SACRAMENTO STATE

Spring Semester 2022
PPA 207 – QUANTITATIVE METHODS
Master's Program in Public Policy and Administration

Faculty Core Elements	
Last Revised	4/3/2022
Contact Information	**Instructor:** Professor Rob Wassmer, Ph.D. **Email:** rwassme@csus.edu **Phone:** (916) 752-2910 [cell]; (916) 278-4556 [office] **Office:** Room 226 Sac State Downtown **Hours:** Monday & Thursday, 4 – 5:30 p.m.; Sunday 7 p.m. Zoom "Water Cooler"; and by appointment (in-person or Zoom) **Classroom:** Room 110 Sac State Downtown **Hours**: 6 to 8:50 p.m. **Website** **Twitter:** @rwassme
Prerequisite	PPA 205 with a B- grade or better [or instructor permission]
Course Description	Study of quantitative methods as applied in public policy and administration analysis. Concentrates on interpreting the results of econometric, statistical, and other public policy studies and determining the relevance and applicability of quantitative analysis with the larger scheme of public policy decision-making.
Required Materials	(1) *STATA: A Really Short Introduction* (2019), Felix Bittman, De Gruyter Press; purchase at Sac State bookstore, Amazon, or your favorite internet bookseller. (2) *STATA/BE 17 Grad Plan Statistical Package* **available** for purchase at STATA website. Based upon being a Sac State student, prices are $48/6 months or $225/perpetual. Please load on your laptop in time for the first meeting. Unless you are sure you want a permanent copy of this, I suggest getting the 6-month version and updating it to perpetual within the 6 months if you change your mind. I recommend the perpetual version if you desire to do data analysis as part of your career.

	(3) **Naked Statistics** (2014), Charles Wheelan, Norton Press; purchase at Sac State bookstore, Amazon, or your favorite internet bookseller. (4 – You may have from PPA 200 or 240A) **Writing Literature Reviews: A Guide for Students of the Social and Behavioral Sciences**, Jose Galvin, 4th Edition (or later), Pyrczak Publishing; purchase at Sac State bookstore, Amazon, or your favorite internet bookseller. *You will also need a computer during our meeting time, loaded with Zoom, STATA, and Excel.*
Course Learning Objectives	There are five learning objectives for this course that are part of a broader set of learning objectives for the MPPA degree.

PPA LEARNING OBJECTIVE	HOW APPLIED IN PPA 220A
1 f. Identify, critically examine, and use relevant data to inform policy and administrative decisions.	Learn how to locate, access, and transfer to a statistical package the data necessary to complete a regression analysis that informs a public policy or administrative decision.
1 h. Critically review the literature to help understand and address a problem from various perspectives.	Effectively review empirically based literature to assist and inform in creating a regression analysis.
2 a. Critically use different analytical skills, processes, and tools to address policy and administration problems.	Learn the statistical knowledge and skills necessary to produce a credible regression analysis and to pass judgment on other such analyses as credible.
2 d. Effectively communicate with different audiences to understand public problems and policy and administration strategies.	Understand and apply the analytic tool of statistics, through regression analysis, to offer insights into a policy or administration concern.
2 e. Write clearly and succinctly as appropriate to various audiences.	Practice writing a regression-based research study in a manner that is theoretically sound and understandable to a non-statistical audience.

