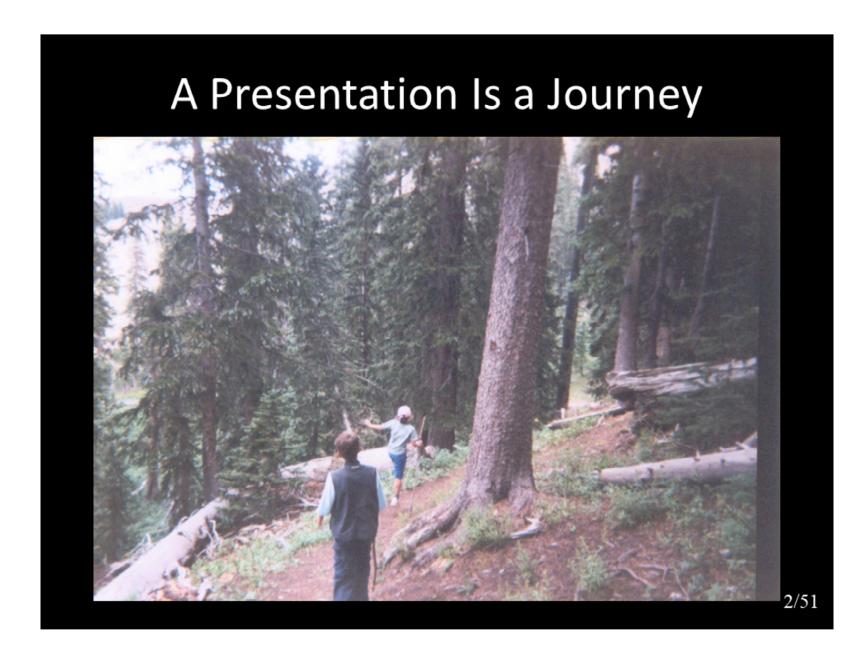
How to Give a Good Research Presentation Three Essential Elements

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Slides available on SSRN, RePec, Research Gate, and my web site, www.shsu.edu/dpg006, with annotations in comments that can be toggled on.

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I would like to acknowledge the contributions and input of the participants in various "How to Give a Good Research Presentation" panel sessions at the Southern Economic Association and Western Economic Association conferences, especially the panelists: Rachana Bhatt, Jillian Carr, Courtney Collins, Monica Deza, Craig Depken, John Garen, Jac Heckleman, Brad Humphreys, Larry Kenny, Fernando Lozano, Pia Orrenius, Jane Ruseski, Tino Sonora, and Artie Zillante.



This is my daughter and son on a family hike in Colorado several years ago, out in front, as they usually are, even though they don't know the way © To my wife and me, we are hiking a trail to the top of a ridge, but to them, we are "mountain climbing." Mountain climbers need hiking sticks, which they each have, and if you'll notice, our daughter is skipping.

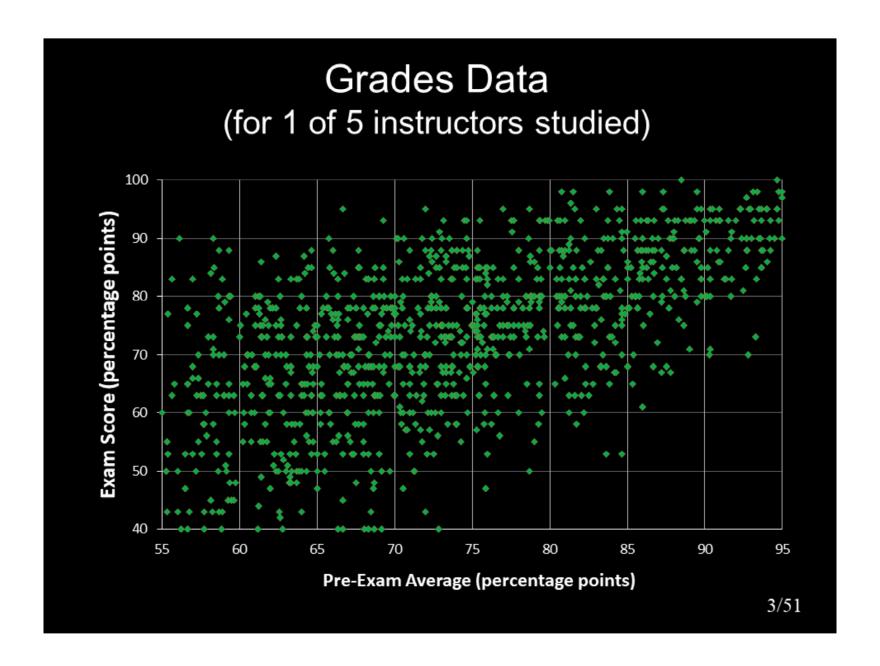
Most of us, when we make a research presentation, think to ourselves, "I am going to tell the audience what I am investigating, and how it fits into the literature, and what my methods are, and then my results and conclusions." But that is the wrong way to think of it: you're in trouble from the start. Because, like "mountain climbing," a presentation is a journey.

