sitting** length from floor to kneepit:  
  
**standing** length from floor to hip:  
  
**standing** length floor to armpit:

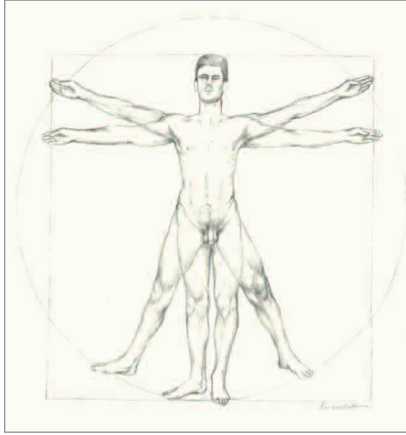


**RIGHT SIDE:**  
middle finger to elbow (on the inside):  
  
elbow to armpit:  
  
flat footed, how far can you reach on a wall with the tip of your finger?:  
  
foot length:  
  
**sitting** length from floor to kneepit:  
  
**standing** length from floor to hip:  
  
**standing** length floor to armpit:



Quality of measurements (scale of 1 to 10): \_\_\_\_\_ How long did it take: \_\_\_\_\_ Units: inch / cm

Kathleen Rivas  
 kathleen.rivas@wsu.edu  
 011692866



(a) Thomas et al. (2020) discuss this.



(b) Schnitt realer Sensor (Thomas et al. 2020)

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**Figure 3: Der Sensor in Theorie und Verwirklichung... caption at bottom instead?** I can write a really long caption if I want.

This is using "crop" to include one image and trim it to appear as two. Likely you will have two separate images if you use this option, so you would set the trim parameters all equal to 0.

This figure has subfigures which each also have a possible caption.

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## 6.2 *Preparing the Report Workspace as a subsection*

### 6.2.1 *Preparing the Report Workspace as a subsubsection*

#### *Preparing the Report Workspace as a paragraph*

*Preparing the Report Workspace as a subparagraph* Below is the necessary functions and libraries required to run the code referenced in this document.

```
library(devtools);          # required for source_url
library(dplyr)

path.humanVerseWSU = "https://raw.githubusercontent.com/MonteShaffer/humanVerseWSU/"
source_url( paste0(path.humanVerseWSU,"master/misc/functions-project-measure.R") );
```

```
## Warning: package 'Hmisc' was built under R version 4.0.3
```

Below is the code to load the data and prepare it for analysis.

```
path.project = "C:/_git_/WSU_STATS419_FALL2020/project-measure/";

path.github = "https://raw.githubusercontent.com/kat-rivas/WSU_STATS419_FALL2020/";
source_url( paste0(path.github,"master/functions/functions-project-measure.R") );

measure = readRDS("C:/Users/Dorbs of Doom/Documents/WSU/Fall 2020/STAT 419 Intro to Multivariate/final.1")
measure.df = prepareMeasureData(measure)
```

Below is the code to generate the summary statistics and save them as a table that you see in Section ??.

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**ENDNOTES**

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[1] This is a footnote that can be really long.

You can have multiple paragraphs in the footnote. You can have underline or **bold** or *italics*. You can even have a math equation inline.

In this section, we review the regression results to summarize our findings. First, we examine each model for significance, and conclude the hypothesized models fit well with the data. Second, we conclude that the fixed country effects represent consistent and unbiased parameter estimates. Third, with the use of the ? robust standard errors, we adjust any variance bias to ascertain the significance of these consistent estimates. Therefore, we are able to make inferences about the hypotheses using our model estimates. For ease of interpretation across these 12 models, we introduce  $\hat{\beta}_{Total}^{M1}$  as notation to refer to parameter estimate  $\hat{\beta}_1$  (HDI) for the Total Sample and (M1) Model 1: Main Effects. We proceed by reporting findings for the total sample.

The footnotes are automatically converted to "endnotes" and will be included at the end of the document. It will finish when you have that outer brace like this.

**REFERENCES**

- Becker, Richard A, John M Chambers, Allan R Wilks. 1988. *The New S Language*. Wadsworth & Brooks.
- Thomas, Diana M, David Galbreath, Maura Boucher, Krista Watts. 2020. Revisiting leonardo da vinci's vitruvian man using contemporary measurements. *Jama* **323**(22), 2342–2343.
- Tukey, John W. 1977. *Exploratory data analysis*. 1st ed. Reading, MA.

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