PPA 207 – QUANTITATIVE METHODS

MASTER’S PROGRAM IN PUBLIC POLICY AND ADMINISTRATION

MASTER’S PROGRAM IN URBAN LAND DEVELOPMENT

CALIFORNIA STATE UNIVERSITY, SACRAMENTO

SPRING 2012

Professor: Rob Wassmer, Ph.D.

E-Mail: rwassme@csus.edu

Home Page: http://www.csus.edu/indiv/w/wassmerr

Class Location, Times, and Dates: We will meet every Monday in MND 2007 throughout the semester (with the exception of March 19 Spring Break) from 6 to 8:50 p.m.

Office: Room 3037, Tahoe Hall

Office Phone: (916) 278 - 6304

Office Hours: Monday and Thursday, 4:00 - 5:30 p.m. and by appointment if necessary.

Texts:

Please purchase all texts and review them before our first meeting. I expect you to do the assigned reading before class. Bring the appropriate text(s) to class on the dates covered.

(1) *Using Econometrics: A Practical Guide*, 6th Edition (required), A.H. Studenmund, Addison, Wesley, Longman (labeled as ECON); available for purchase at Sac State Bookstore or click to buy on web at Amazon.com (click on the previous link to purchase – used $85);

(2) *A Gentle Introduction to STATA*, 3rd Edition (required), A.C. Acock, STATA Press (labeled as STATA); available for purchase at Sac State Bookstore or click to buy on web at Amazon.com (click on the previous link to purchase – used $27);

(3) *Writing Literature Reviews*, 4th edition (required), Jose Galvin, Pyrczak Publishing (labeled as LIT); available for purchase at Sac State Bookstore or click to buy on web at Amazon.com (click on the previous link to purchase – used $32);

(3) *STATA/IC 11 Grad Plan Statistical Package* (strongly recommended, if you do not purchase you will need to do all of your statistical work on campus), available for purchase at http://www.stata.com/coursegp.html, specify “RWPPA” for the GRADPLAN ID, Prices are 65.00/6 months, 98.00/annual, and 179.00/perpetual.
(4) *The Politics of Happiness*, Derek Bok, Princeton University Press, (suggested or get required chapter reading from library); available for purchase at Sac State Bookstore or click to buy on web at [Amazon.com](https://www.amazon.com) (click on the previous link to purchase – used $8);

(5) You will also need a memory stick, brought to class each night, to store data generated in class.

**Supplement:**


**Prerequisites:**

You must have taken PPA 220A and the required prerequisite undergraduate statistics course prior to enrolling in this course. If you took the statistics course awhile back, please review Studenmund’s Chapter 17 before our first meeting. I will review this material in the first night of class, but it will be quick. You will also need familiarity with the use of an Excel spreadsheet. If you are weak in this area, please review this tutorial web link [http://www.baycongroup.com/el0.htm](http://www.baycongroup.com/el0.htm) before our first meeting.

**Data Sources:**

The primary assignment that you will produce from this class is a regression-based research paper. Such a paper requires a data set with at least 500 or more observations on a dependent variable and the various explanatory variables that you expect to cause variation in the dependent variable. In class, I will introduce you to four potential data sets of this type. A fifth data set from the General Social Survey 2006 (the 2008 full version is available at ICPSR) is not an option for your paper, but is what we will use as a running example throughout the entire course. All of these are available for download at SacCT.

One data set is from the California Department of Education and is based on the Academic Performance Index (API) scores for California’s public K-12 schools, a second is from the Center for Disease Control on Behavioral Risk Factors, a third is from federal Department of Housing and Urban Development and is a 2004 American Housing Survey from the Sacramento Area, the fourth is a residential real estate data set from Jan 2008 to December 2010 (that may be updated) from the Multiple Listing Service and contains information on all homes sold in Sacramento County over this period. These data sets all have the potential for use as the basis for your final paper.

