PPPA 6002: Research Methods & Applied Statistics

Fall 2020
Thursday sections:
• 12:45 – 2:15 EST (Section 10)
• 6:10 - 7:40 EST (Section 13)

Instructors
Bill Adams (adams@gwu.edu)
  Online office hrs: Mon/Tues/Fri 4-6:00 EST
Leslie Kwan (lykwan@gwu.edu)
  Online office hrs: Mon 3-5:00; Tues/Wed 4-6:00 EST
Afternoon lab on selected dates 2:45-3:45 EST
Didem Bayar (kidembayar@gwu.edu)
Evening lab on selected dates 8:00-9:00 EST
Katie Howell (katiehowell94@gwu.edu)

Textbooks & Software
• No required books to purchase.
• Blackboard: annotated PowerPoints, plus weekly videos and readings.
• SPSS software (available through GW).

Assignments and Grades
Part 1: Research Methods with Bill Adams:
• Participation in Part 1 counts 5%.
• Mini-quiz for Part 1 counts 5%.
• Weekly worksheets in Part 1 count 10%.
• Dataset project in Part 1 counts 10%.
• Exam for Part 1 counts 20%.
Part 2: Applied Statistics with Leslie Kwan:
• Research project in Part 2 counts 20%.
• Exam for Part 2 counts 15%.
• Worksheets in Part 2 count 10%.
• Practice problems in Part 2 count 5%.

Learning Objectives
PPPA 6002 focuses on practical skills for conducting and evaluating empirical and quantitative research, plus provides a brief look at qualitative methods. The course explores the strengths and weaknesses of experimental (RCT), quasi-experimental, and nonequivalent control group experimental designs. It also covers the widely used statistical software, SPSS, and foundational univariate, bivariate, and multivariate statistics.

In particular, the course targets as learning objectives key research skills including how to:
Skill 1: Conduct and evaluate survey research
Skill 2: Conduct and evaluate RCTs
Skill 3: Conduct and assess other methods such as NBE, time series designs, and correlational designs
Skill 4: Conduct and evaluate qualitative studies
Skill 5: Conduct statistical analyses using SPSS
Skill 6: Analyze basic univariate statistics
Skill 7: Implement bivariate statistical techniques, such as t-tests, chi square, correlation, and regression
Skill 8: Implement multivariate statistical techniques such as multiple regression and partial tables analysis
Skill 9: Prepare a research study summarizing statistical analyses for a non-technical audience

Class Participation
Your engagement each week is vital to making this online course work effectively. This entails not only attending class, ideally with your video on, but also participating in discussions, being a supportive and reliable member of your team, and keeping up to top of communications, including responding promptly to emails and checking announcements in Blackboard.
Part 1: Additional Information (Adams)

**Blackboard:** All weekly Part 1 course information including readings, videos, PowerPoints, and assignments will be posted on the course Blackboard site.

**Office hours:** For a reservation during Monday, Tuesday, or Friday afternoon office hours, go to 6002 Blackboard. Under Part 1, click “Zoom Chat” to select your most convenient time. If the topic is urgent and time sensitive, please email adams@gwu.edu.

**Weekly Steps:**
First, closely review the week’s narrated PowerPoint (posted in Blackboard).

Second, for elaboration, reinforcement, and more detail watch the week’s videos and go over the readings posted in Blackboard.

Third, refer to the week’s key concepts listed in the syllabus. Make it priority to draw on the PowerPoint talk and the supplemental materials to fully understand and be able to apply these concepts. Bring any questions for the Q&A in the synchronous session (or in online chats with the instructor or TA).

Fourth, the day before our class, get together with your assigned team to review the key concepts and discuss the worksheet. Collaboration is very much encouraged.

Fifth, upload your answers to the weekly worksheet the day before our class meeting. Answers should be concise but usually more than a few words.

Sixth, be sure to have a convenient copy of the worksheet questions and your answers for the live class.

**Grading:** Lowest overall Part 1 grade (no rounding) for an A is 94.00; A- 90.00; B+ 87.00; B 83.00; B- 80.00; C+ 77.00; C 73.00; and C- 70.00.

**Part 1 Quiz and examination:** These are closed book. They consist of short objective questions focusing on understanding and applying the key concepts listed in the syllabus.

