Writing working papers and journal articles

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Q.1 Guestimate of how many scientific journals there are across all disciplines?

Estimate: 30,000

https://www.universityworldnews.com/post.php?story=20180905095203579#:~:text=No%20one%20knows%20how%20many,million%20articles%20published%20each%20year.&text=Our%20argument%20is%20a%20simple,and%20drastic%20cutbacks%20are%20needed.

Q.2 Guestimate of how many scientific journal articles are published across all disciplines?

Estimate: 2 million annually

https://www.universityworldnews.com/post.php?story=20180905095203579#:~:text=No%20one%20knows%20how%20many,million%20articles%20published%20each%20year.&text=Our%20argument%20is%20a%20simple,and%20drastic%20cutbacks%20are%20needed.

Q.3. If you take all the articles that have been published, how many times has the median journal article been cited?

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Answer: zero…O

Interesting and important fact. Not meant to be scary, but we all want our work to be read and cited (have impact).

The purpose of this talk is to give some thoughts and advice to improve writing and achieve that goal.

This talk is intended for people with some interest and experience in applied research that aims to be relevant for policy and business decision-making.

Feel free to chime in and ask questions, make comments and share experiences!

About me.

- Associate Professor, Dept. of Agricultural Economics, Purdue University, Indiana USA
- 10th year on faculty, PhD from MSU in 2011.
- Published 33 peer-reviewed journal articles
  - 18 of those papers used data from and related to agricultural policy issues Malawi
  - Co-authored with numerous Malawian colleagues
- Currently Associate Editor at:
  - *American Journal of Agricultural Economics* (since 2018)
  - *Agricultural Economics* (since 2018)
  - *African Journal of Agricultural and Resource Economics* (since 2020)
  - *IFPRI Publications Review Committee* (since 2016)

- Currently review 15-20 papers per year.

Talk outline:

1. Overview
2. Discuss sections of and article
   i. Title
   ii. Abstract
   iii. Introduction
   iv. Background
   v. Conceptual framework
   vi. Methods
   vii. Data
   viii. Results
   ix. Conclusion
3. Differences between working paper and journal article
4. Wrap-up
5. Discussion/Q&A.

The first point with any type of communication is to !?!?!

- KNOW YOUR AUDIENCE!
- This will guide what, and how you write.
- Working papers and journal articles are intended for an academic audience.
  - These people are interested in the story, and how you go there….
  - They want rigorous methods, but care about applied applications and policy implications
  - They still want to read a clear, well-written paper.
- Policy briefs can be/should be derived from journal articles and other types of quality analysis but the audience is different
  - policy-makers, practitioners, non-technical stakeholders
  - They are more interested in the story (results/implications) than how you go there.
  - Up to you to make sure the way you or other researchers got there
- Working papers, Journal articles, policy briefs are compliments to each other (not substitutes). More on this later

Focus on journal articles for academic audiences. Where to start?

Key to research/discovery is to come up with a new idea

- Seems easier said than done. How does one come up with an idea?
  - Read literature
  - Observation in the field. Own experiences
  - Talk to experts (farmers, private sector, policy makers)

- Need to think about the contribution of your idea to the existing literature
  - Be able to explain how you build on that
  - What is “new”?
  - You get the chance define what is “new”!
    - Not every paper comes up with the theory of relativity
    - Not every paper comes up with the theory of the firm.
  - If you don’t define what is “new” someone else will have to do it.
    - Reader, editor, reviewer
    - May not be what you want (we will discuss more in the section on introductions).

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Q.4. When do you think readers start judging your paper?

A. After they read the whole paper?

B. After they read the title?

C. After they read the abstract?

D. After they read the introduction?

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Should assume that readers are busy and quick to judge. Want to make a good first impression…… ☺ !

Q.5. Which way do most people read papers?

A.

1. Title
2. Abstract
3. Introduction
4. Background
5. Conceptual framework
6. Methods
7. Data
8. Results
9. Conclusions

B.

1. Title
2. Abstract
3. Conclusions
4. Introduction
5. Results
6. Methods
7. Data
8. Conceptual framework
9. Background

Q.5. Which way do most people read papers?

A.