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Course Delivery & Attendance	I expect Section 1 registrants to attend in person (except as noted below). Section 2 registrants are granted full Zoom participation (if they desire) due to a compelling personal or family health situation that precludes their in-person attendance. This situation is not ideal, but a compromise formed out of the continuing effects of the Pandemic. I believe that the best way to teach applied quantitative analysis is in person with the ability to get real-time feedback on STATA applications from me and your classmates. Thus, you should attend in person if at all possible. Those registered in Section 2 are encouraged to be in person if their situation changes. For the spring of 2022, in consultation with GASPPA, the MPPA Program has adopted the following protocols for our meetings. **Zoom/Online Engagement** Unless enrolled in the online Zoom section (2) of PPA 207, I will expect you to attend meetings in person. I realize, however, that we all end up with periodic scheduling challenges related to professional and personal obligations. Therefore, everyone may choose to attend one class online during the semester without any participation penalty—please provide me with advance notice. Of course, you may always contact me about shifting to online participation if you are ill or experiencing an emergency. **As an instructor**, I will be conscious of audio issues and use multiple microphones. I will also take steps to ensure online students can be seen on screen. **As a class**, we can experiment with in-person partners to support online students since instructors cannot always see and monitor chat functions while facilitating in-person discussions. We can also experiment with sharing pictures of in-meeting whiteboard notes or other hard-copy visuals. **As an online participant**, I ask you to keep your camera on if possible and speak up and contact your in-person partner with comments and questions during meetings. Also, please remember not to send instructors or colleagues private messages with sensitive information via zoom.
Weekly Distribution of Course Materials	**HW Assignments:** Wednesday posting on CANVAS before course meets **PowerPoint Notes:** Friday posting on CANVAS before course meets

Course Grading Scale		Percent Correct	Letter Grade	Number Grade	
		100-97	A+	4.3	
		96-93	A	4.0	
		92-89	A-	3.7	
		88-85	B+	3.3	
		84-81	B	3.0	
		80-77	B-	2.7	
		76-73	C+	2.3	
		72-69	C	2.0	
		68-65	C-	1.7	
		64-61	D	1.0	
		<61	F	0.0	
Final Grade Calculation	Class participation, visits to office hours, and Zoom "water cooler" (10%) Average of highest 12 Weekly HW Grades (40%) Midterm Literature Review Assignment (20%) Final Regression Paper Assignment (30%)				

Student Core Elements

Student Services Information & Links	Services to Students with Disability (SSWD) *"Sacramento State is committed to ensuring an accessible learning environment where the course or instructional content is usable by all students and faculty. If you believe that you require disability-related academic adjustments for this class, please immediately contact Services for Students with Disabilities (SSWD) to discuss eligibility. A current accommodation letter from SSWD is required before any modifications, above and beyond what is otherwise available for all other students in this class will be provided."* Student Health and Counseling Services *"Your physical and mental health are important to your success as a college student. Student Health and Counseling Services (SHCS) in The WELL offers medical, counseling, and wellness services to help you get and stay healthy during your time at Sac State. SHCS offers: Primary Care medical services, including sexual and reproductive healthcare, transgender care, and immunizations; urgent care for acute illness, injuries, and urgent counseling needs; pharmacy for prescriptions and over-the-counter products; mental health counseling, including individual sessions, group counseling, support groups, mindfulness training, and peer counseling; athletic training for sports injury rehabilitation; wellness services, including nutrition counseling, peer-led health education, and wellness workshops, and free safer sex supplies;*

	violence and sexual assault support services. Most services are covered by the Health Services fee and available at no additional cost." Crisis Assistance & Resource Education Support (CARES) *"If you are experiencing challenges with food, housing, financial or other unique circumstances that are impacting your education, help is just a phone call or email away. The CARES office provides case management support for any enrolled student.* Drop and Withdrawal Policy University Grading Policy University Academic Advising Information Resources and Technology Support Centers and Programs Reading & Writing Center Student Rights and Responsibilities
Academic Honesty	When you do any writing for this course or any course at Sacramento State, you must be aware of what plagiarism is and how its practice can become grounds for dismissal from the university. Details are here. The following is also helpful: *Plagiarism is a form of cheating. At Sacramento State, plagiarism uses distinctive ideas or works belonging to another person without adequately acknowledging that person's contribution. Regardless of the means of appropriation, incorporation of another's work into one's own requires adequate identification and acknowledgment. Plagiarism is doubly unethical because it deprives the author of proper credit and gives credit to someone who has not earned it. Acknowledgment is not necessary when the material used is common knowledge.* *Plagiarism at Sacramento State includes but is not limited to the following. The act of incorporating into one's work the ideas, words, sentences, paragraphs, or parts thereof, or the specific substance of another's work without giving appropriate credit, thereby representing the product as entirely one's own. Examples include not only word-for-word copying but also the "mosaic" (i.e., interspersing a few of one's own words while copying another's work), the paraphrase (i.e., rewriting another's work while still using the other's fundamental idea or theory);*