I think this picture embodies what we should aspire to achieve in this journey. First there is the destination, the ultimate question that the researcher is trying to answer. We want this to be intriguing, appealing, to call to the audience as the "mountain" calls to our kids. But if you start your presentation with, "This is what I am going to do and this is how it fits into the literature," you haven't really established your destination, but you have drained your talk of some of its appeal.

Next is the path that leads to your destination. This path is your slides, which should involve the audience and draw them along. To do this, they must have something for the audience to "grab hold of." If they don't, then you relegate them to passive observers who must be pulled forward along the path instead of eagerly proceeding down it on their own.

Finally, there is you, the presenter, the host, the guide on this journey. That is the last thing this picture shows us—by omission. Our kids are out in front, taking in the wonder of it all. The hosts—my wife and I—are "leading from behind." We don't want to be in front, obscuring the view and draining away some of the excitement of exploration. So it should be, metaphorically, for your talk as well.

The three keys to a good presentation discussed in this talk will show you how to turn your presentation into a journey. The first key helps you properly establish the destination. The second key helps you lay down a path that draws in the audience. And the third key delineates your role in the process, shows you how to "lead from behind." Let's get started!



So here you are at the introductory part of your talk. This moment is pregnant with possibilities, but it also the moment when many presentations falter, never to recover. So have a clear objective in mind: you are trying to establish the destination for your journey. If you start in with, "This is what I am going to do and this is how it fits into the literature," then you are not impelling the audience forward, but dragging them behind you to a destination that they haven't bought into, but have merely been informed about.

So let me suggest another way. Rather than tell you, I'm going to show you, by introducing another talk I have given from the past. (Every slide I will show you is from presentations I have given.) Here, I start with the data. You have been looking at this slide the whole time that I've been talking—are you bored? Or intrigued? Just staring at it, questions quickly come to mind! I can just launch into a description of this data, the plot, the A/B/C/D/F grading system used in all five instructors' courses. Then I can draw the audience's attention to borderline students, with say a 79 average going into the final exam, and establish my destination with a simple question: "So, what do you think? Do these students tend to perform especially well on the final, in order to finish the class with a B instead of a C?"

I don't answer this question at this point in the talk—I merely pose it, and broaden it to the incentive effects of grades generally. The destination is set, the audience is intrigued, maybe trying to peer into that slide and discern what the answer to this question will be. Before proceeding, I affirm that this data suffices to answer my question and sketch out, intuitively, how I will use it to do so. One slide into my talk, I have hooked you on the topic of my study and acquainted you with the data and methods used to investigate it. All with a scatterplot from Excel.

(This research was published as "Grades as Incentives," *Empirical Economics*, 44(3): 1563-1592, 2013, with Bill Green, https://link.springer.com/article/10.1007%2Fs00181-012-0578-0.)

The First Key to a Good Presentation:

CREATE A IN KNOWLEDGE

(which you will then fill)