**Lab Sessions:** During Part 1, the lab period will be used as shown on the next page. Other weeks you are urged to use the lab time to do the class readings and review videos, complete your weekly worksheets, and/or meet with your study group.

Part 2: Additional Information (Kwan)

**Blackboard:** All Part 2 course information including class notes, additional readings, and homework assignments will be posted on the course Blackboard site.

**Office Hours:** To sign up for Monday, Tuesday, or Wednesday office hours, please schedule an appointment through Google Calendar Appointments at tiny.cc/lykofficehours.

**Textbook:** There is no required textbook for Part 2. If you would like a textbook for extra support, we recommend Healey’s Statistics, 10th edition.

**SPSS:** SPSS is the statistical software used in the course. SPSS is available on the Columbian Collage Cloud. You will receive separate instructions for accessing SPSS. You do not need to rent or purchase SPSS but, if you do want a copy, it is available for rent through gw.onthehub.com.

**Lab Sessions:** During scheduled labs, the class TAs, Didem Bayar and Katie Howell, will hold regular virtual office hours and provide SPSS assistance to help you with your assignments and research project. The lab to introduce SPSS is during week 5 in Part 1. Additional SPSS labs will be held during weeks 9, 10, 11, 13, and 14. Attendance is encouraged but not mandatory.

**Worksheet Assignments and Practice Problems:** Part 2 worksheet assignments and practice problems will be graded on a check, check-plus, or check-minus system, based on whether the assignment was fully completed. Feel free to work with classmates, but if you do decide to work with other students, please still turn in your own solutions. Responses should be submitted via Blackboard on or before the due date.

**Research Project:** This project offers an opportunity to further develop your skills in analyzing data by generating relevant statistics and interpreting them using a dataset of your choice. Papers should be submitted via Blackboard on or before the due date.

**Part 2 Examination:** The exam will not be cumulative. Rather, it will draw exclusively from material covered in Part 2. Details regarding the exam format will be provided closer to the date.
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<thead>
<tr>
<th>Session</th>
<th>6002 Session Topics</th>
<th>Lab</th>
<th>Worksheets Due</th>
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<tbody>
<tr>
<td>Week 1: Sept 3</td>
<td>Research ethics; Research questions; Literature reviews</td>
<td>None</td>
<td>✓ #1</td>
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<td>Week 2: Sept 10</td>
<td>Measurement validity and reliability; Levels of measurement</td>
<td>✓</td>
<td>✓ #2</td>
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<td>Week 3: Sept 17</td>
<td>Question and questionnaire design; Survey sampling systems</td>
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<td>Week 4: Sept 24</td>
<td>Causal inference and RCT designs</td>
<td>✓</td>
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<td>Week 5: Oct 1</td>
<td>NEC group designs; Time series; Correlational designs</td>
<td>SPSS</td>
<td>✓ #5 Dataset due</td>
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<td>Week 6: Oct 8</td>
<td>Qualitative research; Focus groups Content analysis; Meta-analysis</td>
<td>Quiz</td>
<td>✓ #6</td>
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<td>Week 7: Oct 15</td>
<td>Univariate descriptive statistics</td>
<td>✓</td>
<td>✓ #7</td>
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<td>Week 8: Oct 22</td>
<td>Examination (Conclusion of Part 1)</td>
<td>Part 2: Sampling distribution (Discussion during lab session)</td>
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<td>Week 9: Oct 29</td>
<td>Estimation and confidence intervals</td>
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<td>✓ #8</td>
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<td>Week 10: Nov 5</td>
<td>Hypothesis testing; Difference of means</td>
<td>✓</td>
<td>✓ #9</td>
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<td>Week 11: Nov 12</td>
<td>Bivariate regression and correlation</td>
<td>✓</td>
<td>✓ #10</td>
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<td>Week 12: Nov 19</td>
<td>Multiple regression</td>
<td>None</td>
<td>None</td>
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<td>Week 13: Dec 3</td>
<td>Contingency tables; Chi square</td>
<td>✓</td>
<td>✓ #11</td>
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<td>Week 14: Dec 10</td>
<td>Partial tables analysis</td>
<td>Exam review</td>
<td>✓ #12 Research paper due</td>
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<td>Week 15: Dec 17</td>
<td>Examination (Conclusion of Part 2)</td>
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1. **Introduction to 6002, plus**
   Research Ethics: Research Questions; and Literature Review