If you do not want to use one of these data sets, then you may suggest another to me by the third week of class (February 6) and with my approval, use that instead. A great source of potential data is the ICPSR (Inter-University Consortium for Political and Social Science Research) at [http://www.icpsr.umich.edu/icpsrweb/ICPSR/index.jsp](http://www.icpsr.umich.edu/icpsrweb/ICPSR/index.jsp). If you enter this web site using a Sac State connection address, you will have free access to the data available there.
WebCT:
You must have an account that allows access to the World Wide Web and SacCT. On SacCT I will post a PowerPoint of material covered in each meeting and a description of any supplemental homework that is due at the following meeting. These will be available, at the latest, the Saturday before the class meets. All your grades will be accessible through WebCT. Information on SacCT is at https://online.csus.edu.

Learning Objectives:
At the end of PPA 207, a student attending all meetings will:

(1) Have a working knowledge of where to begin to gather data for policy analysis.

(2) Possess the ability to accumulate data and do basic descriptive analysis of it using the Excel spreadsheet program and a more advanced statistical program (STATA).

(3) Understand the importance of causal modeling before undertaking a statistical analysis.

(4) Understand the appropriate use of multivariate statistical techniques to identify causal relationships between variables.

(5) Have a working knowledge of regression analysis and the value it offers to answer policy questions.

(6) Be able to put together a research paper that describes a policy problem and undertakes a regression based research study to help offer a solution.

The purpose of this course is to expose the master’s student of public policy and urban land development to some of the empirical methods used in the analysis and formulation of government policies. These include descriptive statistics, types and sources of data, distributions of data, regression analysis and interpretation, and some of the basic issues/problems that can arise in regression analysis. My goal is not to turn you into an expert on statistics and regression analysis, but I do wish to provide you with a working knowledge of the most basic applied techniques in these areas. Even if you never expect to apply these techniques directly in your anticipated career path, it is very likely you will be required to interpret and comment on reports that contain policy analyses based on these techniques.

Method:
Pedagogy includes in-class meetings and discussions, required assignments out of the Studemund, and assignments using STATA and the provided GSS data set. Each week students will be required to complete written answers to HW questions. HW will be assigned in the previous class from when it is due at the end of the PowerPoint slides.

Each class meeting will begin with discussion of HW and assigned paper reading in student groups, and then collection of the previous week’s HW assignment. Only the
student who completed the assignment can turn it in (my method of attendance). After 90 minutes of class time, we will take a 15-minute break.

Some in-class time will be devoted to covering the use of the Excel and STATA computer packages using classroom computers. It is also most important that you have access to these packages outside of the classroom so you get hands-on experience with the empirical methods discussed in this class. Computer assignments and statistical exercises will be due every class period except the first. If possible, the optimal situation is to install Excel and the purchased STATA software on a home or work personal computer. If this is not possible, you should use the computers provided at the Sacramento State labs.

Academic Honesty

When you do any writing for this class, or any class at Sacramento State, it is important that you are aware of what plagiarism is, and how its practice can become grounds for dismissal from the university. Details are available at the University Policy Manual found at [http://www.csus.edu/umanual/student/UMA00150.htm](http://www.csus.edu/umanual/student/UMA00150.htm). The following is directly from this manual:

**Plagiarism:** Plagiarism is a form of cheating. At CSUS plagiarism is the use of distinctive ideas or works belonging to another person without providing adequate acknowledgement of that person’s contribution. Regardless of the means of appropriation, incorporation of another’s work into one’s own requires adequate identification and acknowledgement. Plagiarism is doubly unethical because it deprives the author of rightful credit and gives credit to someone who has not earned it. Acknowledgement is not necessary when the material used is common knowledge. Plagiarism at CSUS includes but is not limited to:

1. The act of incorporating into one’s own 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, in essence, 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; and
2. Representing as one’s own another’s artistic or scholarly works such as musical compositions, computer programs, photographs, paintings, drawings, sculptures, or similar works.

**Paper:**

In order to receive anything but a failing grade in this course, each student is required to complete a regression-based paper on the topic of his/her choosing (subject to my approval). Unless you use one of the four datasets provided, you will need to gather data for this paper by our third meeting (February 6). Below I offer details on what needs to be included in the paper.
Grades:

You are asked to participate in class discussions and complete the homework assigned. Ten homework assignments are required. I will assign a grade to each of your written answers to homework and derive an overall grade on homework from that. All homework answers must be clearly labeled with the chapter and question number, and typed out with the exception of requested graphs or diagrams can be hand drawn.