	fabrication (i.e., inventing or counterfeiting sources), ghost-writing (i.e., submitting another's work as one's own) and failure to include quotation marks on material that is otherwise acknowledged. I will use the *Turn-It-In* plagiarism check on Canvas for your midterm literature review and final paper. So please run your papers through it before submitting the final draft. Many times, plagiarism is unintentional. This check flags potential sentences you may not have considered potential plagiarism when written. Remember, the job of an analyst is often to read the findings of others and put them in their own, more simplified words for a client or the public. I desire you to practice that here through your HW assignments and final paper.
	Schedule (*material under each meeting subject to slight change and additions*)
Meeting One **Jan 24, 2002**	• Syllabus Review • Wheelan, *Introduction* and Chapter 1 (*What's the Point*) • Bittman, Chapter 1 (*Introduction*) • CHIS 2020 Topics • *CHIS 2020 Data Dictionary* (@ CANVAS) • *CHIS 2020 CATI Adult Questionnaire* (@CANVAS) • CHIS_2020_ADULT.dta (@ CANVAS)
Meeting Two **Jan 31, 2022**	• Planet $ Podcast, *Wheelan on What Causes What?* • Bittman, Chapter 2 (*The First Steps*) • STATA YouTube, *Tour of the STATA Interface* • STATA, *Cheat Sheets*
Meeting Three **Feb 7, 2022**	• Bittman, Chapter 3 (*Cleaning and Preparing Data*) • AERA Open Journal, *What Is the Stanford Education Data Archive Teaching Us About National Educational Achievement?* • *Educational Opportunity Project at Stanford University* • *SEDA Technical Documentation* (@ CANVAS) • seda_dep_geodist_pool_4.1.dta (@ CANVAS) • seda_cov_geodist_pool_4.1.dta (@ CANVAS)
Meeting Four **Feb 14, 2022**	• Galvin, Chapters 1-5 (*Writing Literature Reviews*) • Wheelan, Chapter 2 (*Descriptive Statistics*) • Bittman, Chapter 4 (*Describing Data*), pp. 47-54 • STATA YouTube, *Descriptive Stats in STATA*
Meeting Five **Feb 21, 2002**	• Galvin, Chapters 6-10 (*Writing Literature Reviews*) • Bittman, Chapter 4 (*Describing Data*), pp. 55-66 • STATA YouTube, *Publication Quality Graphics*
Meeting Six **Feb 28, 2022**	• Galvin, Chapters 11-14 (*Writing Literature Reviews*) • Wheelan, Chapter 3 (*Deceptive Description*) • Wheelan, Chapter 4 (*Correlation*)