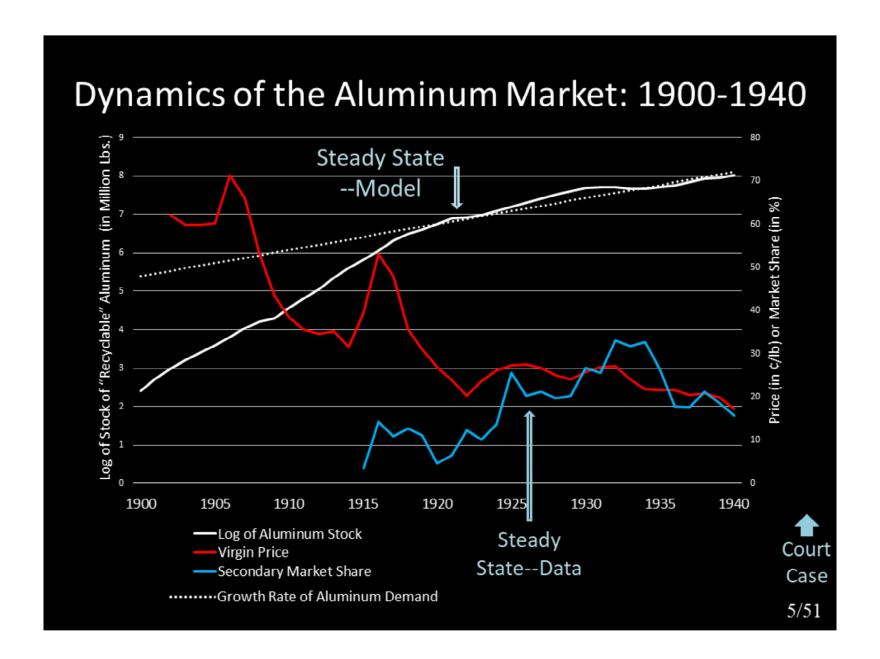
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What is the general principle here? It is that your introduction should create a GAP in knowledge, following the "gap theory of curiosity" (Loewenstein, 1994). In the process of creating this gap, you both introduce the topic and motivate your research question. The previous slide did this simply by showing the data, but there are many ways to accomplish this goal.

Now, in order to have a gap, you have to have material that surrounds that gap. You can't have a gap in nothing. This material consists of prior knowledge, contextual information, and descriptive facts. Use it to develop, construct almost, this gap in knowledge. This gives your audience something to "hold on to," to work with, as you move through your talk. To create a gap in knowledge, you must properly set the stage, which means providing the appropriate intellectual, institutional, and descriptive context. The gap in knowledge that arises out of that context is more meaningful and thus more interesting than an abstract question that is posed without it.

Finally, recognize that a gap in knowledge is not equivalent to a gap in the literature. A gap in knowledge is more intuitive, more substantive, and more "organic"—it requires you to "come out of the weeds," all the details of your study, and relate to your audience in a simpler, more natural way. This is very important for presentations and for promoting your research generally. You may need to add some detail about the literature, depending on the topic and the nature of your talk (brief conference presentation, job talk, etc.), but this should always come after establishing the gap in knowledge, and can usually be done in a way that does not "drag the listener behind you," as we will see.

Now let's look at some other ways to create a gap in knowledge.



Here is another unconventional way to introduce a talk – start with the results! The question that comes to mind then becomes, how did you get that surprising result? The usual literature review is also inverted – you point out your surprising finding first, with the promise that you eventually will show why it differs from the previous findings in the literature.

The verbal part of this presentation would begin like this: "My study, like several before it, is spawned by the famed Alcoa antitrust case of 1945. Alcoa was a monopolist in virgin aluminum that is created 'from scratch' out of ore (bauxite). Its only competition came from a competitive recycling sector that produced secondary metal. To some extent, however, Alcoa could mitigate the pro-competitive effect of the secondary market by restricting the company's (earlier) sales of virgin. This issue, called the 'recycling problem,' was key to the antitrust case and motivated several previous analyses of it. However, the recycling problem had in fact been in a steady state for two decades prior to the case, and was no longer relevant. Because of fundamental modeling flaws, however, this essential fact went unrecognized in all previous studies of this problem." The audience is now *invested* in the details of modeling the recycling problem, since I have shown (or asserted, with proof to follow) that they are quite consequential.

After establishing this destination, I would use this graph to set the stage for the remainder of the paper. I would introduce the main variables in the recycling problem: prices, demand growth, market shares, etc. I would establish what the steady state meant theoretically, in terms of the model that I was about to introduce, and empirically, in terms of observed variables. I would provide the context needed to understand the question and my analysis up front, equipping the audience for the nitty gritty to follow—the technical modeling issues that distinguished this paper from its predecessors.

(This research was published as "Recycling and Market Power: A More General Model and Re-evaluation of the Evidence," *International Journal of Industrial Organization*, 17(1): 59-80, 1999, https://www.sciencedirect.com/science/article/pii/S0167718797000234.)

What Is The Key Difference between These Pricing Formulas?