1. Title
2. Abstract
3. Introduction
4. Background
5. Conceptual framework
6. Methods
7. Data
8. Results
9. Conclusions

B.

1. **Title**
2. **Abstract**
3. **Conclusions**
4. **Introduction**
5. **Results**
6. **Methods**
7. **Data**
8. **Conceptual framework**
9. **Background**

People tend to read an article from the outside-in. If they are interested they decide to move forward reading additional sections.

i. **Title:** the first thing a reader sees.

- How to draw them in and want to read more?

- Which paper title makes you want to read further?

A) Rural land rental markets in Malawi: participation rates, trends drivers and outcomes.

B) Rural land rental markets in Malawi: who participates, who benefits and by how much?

- Framing your title as a question that will be answered can increase its appeal.
- Should clearly indicate what the article intends to do.
- Avoid “catchy” titles, that don’t really explain what the article is about or intends to do.
- Worth giving it some thought. Can edit and adjust once paper is drafted.

ii. Abstract: first concrete piece of information in your article that someone will read

- Allowed lengths vary by journal article, but generally seem to be getting longer.
  - 100-250 words

- Obviously the amount of detail you include depends on length. But need to quickly mention in one sentence each.
  - Objective, research question(s)
  - Data, location of the study
  - What is new about study
  - Methods, how you answered the question
  - Main results
  - Implications

ii. Abstract: Example, of an abstract to critique

Abstract (200 word) – Ricker-Gilbert et al. (2019)

We estimate the efficiency and equity returns to farmland rental markets in Malawi using a matched tenant-landlord survey of smallholder farm households in four districts. Our sample allows us to more fully observe the landlord side of the rental market which is almost always missing in previous studies. Our results suggested that land rental markets promoted efficiency by facilitating a net transfer of land to more productive farmers. We also found that land rental markets promoted equity as conventionally defined in the land markets literature, i.e. by transferring land from land-rich households to land-poor households, and from labor-poor to labor-rich households. However, our study identified some important challenges for land rental markets in this context. First, we found that tenants in our sample were wealthier than their landlord counterpart on average in all dimensions other than landholding. In addition, most landlords reported the motive for renting-out their land as either the need for immediate cash, or the lack of labor and/or capital to cultivate the plot that was rented-out. These findings align with concerns about potential "stress-renting" by poor landlords and suggest the value of defining equity along a broader set of dimensions other than simply equalizing the distribution of farmland and labor.

ii.a. Highlights

- Numerous journals (including *Food Policy*) now require highlights.
- Way to increase visibility and discoverabilty of article via search engines
- 5 lines max , with 85 characters in each line (basically one sentence).

- These can be tricky to write well.

- Suggestion
  - Two lines of what you did, question and data
  - Two lines of results
  - One line of implications

iii. **Introduction:** the first, most important part of a paper. The first part that can help make or break it.

- How to get started? How to write a good introduction?
- A good reference for a formulaic guide is Keith Head's Introduction formula.
- Also a good reference on how to write a scientific paper (applies to economics).
- According to Head you need.
  - The hook
  - The question
  - The Antecedents
  - Value-addition
  - Road-map

- Make sure you define terms that you are using. Avoid Jargon.

See Omotilewa et al. (2018) and Ricker-Gilbert et al. (2019) for example of good introductions in my opinion

Advice I give my students on structuring introduction

- **Introduction (max 5 pages, double spaced 11-12 point font)**

1. **Two paragraphs** of motivation overview (*Hook* as Head calls it).
   i. This should relate directly to the question/issue that you are going to investigate.
2. **Two paragraphs** of your objectives/questions (What the paper actually does)
   i. You want to explain why your article is about before you lose the reader
3. **Three-four paragraphs** stating and explaining your contribution.
   i. Don't assume reader will recognize your contribution unless you make it explicit!
   ii. discuss the contribution as it relates to and builds upon the previous literature.
      a. Do not discuss the previous literature in a critical way.
   iii. Don't have space to give examples of all literature on the topic in introduction
4. **One paragraph** of how you implement what you plan to do (methods)
   i. Given the current focus on empirical identification strategies by reviewers need to explain how you deal with endogeneity and what data you will use. Especially true if using observational data.
5. **One paragraph** results preview.
   i. Optional but lets the reader know your findings are meaningful
   ii. Focus on key findings and briefly mention implications (maybe one sentence)
6. **Road-map** for rest of the paper
   i. Optional.