	• Bittman, Chapter 4 (*Describing Data*), pp. 67-71 • STATA YouTube, *Pearson Correlation Coefficient*
Meeting Seven **Mar 7, 2022**	• Bittman, Chapter 5 (*Introduction to Causal Analysis*) • Wheelan, Chapter 7 (*Importance of Data*) • Wheelan, Chapter 9 (Inference) • Jez and Wassmer, *The Impact of Learning Time on Academic Achievement* (@ CANVAS) • Add CHIS-related regression article based on students' interests
Meeting Eight **Mar 14, 2022**	• Wheelan, Chapter 11 (Regression Analysis) • Bittman, Chapter 6 (*Regression Analysis*), pp. 83-93 • STATA YouTube, *Simple Linear Regression Analysis*
Meeting Nine **Mar 28, 2022**	• Literature Review Midterm Assignment Due on Canvas at 6 p.m. • Bittman, Chapter 6 (*Regression Analysis*), pp. 94-100 • STATA YouTube, *STATA Quick Tip: Margins*
Meeting Ten **Apr 4, 2022**	• Wheelan, Chapter 12 (Common Regression Mistakes) • Bittman, Chapter 7 (*Regression Diagnostics)*, pp. 102-108 • YouTube, *Multicollinearity Diagnostics* • YouTube, *Nonlinear Transformations*
Meeting Eleven **Apr 11, 2022**	• Wheelan, Chapter 12 (Common Regression Mistakes) • Bittman, Chapter 7 (*Regression Diagnostics*), pp. 108-117 • YouTube, *Heteroscedasticity Tests*
Meeting Twelve **Apr 18, 2022**	• Bittman, Chapter 8 (*Logistic Regression*) • STATA YouTube, Logistic Regression in STATA (Binary Predictors)
Meeting Thirteen **Apr 25, 2002**	• Bittman, Chapter 8 (*Logistic Regression*) • STATA YouTube, Logistic Regression in STATA (Continuous Pred)
Meeting Fourteen **May 2, 2022**	• Bittman, Chapter 10 (*Reporting Results*) • Bittman, Chapter 11 (*Writing a Seminar Paper*)
Meeting Fifteen **May 9, 2022**	• Consultant Paper, *Cost of State Regulations on California Small Business Study* (@CANVAS) • Final regression paper assistance
Final Paper Due **May 16, 2022**	• Final Regression Paper Assignment Due on Canvas at 6 p.m.

Literature Review Midterm Assignment	
Instructions	Your assignment is to write a five-page, double-spaced, typed literature review in Calibri 12 font with one-inch margins all around. It is due in the electronic form to me through CANVAS by no later than 6 p.m. on Monday, Mar 28. Each portion of a day late will result in a one-grade deduction. Please use the rubric below to guide your writing of this literature review. I also list the points earned by satisfying each of the requirements. I will use this grading rubric for the assignment. All references to Galvin refer to the fourth Edition.
Rubric	**Attach this rubric as the last page in your submission.**

Required Element	Points Available	Points Earned
(1) Use a **minimum of three regression-based and two non-regression-based articles** drawn from academic and preferably refereed journals and closely aligned with your research topic.	**10**	
(2) Include a **reference list** at the end of the literature review (that does not count toward your five-page limit) that is in **APA style**. References made throughout the review should also follow APA style.	**10**	
(3) Read your articles in the manner described in Chapter 4 in Galvin for "General Guidelines for Analyzing Literature" and organize your literature review around **three different themes designated as separate sections in your review.**	**10**	
(4) Review Chapter 5 in Galvin on "Analyzing Quantitative Research Literature." Note particularly **Guidelines 4 (cause and effect issues covered), 9 (differences in variable measurement), 10 (sampling issues), 12 (magnitude and statistical significance of regression coefficients), and 13 (flaws in studies observed) and incorporate these suggestions into your analysis and write up.**	**10**	
(5) Review Chapter 7 in Galvin "Building Tables to Summarize Literature." You are to **include a well-crafted table of the type described here** in your review. Put this in an appendix in landscape form, and it will not count against your five-page limit.	**20**	
(6) As discussed in Chapter 8 of Galvin's "Synthesizing Literature Prior to Writing a Review," your **literature review's "voice" is suitable. Differences among studies are noted (Guideline 5), obvious gaps discussed (Guideline 1), relevant theories discussed and how studies advance them (Guidelines 7 and 8), summaries after each section's end (Guideline 9), conclusions/implications, and suggestions for future research [your own PPA 207 paper] are included (Guidelines 10 and 11).**	**20**	
(7) You have a coherent essay according to Chapter 10 in Galvin. Coherence means an **overview at the start (Guidelines 1 and 2), annotations avoided (Guideline 4), subheadings used (Guideline 5), a conclusion at the end (Guideline 8), and your argument flow well (Guideline 9).**	**10**	
(8) Style and mechanics follow Galvin's suggestions in Chapter 11. In particular, **Guideline 3 (no overuse of direct quotations), Guideline 4 (correct APA use of citations), Guideline 6 (spell out acronyms), Guideline 9 (avoid slang), Guideline 11 (check your draft using Microsoft Grammar Editor, avoid passive voice), Guideline 12 (concise and descriptive title), and Guideline 14 (absolutely no plagiarism).**	**10**	
TOTAL	**100**	