   - Blackboard recorded lectures, readings, and videos

   Belmont Report and key principles of research ethics
   Special attention to informed consent, minimizing risk, privacy, and extra care for vulnerable groups

   Institutional Review Board (IRB)
   Necessity for citation attribution
   Confirmation bias

   Theory-building research steps
   Applied research steps

   Theory: Hypothesis
   Independent variable (X); Dependent variable (Y)
   Operationalize concepts; operational definition

   Basic structure of the written research report:
   Intro & problem statement; lit review;
   methodology; findings; discussion

   Writing a problem statement

   Main goals of literature review
   Tips for upgrading the literature review

2. **Data Gathering; Levels of Measurement; Measurement Validity and Reliability**

   - Blackboard recorded lectures, readings, and videos

   Cases (observations) in rows
   Variables in columns; values in cells
   Individual-level data
   Aggregate data
   Ecological fallacy

   Levels of measurement:
   Nominal, Ordinal, Interval, Scale

   Interval and ratio often called scale (or interval)
   Nominal and ordinal often called categorical
   Suitable stats vary depending on measurement level

   Measurement reliability = consistency
   Measurement validity = accuracy

   Subjective validity: face validity
   Criterion validity: concurrent & predictive validity

   Unobtrusive measures
   Multiple measures

   Secondary data analysis – pros and cons
   Scrutinize secondary data before using it

3. **Question and Questionnaire Design; Survey Sampling Systems**

   - Blackboard recorded lectures, readings, and videos

   Principles for designing good individual questions
   Ways to filter or minimize “random responses”

   Best practices for overall questionnaire flow:
   Short intro; easy start; broader to more detailed;
   sensitive questions later; demographics at end

   Closed-ended vs. open-ended questions
   Likert item (strongly agree/agree/disagree/strongly disagree)

   Census vs. sample
   Random vs. nonrandom samples
   Nonrandom (nonprobability) sampling such as
   convenience, snowball, and purposive sampling

   Simple random sampling
   Systematic random sampling
   Stratified random sampling
   (Proportionate vs. nonproportionate)

   Probability-proportional-to-size (PPS) sampling
   Sampling frame (source/list used to draw sample)

   Nonresponse bias vs. response bias
   Evaluating response rates; how high is high enough?
Survey participation as a quick cost-benefit decision
Best practices for improving survey response rates
Weighing the sample to reflect the population
Determining the optimum size of a completed sample
Benchmark confidence intervals (95% level) for
n=100 (±10%); 600 (±4%); 1100 (±3%)

Causal inference and RCT Designs

- Blackboard recorded lectures, readings, and video

Three elements of causal inference...
1) X & Y covary; association; concomitant variation
2) X before Y; direction; time sequence; temporal order
3) Rule out Zs; no plausible alternative; nonspuriousness

Correlation does not prove causation!
Post hoc, ergo propter hoc fallacy

Campbell & Stanley’s design diagraming system
Single group posttest only
Single group pretest-posttest (aka before-and-after)
Static group design (nonequivalent comparison design)

Antecedent variables
Intervening variables
Major threats to internal validity:
  - History
  - Maturation
  - Practice
  - Instrumentation
  - Regression to the mean
  - Selection
  - Intra-group history
  - Attrition/Mortality (and how to deal with attrition)

“Intent to treat” analysis includes all those assigned
to treatment group regardless of participation

Randomized, controlled trial (RCT) = true experiment

Elements of an RCT:
(1) random assignment of subjects from pool to
groups and (2) random assignment of X to groups

Reason for the power of RCTs:
  Comparability of the groups (i.e., only real
difference between the groups is X, so X is the
best explanation for differences in the groups)

Classic experimental design
(aka pretest-posttest control-group design)

Posttest only experiment
(aka posttest-only control-group design)

RCT variations:
  “Control group” may get something
  May have more than one X (factorial designs)
  Can assign collectivities (instead of individuals)
  Groups not always assigned 1:1 (e.g., may be 2:1)

Factorial designs (simple or complex)
Dosage/sensitivity designs
Complex X
Multiple Ys

External validity (generalizability)
Random selection from the relevant population
strengthens external validity.
Random assignment from pool of subjects to groups
strengthens internal validity.