Your literature review accounts for 25 percent of your grade, the final paper accounts for 35 percent, the average of all homework assignments for 30 percent, and your participation in class is the remaining 10 percent.

Scoring for Homework:

<table>
<thead>
<tr>
<th>Percent Correct</th>
<th>Letter Grade</th>
<th>Number Grade</th>
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<tr>
<td>100-97</td>
<td>A+</td>
<td>4.3</td>
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<tr>
<td>96-93</td>
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<td>92-89</td>
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<td>88-85</td>
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<td>84-81</td>
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<td>80-77</td>
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<td>76-73</td>
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<td>72-69</td>
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<tr>
<td>68-65</td>
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<td>64-61</td>
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<td>&lt;61</td>
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Schedule:

I strongly suggest that you attend all Monday meetings. If you do not attend, you will not be able to turn in your homework due at that meeting (no exceptions!). By March 5 (preferably earlier), each of you will also need to visit my office or call me for a private 15-minute discussion of the plan for your paper and the progress you have made on it. There will be no midterm exam. Instead, I ask that you turn in by March 26 the six-page literature review that is part of your paper. Some details on this are below, more will be forthcoming in class. I will also use the homework exercises that are due at the start of each class meeting (except the first) to judge your progress throughout the semester. Definite homework assignments listed in the schedule below. More added to the weekly PowerPoint notes. The final is a paper that is due at the latest on May 14.

The readings out of Studenmund (ECON), Acock (STATA), and Galvin (LIT) are below.
Note that the Galvin (LIT) book will not be covered by me talking about it. Instead you will break into groups to discuss.

Meeting 1 – Monday, January 23

Syllabus Review
ECON Ch. 17 – Statistical Principles
STATA Ch. 1 – Getting Started
ICPSR (Inter-University Consortium for Political and Social Science Research) @
http://www.icpsr.umich.edu/icpsrweb/ICPSR/index.jsp
Download and discuss GSS 2006 class data set @ SacCT
Bok, Politics of Happiness, Chapter 1, “What Investigators Have Discovered,” (on reserve at Sac State Library). A related PBS Newshour story can be found at

Meeting 2 – Monday, January 30

ECON Ch. 1 – An Overview of Regression Analysis
STATA Ch. 2 – Entering Data
LIT Ch. 1 and 2 – Writing Reviews of Academic Literature and Considerations
Discuss Sacramento County Multiple Listing Service Data Set @ SacCT
http://www.csus.edu/ppa/faculty/samplescholarship/The%20Recent%20Pervasive%20External%20Effects%20of%20Residential%20Home%20Foreclosure.pdf

Meeting 3 – Monday, February 6

ECON Ch. 2 – Ordinary Least Squares
STATA Ch. 3 – Preparing Data for Analysis
LIT Ch. 3 and 4 – Selecting a Topic and General Guidelines
Discuss CA Department of Education Academic Performance Index Data Set @
http://www.cde.ca.gov/ta/ac/ap/apidatafiles.asp
Eleni Papailias' PPA 207 Paper, "Hispanic Student Achievement: An Investigation of Various Factors and the Effects on Hispanic High School API scores in California" @ SacCT

**Meeting 4 – Monday, February 13**

ECON Ch. 3 – Learning To Use Regression Analysis

STATA Ch. 4 – Working With Commands

LIT Ch. 5 and 6 – Analyzing Quantitative (Qualitative) Research

Discuss CDC Behavioral Risk Factor Data Set @ [http://www.cdc.gov/brfss/index.htm](http://www.cdc.gov/brfss/index.htm)


**Meeting 5 – Monday, February 20**

ECON Ch. 11 – Running Your Own Regression Project

STATA Ch. 5 – Descriptive Statistics and Graphs for One Variable

LIT Ch. 7 and 8 – Building Tables and Synthesizing Literature

Discuss HUD Sacramento American Housing Survey Data Set @ [http://www.huduser.org/portal/datasets/ahs/ahs04metro.html](http://www.huduser.org/portal/datasets/ahs/ahs04metro.html)