Single Product, Linear (Lerner, 1934):

$$(P-c)/P = 1/|\eta|$$

Multiproduct, Nonlinear (Mirrlees, 1976):

$$\sum \frac{\partial}{\partial n_j} \mu_j(v, v', n) + \sum \frac{u_{zn_j}(x(v, v', n), z(v, v', n), n)}{u_z} \mu_j(v, v', n)$$

$$= \left(1 - \frac{\lambda}{u_z}\right) f.$$

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The previous study was largely theoretical, yet could still be factually motivated. Now let's flip the script and introduce an empirical paper using theoretical content. Here I do this by using equations as visuals and asking a simple yet intriguing question: What is the essential difference between these two formulas?

From there, the conversation flows naturally. The top equation is less general but quite intuitive. We know it well, the natural linear pricing heuristic that we all teach our majors: the markup is inversely related to the elasticity of demand. Conveniently, this equation can be directly applied to data.

Not so much for the more general, but more complex, equation on the bottom. I don't even know what most of the symbols mean! There are lots of multiproduct pricing heuristics too—tying, bundling, two part pricing, etc.—yet none of them drop right out of this equation.

Eventually, we arrive at the answer to my question: the top formula allows you to TEST THE HEURISTIC DIRECTLY. You can't do that with the formula on the bottom! How, then, can we examine the use and relevance of pricing heuristics in a multiproduct context? The relevance of this question is obvious: most price setting firms sell multiple products and many use pricing mechanisms that are highly nonlinear. There's your destination. I tell the audience that this paper will put forward a simple, natural technique that can be utilized with limited data and little theoretical guidance, and then we get down to business.

Notice that in all three openings, I never just out and tell the audience what I am going to do. This is not to be coy—they will find out soon—but because it is not essential to establishing the destination for my talk. My empirical findings, my theoretical results—they will come soon enough. First we have to thoroughly establish the question. We must create the gap in knowledge that this study is going to fill.

OK, now your destination is established and you have the audience's interest. They have already started walking down the path ahead of you. But what about the journey itself? How do you hold the audience's interest as you move into the body of your talk, and have them continue to push ahead down the path toward this destination? The key is not gimmicky—not humor, not "bells and whistles"—but substantive. Making it work involves the presence of one thing and the absence of another.

(Published as "Multiproduct Pricing in Major League Baseball: A Principal Components Analysis," *Economic Inquiry*, 49(2):474-488, 2011, with Craig Depken, https://doi.org/10.1111/j.1465-7295.2010.00263.x.)

The Second Key:

MAKE YOUR SLIDES KINETIC

(by using good graphic design)

HA HA HA – there aren't 51 slides, only 15!

Your narrative is probably causal in some way, shape, or form. You are exploring, theoretically, empirically, or both, how some variable or set of variables influences some outcome or set of outcomes. Now your presentation isn't just a *journey*, but a *quest*, like in The Hobbit, except that you seek not treasure but the "hidden" connection between the variables of interest. You should structure your presentation to draw the audience into this "causal quest" with you. Let your slides lay out a path that your audience can follow (with some help) on their own. Then your causal quest becomes theirs, too.

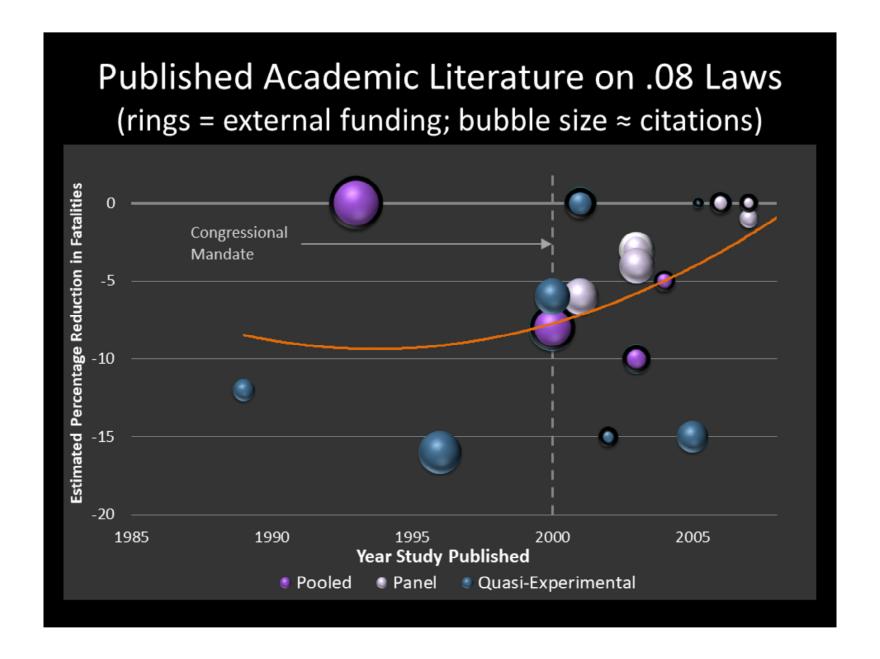
Just how you do this depends on the content of your narrative, of course. But, in general, this can be accomplished by making your slides *kinetic*—giving them movement. By this I don't mean little stick creatures that move around or whatever—let's not do gimmicks of any kind. Rather, present information in such a way that viewers can search for or draw causal connections on their own. In the process of doing so, they are moving down the path toward your destination on their own volition. All you have to do is provide reinforcement for those people who are on track and some guidance for those who aren't.