Reactivity
Hawthorne effects
Placebo
Try to avoid between-group reactivity as well as
other types of reactivity (e.g., with X and staff)

RCT’s two essential elements
5 NEC, Time Series, Correlational Designs

- Blackboard recorded lectures, readings, and videos

Practical reasons why RCTs may not be conducted
Quasi-experiments (vague term)
Causal comparative (another term for studies that try to infer causality when groups not randomly assigned)
Nonequivalent comparison group (NEC) designs
Pretest-posttest nonequivalent comparison designs
Posttest only nonequivalent comparison group design

- Key internal validity threat to NEC designs: selection
- Retrospective matching design
- Natural experiments (strict vs. broad usage)
- Time series (aka longitudinal) research
- Why superior to "single group pretest-posttest?"
- Key internal threat to time series study: history
- Simple interrupted time series
- Reiterative time series; Multiple time series
- Deceptive time series charts (truncated base)
- Panel data vs. cross-sectional data
- Retrospective pretests (aka proxy pretests)
- Fallacy of time series inferences from a single survey

Process and logic of correlational designs
Crucial role of controlling other factors; not crudely looking at results from a single X

- Key internal threat to correlational studies: selection
  - Hard to statistically control for all Zs, especially threats from motivation and self-selection (thus specification error, aka omitted variable bias);
  - different controls can yield widely varying results

Overall assessment of causal designs:
Lab RCTs: usually strong on internal validity
but weak on external validity
Nonexperimental field studies: often strong on external validity but weak internal validity
Field RCTs: strong in both internal and external validity but often not feasible to conduct

The logic of inferring causality by coupling lab experiments with nonexperimental field studies

Big four validity issues:
  - Measurement validity
  - Internal validity
  - Statistical conclusion validity
  - External validity

6 Qualitative and Other Research

- Blackboard recorded lectures, readings, and videos

Qualitative Research
- More exploratory than hypothesis testing
- Small, purposive sample, not large random
- Extended, intense observations or interviews
- Unstructured or semi-structured data gathering
- Essay reports with little or no quantitative data
- Often explore the researchers' subjective impact

Focus groups purposes:
- Probing attitudes, reaction testing, brainstorming
Focus group steps: recruit relevant people; 10-12; 1½-2 hours; semi-structured format with mostly open-ended topics; neutral facilitator.

Mixed Methods Research
- Using both qualitative & quantitative approaches,
- For example, qual, then quant, then qual

Focus groups purposes:
- Probing attitudes, reaction testing, brainstorming
Focus group: participant recruitment; focus group size; session length and agenda; moderator style; and ideal focus group facilities

Content analysis steps:
- Define scope
- Operationalize variables to code
- Refine and test coding system
- Inter-coder reliability testing
- Code content and analyze data

Meta-analysis purpose and strengths
Steps in conducting a meta-analysis
Univariate Descriptive Statistics

- **Blackboard recorded lectures, readings, and videos**

Good data analysis requires good data, plus awareness that: all summary statistics are reductionist, context dictates interpretation, minor differences should not be exaggerated, correlation does not prove causation, start with univariate analysis before multivariate.

Nominal univariate statistics – percent and mode

- Interpretation pitfalls include:
  - Misleading pictograms; confusing absolute and relative percent; misinterpreting mode as midpoint; and misleading modal composites
- Plurality vs. majority
- Major measures of central tendency:
  - mean and median, plus trimmed mean
- Mode (not necessarily a central tendency)

Major measures of dispersion:

- standard deviation and interquartile range
- Positive skew (high values pull mean above median)
- Negative skew (low values pull mean below median)

Normal curve

- ± 1 standard deviation = 68.3% of normal curve
- ± 2 standard deviations = 95.4% of normal curve
- ± 3 standard deviations = 99.7% of normal curve