**Meeting 6 – Monday, February 27**

ECON Ch. 4 – The Classical Model

STATA Ch. 6 – Descriptive Statistics and Graphs for Two Categorical Variables

LIT Ch. 9 and 10 – Guidelines for Writing First Draft (Developing a Coherent Essay)

Joe Karkoski’s PPA 207 Paper, “A Hedonic Pricing Model of the Effect of the American River Parkway on Home Prices in Sacramento, California, USA: An Exploratory Analysis,” @ SacCT

**Meeting 7 – Monday, March 5**
ECON Ch. 5 – Hypothesis Testing

STATA Ch. 8 – Bivariate Correlation and Regression

LIT Ch. 11 and 12 – Guidelines on Style and Incorporating Feedback


**Meeting 8 – Monday, March 12**

ECON Ch. 6 – Specification: Choosing the Independent Variables

STATA Ch. 10 – Multiple Regression

LIT Ch. 13, 14, and Model Lit Review H – Preparing Reference, Self Editing, and “Well Being Latino Youth”

Sean Herra’s PPA 207 Paper, “A Quantitative Analysis Investigating the Determinants of Home Values in the Sacramento Metropolitan Statistical Area” @ SacCT

**Meeting 9 – Monday, March 26**

**LITERATURE REVIEW DUE IN CLASS**

ECON Ch. 7 – Specification: Choosing a Functional Form

Julia Bishop’s PPA 207 Paper, “School District Insolvency and Academic Achievement: A Regression Analysis,” @ SacCt

**Meeting 10 – Monday, April 2**

ECON Ch. 8 – Multicollinearity


**Meeting 11 – Monday, April 9**

ECON Ch. 11 – Heteroskedasticity

Thomas Bernauer and Vally Koub, “Effects of Political Institutions on Air Quality,” @ SacCT
Meeting 12 – Monday, April 16
ECON Ch. 13 – Dummy Dependent Variable Techniques
STATA Ch. 11 – Logistic Regression
Sean O'Connor's PPA 207 Paper, “Why Don't They Get Their License?: Identifying Determining Factors in the Success/Failure of Marriage and Family Therapists in the California Professional Licensing Process” @ SacCT

Meeting 13 – Monday, April 23
ECON Ch. 14 – Simultaneous Equations
Fisher and Wassmer Working Paper, “The Issuance of State and Local Debt during the United States’ Great Recession,” @ SacCT

Meeting 14 – Monday, April 30
ECON Ch. 16 – Experimental and Panel Data
Leora Frieburg, “Did Unilateral Divorce Raise Divorce Rates? Evidence from Panel Data?,” @ SacCT

Meeting 15 – Monday, May 7
Varshney and Tootelian’s Consulting Paper, “Cost of State Regulations on California Small Business Study” @ SacCT
Remainder of Class Devoted to Review Necessary to Complete Your Paper

Final – Monday, May 14
Final Paper Due in Tahoe 3037 by 6 p.m.
Your assignment is to write a six-page literature review that is typed, double-spaced, 11 font and one-inch margins all around. It is due in electronic form to me by no later than 6 p.m. on Monday, March 26. Each day late will result in a one-grade deduction. Please submit as a WORD attachment to a SacCT e-mail to me. I describe below the requirements for the paper. 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 below refer to the fourth edition.

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

Professor Rob Wassmer, Public Policy and Administration, Sacramento State

Your grade on the final paper comes from how well you satisfy the items on this list. You must turn in a paper and an electronic copy (by SacCT) by 6 pm on May 14, 2012. Each day after this date, it is late and will result in a one lower grade deduction.

A one after a criterion means that you satisfied it 100%. A decimal means that you satisfied it at that level. A zero indicates not done. These indicators determine your overall grade.