The previous slides were each constructed that way. They encouraged you, as the viewer, to think about the material being presented and to figure things out on your own. The first slide, about grades, makes you wonder about the relation between the x and y variables. The second slide makes you wonder what the missing word ("gap") is. The third slide, about aluminum, invites you to draw connections between the time series presented, while the fourth invites you to compare two different ways of thinking about pricing.

This was no accident. In each case I carefully designed the slide to accomplish this goal: kinetic slides arise from careful design. Furthermore, if you make good slides, you won't need many – which is OK, since your paper has the details on everything, and the number of attention-disturbing transitions is reduced. (I bet you groaned inside when you saw "1/51" on that first slide, didn't you?) I have seen some decent presentations with many slides. But let there be no question who is in front on that journey—the presenter is, with the audience racing so as not to get left behind.

My ballpark for a 22 minute presentation is 10 slides, maximum. For an hour and a half talk, I aim for 15. Only rarely should you need more. Is it really necessary to include all these details in your talk? Your paper has the details!

Still, the quantity of slides is less important than their quality. Let's look at some slides that are designed to draw you in.



This slide summarizes a good-sized literature on an important U.S. drunk driving law that sets a per se blood alcohol limit of .08 g/dl. Boy is it kinetic.

This slide is laid out very carefully. It is clear and self-contained: everything you need to know about the graph is reported on the slide, so you can start interpreting it immediately. It is informative, using five features—color, size, X&Y location, and "rings"—to convey information, which facilitates the search for causal connections. And it provides contextual information to help you interpret the patterns that you see.

After examining the details, you can "step back" and look at the big picture. The estimated effect falls shortly after the Congressional Mandate, whatever that is (and it would be described in the verbiage accompanying this slide). Is that causal or accidental? Does it have anything to do with study design, which changes at about the same time? And if the more recent results are practically nil, does that mean this law doesn't really do much in the end?

In the actual talk, after this slide, I would show similar slides for two other major drunk driving laws, both of which portray broadly similar patterns. Then the question becomes, what is driving these patterns? These slides motivate your talk and review the literature in one fell swoop! For the purposes of this presentation, it isn't necessary to go through a laundry list of studies, one lousy bullet point at a time. The big picture is what matters. Well, here it is.

(This research is from a working paper, "Policy Analysis and Policy Adoption: A Study of Three National Drunk Driving Initiatives," https://www.shsu.edu/dpg006/policyanalysis.pdf.)

Estimates of % Change in Fatalities Due to ZT Law Target Group and Control Groups

(100 γ ; standard errors in parentheses; * for p < 0.05)