iv. Background/literature review

- These matter, but are less important than introduction, methods, results, conclusions
- 1-2 pages each. May not need both or either of them.
- Should help provide readers context for the rest of the paper.
- Background
  - Keep it focused on the information that informs the research topic at hand.
  - Omotilewa et al. (2018). Estimated the impact of an improved storage technology in Uganda.
    - Background focused on storage losses, and storage technologies in Uganda
    - Do not need to know everything about smallholder agriculture in Uganda. Reader can go elsewhere for that.
- Literature Review
  - Focus on the literature that relates to your research and relate it back to contribution of your article.
    - Ricker-Gilbert et al. (2019), broader literature review discussed previous literature on land rental markets in Eastern and Southern Africa.
  - If previous literature seems large, fragmented and has inconsistent conclusions maybe it is an opportunity for you to write a synthesis / systematic review on the topic!?!?!

v. Conceptual framework

- If you are going to have a CF need to do it right!
- It is not necessary for an empirical paper (these days I see more and more without CF).
- But a good CF that links with empirical model, can be an important contribution.
- It will enhance your paper and may even allow it to be published in a better journal.
- But only need it if you are going to add something new.
- Do you have a modification or tweak on standard model of producer or consumer theory?
  - If yes, then work to include a good CF.
  - If no, then explain that your contribution is empirical (and maybe that the work is motived by underlying models of smallholder household behavior) and move on.

Writing a useful CF and having it link to the empirical model is the hardest thing for me to do!

Some examples of good CF leading to good empirical frameworks

- Mason, Jayne and Myers (2014). Smallholder Supply Response to Marketing Board Activities in Zambia.
  - Modelled smallholder supply response/production decisions in a context were the private sector buys maize and the government (FRA) buys maize (dual channel system).
  - Builds on the standard producer supply response model to consider decision making with the extra maize price (FRA price).

harvest, and zero otherwise. Let p_f, p_p, and $\boldsymbol{p_0}$ be, respectively, the farmgate FRA, private sector maize prices and a vector of other crop prices at the next harvest. These prices and γ are unobserved random variables at planting time. Assume that the household sells maize to only one marketing channel (the one with the higher farmgate price) and that variable input prices ($\boldsymbol{w}$) are known at planting time.[11] Then, the household's expected profit maximisation problem is:

$$\max_{q,\boldsymbol{q_o},\boldsymbol{x}} E\{[\gamma \max(p_f, p_p) + (1-\gamma)p_p]q + \boldsymbol{q_o p_o}\} - \boldsymbol{xw} \tag{1a}$$

$$\text{s.t. } G(q, \boldsymbol{q_o}, \boldsymbol{x}; \boldsymbol{z}) = 0. \tag{1b}$$

Assuming that γ is independent of p_f and p_p but allowing p_f and p_p to be correlated, equation (1a) can be simplified to:

$$\max_{q,\boldsymbol{q_o},\boldsymbol{x}} \{E(\gamma)E[\max(p_f, p_p)] + [1 - E(\gamma)]E(p_p)\}q + \boldsymbol{q_o}E(\boldsymbol{p_0}) - \boldsymbol{xw} \tag{1a'}$$

Let $\boldsymbol{y} = [q, \boldsymbol{q_0}, \boldsymbol{x}]'$ be a vector of output and variable input quantities and let

$$p^* \equiv E(\gamma)E[\max(p_f, p_p)] + [1 - E(\gamma)]E(p_p) \tag{2}$$

be the household's expected farmgate maize price. Then solving equation (1a′) subject to (1b) gives factor demand and output supply functions of the form:

$$\boldsymbol{y} = \boldsymbol{y}(p^*, E(\boldsymbol{p_0}), \boldsymbol{w}; \boldsymbol{z}). \tag{3}$$

Another example: Hoffmann and Gatobu (2014)
Unobservable quality and the value of self-provisioning