Value of examining frequency distribution charts

Descriptive vs. inferential statistics

<table>
<thead>
<tr>
<th>Population</th>
<th>Mean</th>
<th>Standard deviation</th>
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</thead>
<tbody>
<tr>
<td>µ “mu”</td>
<td>σ “sigma”</td>
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Sample | X “x-bar” | s

Boxplots, stem-and-leaf plots

Histograms, bar charts, pie charts

During Class: Examination for Part 1
After Exam: Introduction to Part 2

Introduction to Part 2: Sampling Distribution

- **Blackboard: Recorded lectures and readings**

Inferential v. descriptive statistics

Sampling distribution (theoretical distribution of a statistic for all possible sample outcomes of given size, n)

- Mean of the sampling distribution = \( \mu_x \)

- Standard deviation of the sampling distribution = \( \sigma_x \)

Properties of the sampling distribution:

1. \( \mu_x = \mu \)
2. \( \sigma_x = \frac{\sigma}{\sqrt{n}} \) (standard error)

Central limit theorem (as sample size grows, the sampling distribution approaches normal regardless of the shape of the population distribution)

Estimation and Confidence Intervals

- **Blackboard: Recorded lecture and readings**

Two types of estimates, point and interval

Estimator (used to estimate the population parameter by approximating it)

Good estimators are 1) unbiased and 2) efficient

Formula to construct a confidence interval around a sample mean when do not know \( \sigma \):

\[
c.i. = \bar{X} \pm Z \left( \frac{s}{\sqrt{n}} \right)
\]

where \( Z \) is the critical value

Consider alpha (\( \alpha \)), which is the probability that the interval does not contain the population parameter, and the confidence level \( 1 - \alpha \) to determine the critical value

Adjust the interval through \( n \) and the confidence level

Formula to construct a confidence interval around a sample proportion:

\[
c.i. = p \pm Z \left( \frac{0.25}{n} \right)
\]

where \( p \) is the sample proportion
**Hypothesis Testing: Difference of Means**

- **Blackboard: Recorded lecture and readings**

Hypothesis testing steps:
1. State the assumptions
2. State the null (H₀) and alternative/research hypotheses (H₁)
3. Select the critical value
4. Compute the test statistic
5. Compare the test statistic to the critical value

Decide whether to reject or fail to reject H₀

Null hypothesis is a statement of no difference, specified in terms of populations. The null is the assumption, but it is never proven. Failure to detect a relationship, especially in a small sample, does not mean there is no relationship.

Z (critical) = ±1.96 if want to be 95% confident, associated with α = 0.05

Formula to compute the test statistic for a two-sample means test when n₁ ≥ 30 and n₂ ≥ 30:

\[ Z(\text{obtained}) = \frac{X_1 - X_2}{\sigma_{X} - X} \]  

\[ = (X_1 - X_2) \sqrt{\frac{s_1^2 + s_2^2}{n_1 + n_2}} \]

Formula to compute the test statistic for a two-sample proportions test (where \( n = \frac{n_1p_1 + n_2p_2}{n_1 + n_2} \)):

\[ Z(\text{obtained}) = \left( p_1 - p_2 \right) \frac{n(1 - n)}{\sqrt{n_1 + n_2}} \]

Student's t-distribution replaces Z-distribution where df (degrees of freedom) is \( n - 1 \) when \( n < 30 \) since s is no longer a good estimator of \( \sigma \). As n increases, t-distribution converges to Z-distribution.

Tradeoffs in testing:
1. Type I vs. Type II error. Lowering \( \alpha \) reduces Type I error (reject true null) but increases Type II error (fail to reject false null)
2. Statistical vs. substantive significance. Large samples can show statistical significance for trivial relationships
3. One vs. two-tailed tests. A one-tailed test increases the likelihood of rejecting the null by lowering Z(critical) but only if theory supports it

**Bivariate Regression and Correlation**

- **Blackboard: Recorded lecture and readings**

Scatterplot (positive, negative, or no relationship)

Formula for bivariate regression: \( Y = a + bX \)  
where \( Y \) = predicted value for dependent variable \( Y \) on the regression line, \( b \) = slope, and \( a \) = intercept

Regression gives the formula for the straight line that comes closest to the conditional means. Conditional mean = average \( Y \) for observations with the same \( X \).