Age Range of Drivers

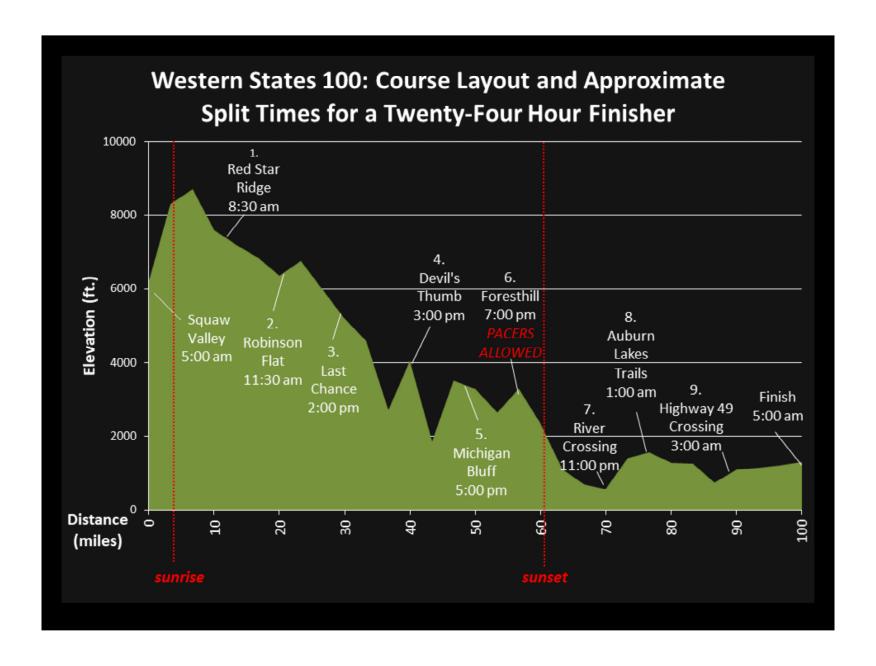
	YOUTH	YOUNG ADULT	ADULT
	(15-20)	(21-25)	(21-90)
Total Nighttime	-5.0	-4.7	-3.4*
Fatalities	(2.8)	(2.8)	(1.7)
Total Daytime	-5.3*	2.1	2.2
Fatalities	(2.4)	(3.3)	(1.4)

Increasingly, I don't even use tables to display my results in a presentation. The results are in the paper, in depth: there is no need to recreate them all on your slides. Later, I will show you an alternative way to display results that I prefer, when feasible.

Still, most of us will use tables from time to time. When I do, I structure it carefully. Here is one such table, for Zero Tolerance drunk driving laws, which apply to "youth" but not to anyone 21 and older. This slide is self-contained and clear, as before. It only displays estimates for key variables, which is all you really need. Note the use of large type, italics, and color to increase readability, along with the absence of extraneous decimals. This slide respects the resolution of the medium and doesn't include more information than the reader can clearly see and interpret. Cluttered slides with too many decimals, unnecessary coefficient estimates, tiny fonts, etc., exceed the resolution of the medium and actually reduce the amount of information that is received by the audience.

The clarity of the slide facilitates comparison-making, as does its layout, which almost begs you to compare the estimates for youth vs. adults, for daytime vs. nighttime. This is kinetic and underscores the essential point made by this paper, which is that omitted variables are seriously biasing the "base" estimate at upper-left, in white. As you examine this slide, you can start to figure that out for yourself. In doing so, you are taking off down the path to our shared destination.

(This research is from "Dead on Arrival: Zero Tolerance Laws Don't Work," *Economic Inquiry*, 48(3):756-770, 2010, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1465-7295.2009.00196.x .)



This slide just contains background details. No theory, no empirics. Yet even here good design can structure your ideas and provide, in essence, a path that your audience can follow in making causal connections.

In the talk above, as for most empirical papers, it is important to provide some "institutional context," some background details of the situation being analyzed. Here the situation is unusual—a one hundred-mile "ultramarathon." The race sure is kinetic, and so is this slide which describes it. It comprises both a course map and a timeline. It shows movement, provides structure, and conveys a lot of information quickly. It's a lot more interesting than bullet points!

In discussing it, I introduce an idea that is made more concretely later in the presentation: there is a qualitative difference between the first six splits of this race and the last four, so that you can think of the race unfolding in two "stages" (the start through split 6, and split 7 to the finish). Introducing that idea here, where it is easily seen contextually, makes it go down much easier when I show the empirical results that confirm it more conclusively.

(This research is from "The Essential Economics of Threshold-based Incentives: Theory, Estimation, and Evidence from the Western States 100," *Journal of Economic Behavior and Organization*, 130:180-197, 2016, https://www.sciencedirect.com/science/article/pii/S0167268116301421.)

The Third Key:

Let Your Talk COMPLEMENT Your Slides (and your paper complement both)

So now we have the audience rushing down the path you have laid to your intriguing destination. Where, then, do you fit in? Are you even needed at all?