- Asymmetric information on food quality (safety) between buyers and sellers in rural maize markets of Kenya may explain people's preference for home grown maize and contribute to lower market participation.
- Build conceptual model, derived from basic household model and subsequent extensions to add their own extension about how preferences for home grown food and asymmetric information about quality drive them towards subsistence and away from market.
- Yield testable predictions.
- Backed up by the empirical analysis.

v. Methods / Empirical Framework

- Important “workhorse” section of any applied research paper.
- Along with the introduction can go a long way towards making or breaking your paper.
- Helpful to recognize that you want to use this section to convince the reader that you are answering the research question in the most efficient and clear way possible.
- Want to show that you are knowledgeable about methods, but don’t make things more complicated than necessary.
- That being said.
  - Need to clearly and accurately write out your model
  - Discuss how it is estimated (estimator choice)
  - Reviewers concerned about endogeneity/selection bias/confoundedness (eg: correlation between errors and observed covariates).

Write out model, and explain it clearly

- If you have a conceptual framework, make sure the model links to it.

From Mason, Jayne and Myers (2015)

- All variables are clearly explained and their inclusion justified.
- Parameters to estimate are presented and explained.
- Parameters link to hypotheses about government prices ($\hat{\alpha}_1$), ($\hat{\alpha}_2$), private sector prices, and ($\hat{\alpha}_3$), government fertilizer.

6.5. Empirical output supply equations

The empirical output supply equations are specified as:

$$y_{i,t} = \alpha_0 + \alpha_1 \hat{p}^*_{i,t} + \boldsymbol{p}_{\mathbf{0},k,t-1}\boldsymbol{\alpha}_2 + \boldsymbol{w}_{i,t}\boldsymbol{\alpha}_3 + \boldsymbol{z}_{i,t}\boldsymbol{\alpha}_4 + \alpha_5 govtfert_{i,t} + r_i + u_{i,t} \qquad (10)$$

where $y_{i,t}$ is a measure of crop output (discussed further below), $\hat{p}^*_{i,t}$ is the expected farmgate maize price (ZMK/kg); $\boldsymbol{p}_{\mathbf{0},k,t-1}$ is a vector of provincial (k) level prices for other crops at the previous harvest in ZMK/kg; $\boldsymbol{w}_{i,t}$ includes an agricultural wage rate (ZMK to weed a 0.25 ha field) and the farmgate fertiliser market price in ZMK/kg; $\boldsymbol{z}_{i,t}$ is a vector of other production shifters such as quasi-fixed factors of production, rainfall and household characteristics affecting production; $govtfert_{i,t}$ is the kilograms of government-subsidised fertiliser acquired by the household; r_i is time invariant unobserved heterogeneity; and $u_{i,t}$ is the error term. We include $govtfert_{i,t}$ as a regressor because along with the FRA, the fertiliser subsidy programme is the other major government initiative that is likely to affect farmers' crop production decisions. Excluding it from the regression would be likely to cause omitted variables bias.[15] Following Ricker-Gilbert *et al.* (2011), $govtfert_{i,t}$ is treated as a quasi-fixed factor because households cannot freely choose how much subsidised fertiliser they acquire.

Discuss why you chose your model and estimator

- Linear models are generally more straightforward to explain and estimate than non-linear models
- Eg: if you have binary (0 , 1) dependent variable can estimate it linearly via Linear probability (LPM) or non-linearly via probit estimator.
  - Strength: LPM easier to estimate than a non-linear estimate like probit.
  - Strength: LPM allows for fixed effects (FE) estimation with panel data, cannot use FE with probit estimator
  - Weakness: LPM can get predicted values outside zero to one range
  - Weakness: LPM errors can suffer from serial correlation.

Discuss strengths and weakness and explain your choice. Drawing upon previous literature to make your choice helps.

Identification, how you deal with non-random errors and correlation with covariates.

- Helpful to discuss the ideal dataset / research design and why that was not possible in your case.
  - What do we learn from this, even if not ideal data?

- Discuss sources of endogeneity (omitted variable bias, reverse causality, simultaneity).
  - Can you argue that the bias is leading to under-estimation (attenuation bias)?

- If you suspect over-estimation bias, try talking about how you increasingly add variables to the model and/or use more robust estimators to reduce the bias.
  - eg: Do coefficients shrink as you add more controls, or use panel estimators or use good instruments?