OVERALL

- There is a cover page with title, your name, and date handed in. ____
- The seven major sections in your paper are marked by roman numerals and heading titles. ____
- The first paragraph of each major section is an introductory paragraph that briefly describes what is in it. ____
- Sub-sections within your paper contain headings. ____
- There are no spelling errors. ____
- There are no grammatical errors. ____
- Transitions between paragraphs are smooth. ____
- One inch margins, 11 font, and double-spaced. ____
- Includes a list of references at end of paper in APA style. ____
- For all style issues use the APA style given in Hacker's A Pocket Style Manual. APA style is also described at http://owl.english.purdue.edu/handouts/research/r_apa.html. ____
- The audience for your paper is an educated layperson who works in public policy and explanations are appropriate. ____

I. EXECUTIVE SUMMARY (1 – 2 pages)

- Follows the suggestions offered in “Executive Summaries Complete the Report,” – http://www.csun.edu/~vcecn006/summary.html ____

II. INTRODUCTION (2 - 3 pages)

- The first paragraph clearly 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 your introduction motivates the reader to continue by placing your question in the context of current events, and public policy and studies. ____
- Cite at least two newspaper or magazine articles that point out the populist importance of determining the impact of your key explanatory variable(s) on the

- The last paragraph contains a description of what is contained in the remaining five sections. A one-sentence description for each section is appropriate. __

III. LITERATURE REVIEW (5 - 6 pages)

- It must contain a description of at least at least seven other regression-based research articles in the area of your policy topic. You can find this research by searching the Sacramento State’s Library’s Web Page of literature bases – http://library.csus.edu/databases. I would suggest using ECONLIT and EBSCOhost as two literature sources that will have regression studies in them. Search using keywords that include "regression" and your topic. ____
- Divide your literature review into at least three labeled themes (or subsections). ____

IV. MODEL (2 - 3 pages)

- Offer a motivation for your choice of a dependent variable. How does it relate to your research question? ____
- 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 variables which represent 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.) ____
- What variables do you use to specifically proxy for each of the broad causes? Justify your choices. ____
- Write the regression model to be estimated as: Y = f(x_1, x_2, x_3, .......); substituting your specifics for Y, x_1, etc. ____
- Do not use acronyms 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)? Justify with a verbal cause and effect description. ____

V. DATA (2 - 3 pages)

- Create a Table 1 that provides description and source for each variable used. (No direct STATA results allowed for any tables. Create tables in your own form and be consistent throughout. Place title on all tables.) ____
- Create a Table 2 that provides variable name, mean, standard deviation, maximum, and minimum. ____
- Create a Table 3 that provides simple correlation coefficients between all independent variables. ____
- Describe in paragraph form what is in Tables 1 – 3. ____

VI. REGRESSION ANALYSIS (3 - 4 pages)

- List your regression results in table form. (No direct STATA results allowed.) ____
• First, give your starting OLS results with no corrections. If possible, this should begin with the log-log form. If not possible, begin with log-linear, or as a last choice the linear-linear form.

• If possible, try running log-linear and linear-linear specifications. If fit better than your first choice, report it and use it in remaining corrections.

• Discuss how you checked for multicolinearity. Was it an issue, and if it was, how you corrected for it? Be sure to include VIF values.

• Did you try including location or other dummies where appropriate? Is it appropriate to try any interaction terms? Discuss your findings.

• Check for heteroskedasticity in your regression by presenting and describing the Park Test. If heteroskedasticity is present in your regression analysis, provide the appropriately corrected results.

• If your dependent variable is dichotomous (0 or 1), report both OLS and Logit regression results. Describe what both mean and which of the two is more appropriate.

• Is endogeneity an issue for any of your casual variables? If not justify why you believe so. If it is, tell why and describe how you would correct using 2SLS. Report these results. (Extra Credit)

VII. CONCLUSION (2-3 pages)

• Considering your final regression result (with all the appropriate corrections), turn regression coefficients into 90% confidence intervals and equivalent elasticities and report them. (Or the appropriate measure if using logit.)

• Discuss which of your coefficients are significant at 90 and 99 percent confidence interval.

• For your significant coefficients, how do they compare to the expected signs you described in model section? If findings are different, give a reason why it may be the case.

• For your significant coefficients, describe the relevance of variable based upon the magnitude of its elasticity.

• Interpret the R-Squared.

• Evaluate your research question. What does your regression results indicate as an answer to it?

• What is the specific policy lessons learned from your results? Revisit the policy questions you raised in your introduction.

• Suggest improvements that you would undertake if you had the time. Is there potential here for a Master’s thesis?