Slope represents the "magnitude." The amount of change in \( Y \) when \( X \) increases by 1 unit

Residuals represent the difference between the actual and predicted values (\( Y_i - \hat{Y}_i \))

Regression assumes the relationship is linear. Not appropriate for curvilinear patterns unless the specification of the variables is altered.

Formula to compute the test statistic for the hypothesis test to determine whether there is a relationship between \( X \) and \( Y \) in the population (H₁: \( \beta \neq 0 \) where \( \beta \) = population slope coefficient):

\[ t(\text{obtained}) = \frac{b - 0}{SE(b)} \]

where SE(b) is the standard error of the slope

p-value = the probability of observing a test statistic equal to or further from the center of the distribution than that obtained if the null is true

Correlation coefficient (r) ranges from -1 to 1 and measures the strength of the relationship. No linear relationship when \( r = 0 \)

Rough (and somewhat arbitrary) cutoffs for the strength: -0.3 ≤ r ≤ 0.3 (weak); -0.6 ≤ r < -0.3 or 0.3 < \( r \) ≤ 0.6 (moderate); \( r < -0.6 \) or \( r > 0.6 \) (strong)

Null hypothesis in test of statistical significance of \( r \) is \( H_0: \rho = 0 \) where \( \rho \) = population correlation coefficient
Multiple Regression

- Blackboard: Recorded lecture and readings

Formula for multiple regression:
\[ \bar{Y} = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n \]
where, e.g., \( b_i \) = slope of the linear relationship between \( X_i \) and \( Y \)

Each slope shows the amount of change in \( Y \) when that independent variable increases by 1 unit:
- holding the other independent variables constant
- controlling for the effects of other independent variables

Coefficient of determination (\( R^2 \)) measures the proportion of the variation in \( Y \) that can be explained by the regression

Some limitations of \( R^2 \) even when its value is high:
1. Always increases when add variables (except in the rare case where the additional variable has absolutely no effect)
2. Does not indicate which variables are significant
3. Does not mean that important variables have not been omitted

Adjusted \( R^2 \) does not necessarily increase when a variable is added to the regression

Dummy (indicator) variables take the values 0 and 1. Used when nominal or ordinal independent variables are included in the regression

To avoid perfect multicollinearity, include one less dummy than the number of categories in the nominal/ordinal variable

Intercept is the predicted value for the omitted category and slope coefficients are interpreted relative to the omitted category

Contingency Tables; Chi Square

- Blackboard: Recorded lecture and readings

When both variables are nominal or ordinal, can create a "contingency" table (aka crosstab) with the independent variable in the columns and compute the "conditional" percentages

Maximum percentage-point difference in the conditional percentages represents the relationship magnitude

Rough (and somewhat arbitrary) cutoffs for the relationship strength: 0-10% points (weak); 10-30% points (moderate); >30-100% points (strong)

Chi square (\( \chi^2 \)) distribution with \( u \) degrees of freedom (df) is the sum of \( u \) squared independent standard normal random variables (\( Z_1^2 + Z_2^2 + \ldots \))

Degrees of freedom for \( \chi^2 \) (critical) = \( (r-1)(c-1) \) where \( r \) is the number of rows and \( c \) is the number of columns in the contingency table

Formula to compute the chi square test of independence:
\[ \chi^2 (obtained) = \sum \frac{(f_o - f_e)^2}{f_e} \]
where \( f_o \) = observed cell frequencies and \( f_e \) = cell frequencies that would be expected if the variables are independent

Formula to determine the expected frequencies:
\[ f_e = \frac{\text{row marginal} \times \text{column marginal}}{n} \]

Partial Tables Analysis

- Blackboard: Recorded lecture and readings

Partial tables analysis (aka crosstabs with controls) examines the relationship between \( X \) and \( Y \) for each category of \( Z \).

Introducing \( Z \) can change the understanding of the relationship between \( X \) and \( Y \) in various ways.