- Make a disclaimer that you recognize full causality may not be possible but there are still important relationships to uncover with these data.

v. Data

- Functional sections explains where your sample came from
- If using data, explain sampling frame, how and when it was collected and where the data came from.
- Be clear about any short-comings in the data collection and issues.
  - Refusal to respond for interview (if a significant problem)
  - Attrition, if collecting follow up surveys
  - Power-calculations, if designing your own intervention to measure impacts
    - Useful for justifying sample size
  - Any cleaning of data you did and how you came to final sample size, if different than original number selected for interview.

v. Results

- Start with descriptive statistics.
- Some people put them with background but they are results too, IMO.
- Use them as *prima facia* evidence to inform econometric or other more rigorous results to come.
- Can you find an interesting way to show results visually?
  - eg: Graphics instead of tables
- Need to be careful if descriptive results are not internally consistent with regression results.
  - There are many good reasons for this, but can trip you up with a reviewer if it is not explained, and appears to have been ignored.

Visual example to tell story, from Prieto et al. *forthcoming* using data from Senegal

Visualizing the quality vs. density premium

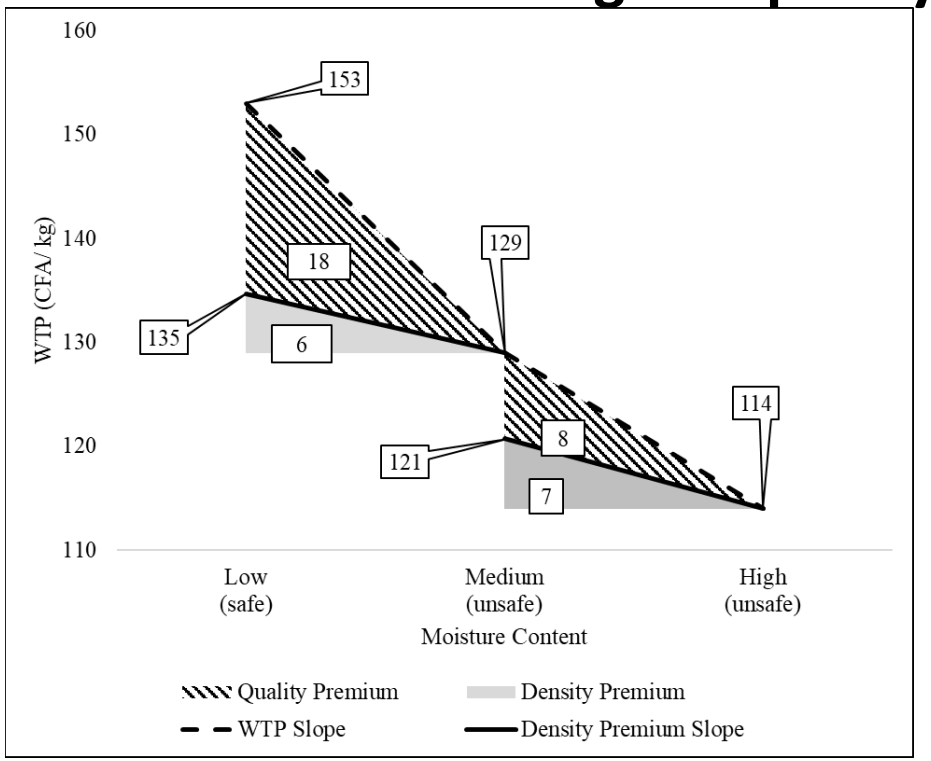

Figure 1: Calculated quality and density premiums for labeled maize.