	Final Regression Paper Assignment
Instructions	Your grade on the final paper comes from how well you satisfy the items on this list. Please turn a Word copy of your paper into Zoom by 6 p.m. on May 16, 2022. Each partial day after this time will result in a one-lower grade deduction (that is, at 6:05 p.m. onMay 16, it is one day late).
Checklist	**Attach this rubric as the last page in your submission.** **<u>OVERALL</u>** • One-inch margins, 11 Times Roman fonts, and double-spaced. ___ • Cover page with title, your name, and date handed in. ___ • There are seven major sections in your paper, marked by roman numerals and section titles. ___ • The first paragraph of every section is an introduction that briefly describes what is in it. ___ • Sub-sections within your seven sections, and they contain headings. ___ • No spelling errors. ___ • No grammatical errors and passive voice eliminated (use Microsoft Word Editor or Grammarly with passive voice detection). ___ • Smooth transitions between paragraphs. ___ • List of references at the end of the paper in APA style. ___ • Follow the APA style given in Hacker's *A Pocket Style Manual* (or described [here]). ___ • Paper's language such that educated layperson working in public policy/admin can follow. ___ • Paper in first-person "active" voice. ____ • Every table and figure are on a separate page(s) and in the section's body that refers to it. ___ **SECTION I: EXECUTIVE SUMMARY (1 – 2 pages)** • Follows the suggestions offered in "[Executive Summaries Complete the Report]" ____ **SECTION II: INTRODUCTION (2 - 3 pages)** • The first paragraph contains your research question. What are you trying to discover through regression analysis? What is the dependent variable? What is (are) the key explanatory variable(s)? ___ • The remainder of the introduction motivates the reader to continue by placing your question in the context of current events and public policy. __ • Cite at least two newspapers, magazines, think-tank pieces, advocacy pieces, etc. These articles point out the populist importance of determining the impact of your key explanatory variable(s) on the dependent variable. ___ • Include at least one figure/diagram (not a numeric table) that you created in STATA that helps the reader understand patterns in your dependent variable and relationship(s) with your key explanatory variable(s). ___ • The last paragraph describes the content in the remaining six sections of your paper. A one-sentence description for each section is appropriate. __ **SECTION III: LITERATURE REVIEW (5 pages)** • Your literature review describes at least three regression-based and two non-regression-based articles related to your policy topic. You can find these articles by searching the [Sacramento State Library's Web Page] or [Google Scholar]. Search using keywords that include "regression" and your topic. ___

- Divide your literature review into at least three labeled themes (and, if desired, subsections within these themes). ___
- Address all the comments I offered on your midterm in a new draft of the lit review in the paper. (If you wish to ignore something, write a note below the comment as to why.) ___
- Attach a copy of your graded midterm with my comments included. Add an electronic note below each of them about how you handled these comments for the final paper. ___

SECTION IV: MODEL (2 - 3 pages)