Relationship can be:
1. Direct (\( Z \) does not alter the \( X-Y \) relationship)
2. Spurious (\( Z \) is the cause of the \( X-Y \) relationship)
3. Intervening (\( Z \) is the link between \( X \) and \( Y \))
4. Suppressor (absence of \( Z \) is masking the \( X-Y \) relationship)
5. Interacting (\( X-Y \) relationship changes across categories of \( Z \))

Examination for Part 2
Standard Policies

1. The Syllabus: This syllabus is a guide to the course. Sound educational practice requires flexibility and the instructor may therefore, at her/his discretion, change content and requirements during the semester.

2. Incompletes: A student must consult with the instructor to obtain a grade of "I" (Incomplete) no later than the last day of classes in a semester. At that time, the student and instructor will both sign the CCAS contract for incompletes and submit a copy to the School Director. Please consult the TSPPA Student Handbook or visit the website for the complete CCAS policy on incompletes.

3. Submission of Assignments: It is the responsibility of the student to ensure that the instructor receives each assignment by verifying uploads to Blackboard using the My Grades tab.

4. Policy on Late Work: All work must be turned in by the assigned due date in order to receive full credit for that assignment, unless an exception is expressly made by the instructor.

5. Academic Honesty: The GW Code of Academic Integrity is at studentconduct.gwu.edu/code-academic-integrity. All exams and other graded work products are to conform to the Code. It defines "academic dishonesty" as "cheating of any kind" and "misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information."

6. Changing Grades after Completion of the Course: No changes can be made to grades after the conclusion of the semester, other than in cases of clerical error.

7. Religious Holidays: Religiously observant students should notify the instructor the first week of classes regarding any session that will be missed; the courtesy of an absence without penalty will be extended.

8. Accommodation for Students with Disabilities: To receive accommodations on the basis of disability, please provide documentation from the GW’s Disability Support Services, Rome Hall 102 (202-994-8250). See also: disabilitysupport.gwu.edu.

9. Mental Health Services: The Colonial Health Center offers assistance to address students' personal, social, career, and study skills problems, along with emergency mental health consultations and counseling services as well as referrals. See: counselingcenter.gwu.edu.

10. Community Values: Higher education works best when it becomes a vigorous and lively marketplace of ideas in which all points of view are heard. Free expression in the classroom is an integral part of this process. Higher education also works best when we approach the enterprise with empathy and civility toward others, irrespective of identity or viewpoints. We value civility because that is the kind of community we want, and civility enables more effective intellectual exploration and growth.

Grade Descriptions and Expectations:

A (Excellent): Exceptional work for a graduate student. Shows a consistently strong command of the material.

A- (Very Good): Very strong work for a graduate student. Shows a strong understanding of analytical approaches and meets professional standards.

B+ (Good): Sound work for a graduate student. This grade indicates the student has at least accomplished the basic course objectives.

B (Adequate): Minimal competent work for a graduate student with some evident weaknesses. Shows competence in most course objectives but the understanding or application of some important issues is incomplete.

B- (Inadequate): Weak work for a graduate student. Understanding of key issues is incomplete. A cumulative GPA of B- will lead to academic probation.

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PPPA 6002. Research Methods and Applied Statistics (bulletin.gwu.edu/courses/pppa)

Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

Average Minimum Independent Weekly Work:

In addition to the average of three hours weekly of direct instruction in class and the computer lab, this course requires a minimum weekly average of six hours of independent reading, research, and learning.
SPECIAL 2020 NOTIFICATIONS

Recording synchronous class sessions
The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99) is a Federal law that protects the privacy of student education records. Consistent with FERPA, please note:

Our synchronous class lectures/discussions will be video recorded. Thus, as part of this course, you may be recorded. The recording will only be made available to students enrolled in this class for the duration of this semester. If you do not wish to be recorded, please contact both the instructor and the GW Privacy Office (privacy@gwu.edu) the first week of class (or as soon as you enroll in the course, whichever is latest) with your privacy concern.

Limits on Use of Electronic Course Materials and Class Recordings
Students are encouraged to use electronic course materials, including recorded class sessions, for private personal use in connection with their academic program of study.

Electronic course materials and recorded class sessions should not be shared or used for any non-course related purposes.

Students who impermissibly share any electronic course materials are subject to discipline under the Student Code of Conduct.

Please contact the instructor if you have questions regarding what constitutes permissible or impermissible use of electronic course materials and/or recorded class sessions.