- Most/all of the discount is due to quality premium.
- Especially for safe to store maize
- **Further evidence that they care when they know!**

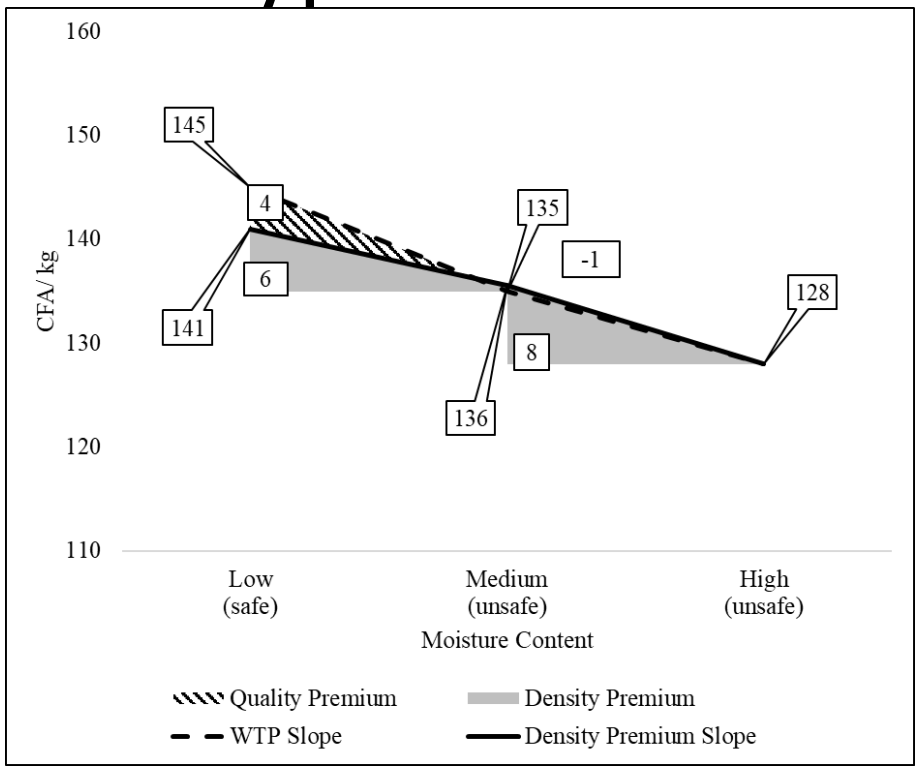

Figure 2. Calculated quality and density premiums for unlabeled maize.

- Most/all of the discount is due to density, following formula

When showing regression results trend towards showing different specifications to argue for robustness

Results from Ricker-Gilbert et al. (2019)

TABLE 4 Factors affecting area rented in, pair fixed effects (FE) and Tobit estimates

Dependent variable = area rented in (ha)	Pair FE estimator (1)–(6)						Tobit estimator (7)–(12)					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Education of HH head	0.06***				0.06***	0.02	0.05***				0.04***	0.01**
	(.000)				(.001)	(.212)	(.000)				(.000)	(.024)
Grit score		0.02***			0.01	–0.02		0.01***			0.01	–0.002
		(.009)			(.336)	(.115)		(.009)			(.222)	(.600)
Present bias			0.00		0.00	–0.00			0.00		0.00	0.00
			(.262)		(.787)	(.549)			(.378)		(.898)	(.571)
Risk aversion				–0.00	0.00	0.00				0.00	–0.00	–0.00
				(.835)	(.807)	(.780)				(.798)	(.956)	(.889)
Prerental landholding in hectare	–0.23***	–0.26***	–0.27***	–0.27***	–0.23***	–0.18***	–0.11***	–0.12***	–0.12***	–0.12***	–0.11***	–0.11***
	(.000)	(.000)	(.000)	(.000)	(.000)	(.001)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
Number of HH members	0.09***	0.11***	0.11***	0.11***	0.09***	0.04	0.04***	0.05***	0.05***	0.05***	0.04***	0.02
	(.004)	(.002)	(.002)	(.002)	(.009)	(.168)	(.000)	(.000)	(.000)	(.000)	(.000)	(.113)
=1 if HH head is female						0.04						–0.06
						(.828)						(.415)
=1 if migrant HH head						0.31**						0.19***
						(.013)						(.000)

- If coefficient estimates are similar across specifications you can argue for robustness
- If you are worried about over-estimation bias due to omitted variables, and adding control variables or using IV estimation reduces the magnitude of your coefficients, then argue your story and identification strategy makes sense.
  - Problematic if coefficients get larger.
- Talk about magnitude of the coefficients (economic significance) not just statistical significance.
  - The former is what is important for policy and in the real world
- Helpful to put the magnitude in relation to the sample means
  - Percentages or standard deviations etc.
- Often times some coefficients will not be statistically significant.
  - Want to think about how to tell an interesting story with a null result.
- Other times some coefficients have unexpected signs and/or magnitudes
  - Need to think of a reason and what we can learn from it.
  - Could be an opportunity for future research.