- Offer a motivation for your choice of the dependent variable. How does it relate to your research question? ___
- Specifically describe where your dependent and explanatory variables come from (data set), unit of observation, dates, and any concerns that arose in using this data. ___
- Include a description of the factors expected to cause variation in your dependent variable. The factors should first be listed as broad causes (say causes A, B, C, etc.) and the specific "x" variables which represent the broad causes {$A = f(x_1, x_2, x_3)$, $B = f(x_4, x_5)$, $C = f(x_6, x_7, x_8)$, etc.} ___
- Describe the variables you use to specifically proxy for each of the broad causes (x_1 through x_8)? Justify your choices. ___
- Do not use acronyms anywhere in your paper to describe x_1, x_2, etc. Instead, write out a short 3 to 5-word description. ___
- What is the expected direction of effect for each of the specific causes (positive, negative, uncertain) you have before the regression run? ___

SECTION V: DATA (1-2 pages)

- Describe in paragraph form what is in Tables 1 – 2. ___
- Create Table 1 that provides descriptive statistics for all variables used (name, mean, standard deviation, maximum, and minimum). ___
- Create a horizontal Table 2 that provides correlation coefficients between all explanatory variables. ___

SECTION VI. REGRESSION ANALYSIS (3 - 4 pages)

For Continuous Dependent Variable
- List your regression results in table form in the manner taught in class (no direct STATA results allowed). Make certain that you use the appropriate weighting method if using CHIS data. ___
- Run an OLS lin-lin regression with no corrections. Check for heteroskedasticity in this regression by presenting and describing the Breusch-Pagan Test. If heteroskedasticity is present in your regression analysis, provide the appropriately corrected results. Place all of these regression results in Table 3. ___
- Discuss how you checked for multicollinearity. Was it an issue, and if it was, how did you correct it? Be sure to include VIF values in Table 4 and refer to partial correlation coefficients in Table 2. ___
- If relevant, try different functional forms after dealing with potential heteroskedasticity and multicollinearity. Begin with the forms of lin-lin, then quadratic, and then log-lin (if possible). ___
- Pick the "best" functional form based upon the number of statistically significant regression coefficients and use it in the remaining regressions. ___
- Include an interaction term using your key explanatory variable(s) in regression results Table 5. Discuss your findings. ___

For Dichotomous Dependent Variable
- List your regression results in table form in the manner taught in class (no direct STATA results allowed). Make certain that you use the appropriate weighting method if using CHIS data. ___

- Run an OLS lin-lin regression with no corrections. Check for heteroskedasticity in this regression by presenting and describing the Breusch-Pagan Test. If heteroskedasticity is present in your regression analysis, provide the appropriately corrected results. Place all of these regression results in Table 3. ___
- Discuss how you checked for multicollinearity in OLS. Was it an issue, and if it was, how did you correct it? Be sure to include "estaf vif" values in Table 4 and refer to partial correlation coefficients in Table 2. __
- If relevant, try a quadratic functional form after dealing with potential heteroskedasticity and multicollinearity and report in Table 3. ___
- Include an interaction term using your key explanatory variable(s) and report in Table 3. Discuss your findings. ___
- Finally, run the most appropriate Logistic regression, based upon your decision regarding multicollinearity and an interaction term and report results in Table 3. Test again for multicollinearity using "collin" command" and include another column in Table 4 with these results. ___
- Describe what both OLS and Logistics mean and which of the two is more appropriate. ___

SECTION VII: CONCLUSION (2 - 3 pages)

- Considering your final regression result (with all the appropriate corrections), turn statistically significant regression coefficients into 90% confidence intervals. Report them in Table 6 that lists the explanatory variables from the largest positive influence to the largest negative influence. (Alternatively, choose the appropriate "odds ratio" measure using logistic regression.) ___
- For your statistically significant coefficients, how do they compare to the expected signs you described in the model section? If findings are different, give a reason it may be the case. ___
- For your statistically significant coefficients, describe the relevance of the variable based upon its magnitude. ___
- Interpret the R-Squared (OLS) or hit ratio (Logistic). ___
- What do your regression results indicate as an answer to your research question? ___
- What are the specific policy lessons learned from your results? Offer responses to the policy questions you raised in your introduction. ___
- Suggest improvements that you would undertake if you had more time. ___