v. Conclusions

- Key section for wrapping up the paper. Often people do not spend enough time writing this section. Writing a good conclusion is hard.
- Marc Bellemare has a Conclusion Formula
  1) **Summary: 2-3 paragraphs**. Explain what you did and why it mattered
  2) Bellemare suggests **limitations** here **(1-2 paragraphs).**
     i) I prefer them in a small sub-section at the end of the results.
     ii) I don't think you want to end the paper with limitations. Definitely do not make limitations the last piece of information in your paper.
     iii) Explain short-coming and try to explain why they should not seriously affect the findings and implications of your work, and/or explain how they are opportunities for future work.
  3) Implications for policy and private decision making (**2-3 paragraphs**).
     i) Explain why your conclusions matter
     ii) Only draw conclusions based on the results and don't speculate (see Chamberlin and Ricker-Gilbert 2018)
     iii) Don't be prescriptive and/or use authoritative to that you know definitively what should be done.
  4) Optional: talk about opportunities for future research (**one paragraph max**) I don't think you should end with this. Better to end with implications IMO.

v. References

- Less important, but some things to consider
- Guideline: 20-25 max references
  - Different than a dissertation where you want to be sure to cite all literature.
  - But make sure you are citing what needs to be cited (no plagiarism).
- Focus on peer-reviewed publications as much as possible, and focus on Economics and Agricultural Economics journals.
  - Cite articles in journals where you want to send the paper.
  - If you do not cite any articles in a particular journal, why would you send your paper there?

A few pieces of “Grey Literature” (eg: working papers, policy notes, extension reports etc.) and paper in other disciplines (eg: agronomy, animal science, etc.) can help make an important point. But you do not want your references filled with these (if you intend to send to an Economics or Agricultural Economics Journal).

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Working papers - Journal articles – Policy briefs

- These are steps in the process to having impact
- They are not stand alone pieces of work.
- Working paper/conference paper is a step in the process of creating the journal article. NOT THE FINAL STEP!
- Good opportunity to circulate to colleagues for feedback, present at conferences, etc.
  - One strategy is to send the paper to someone whom you think may be a review and ask him or her for feedback.
  - Take that feedback and use it to make journal article better
- Once you have robust results and recommendations, use that to write the policy briefs.
  - Policy briefs should be based on sound, rigorous evidence
  - written for a different audience than journal article.
  - Policy briefs focus on results, and implications, while making suggestions for improvements.

Wrap-up: General Comments

- Writing an article can seem like a big task.
  - In many ways it is.

- Helpful to break up the task by focusing on it section by section in blocks.
  - For example: Focus on 1-2 hour blocks writing each section until it is done.
  - Focus on most important sections first
    - Introduction, Methods, Results, Conclusions, Title, Abstract

- Evidence suggests that taking a consistent piece by piece approach to writing leads to greater productivity than waiting to have a block of time.
  - Either block 1-2 hours every week day or 3-4 hour blocks a couple of times a week to make progress.

- Best way to improve writing is to practice writing.

Once you have a dataset and written a journal article on a topic. Don't switch topics right away!

- Look for other ways to add to knowledge base on the topic.
  - Need to be able to explain the value added/contribution of each paper

- Example input subsidies
  - Crowding-in/out of commercial fertilizer (demand side)
  - Then: crowding-in/out of commercial seed (demand side)
  - Then: crowding-in/out of commercial fertilizer (supply-side).
  - Then: impact of FISP on household and hired labor
  - Then: impact of FISP on supply response
  - Then: impact of FISP on maize prices…….

- You can look at the CV's of many successful researchers and see that this is how they built their careers.

Thank you for your time! Questions / Comments?

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References: Websites with journal article writing advice.

1) How do I write a scientific paper? https://www.scidev.net/global/publishing/practical-guide/how-do-i-write-a-scientific-paper-.html

2) Keith Head, the Introduction Formula

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3) Marc Bellemare, the Conclusion Formula

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