Well, of course you are. But you do not need to be front and center, metaphorically speaking. You do not need to get in front of the audience and pull them along behind you. That is not enjoyable for anyone. But that is exactly what you will do if your slides and your talk are redundant. If your slides are words and you just read the words, you've left the audience with no room for discovery. They're boxed out and can do little but listen passively.

But if your kinetic slides propel the narrative, instead, you are almost like a guide, showing the audience around something they already wish to explore. You don't have to be in front—you can lead from behind. To do this most effectively, eliminate redundancies, so that little of what you say is on your slides. That means words and bullet points should be kept to a minimum, to essential points, background information you won't discuss, stuff that really can't be conveyed any other way.

You are speaking words, so make your slides different! Let them *illustrate* your ideas! Let them provide structure! Remember, you have the interest of your audience, they want to blast forward down the path you are laying out. Don't get in the way! Don't write a lot of bullet points, face the screen, and read them. Let's be honest: you do this for yourself, not the audience. Bullet points make it easier and more comfortable for you to deliver your talk—everything is right up there on the screen. But they don't involve the people in the audience. They wall them off instead.

Think of it this way. Your spoken words, your slides, and your paper should not be redundant. Instead, exploit complementarities between your spoken words, your slides, and your paper. Your slides provide the structure and information needed for the audience to follow the main thread of your work and draw causal connections; your paper has the details. Let your talk be different from both. Let it convey the narrative that guides you and your audience forward on your causal quest; let it elaborate on points that require it; let it explain the deeper meaning of slide content that you can't pick up at a glance.

I am now going to provide three examples of how to do this, one for the beginning of your talk, one for the middle, and one for the end.

PREVIOUS STUDIES OF ZT LAWS

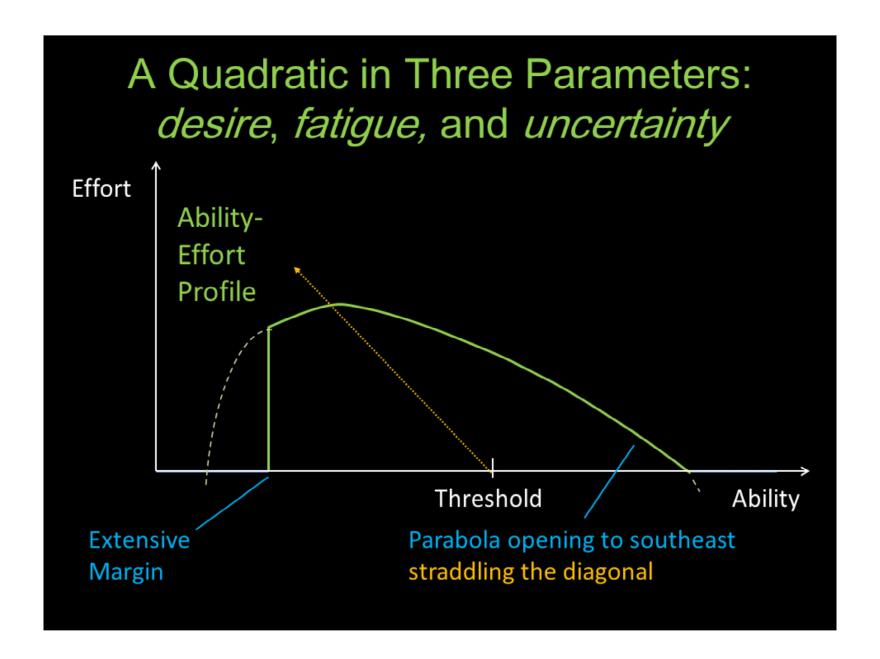
"Case-Control" Analyses	Micro Data Studies	Panel Regressions
Voas et al. (1998, 2003), Blomberg (1992), Hingson et al. (1989, 1994)	Wagenaar et al. (2001), Carpenter (2004), Liang and Huang (2008)	Dee (2001), Dee and Evans (2001), Eisenberg (2003)
Generally indicate large (20%) fatality reductions	Mixed – some evidence of less heavy drinking	Youth fatalities fall by 5%, no change for adults
Results implausible given distribution of BAC	Theory predicts MORE heavy drinking!	Used combined day and night fatalities

The absolute easiest place to get bogged down in your talk—especially a job talk—is in the beginning, when framing your question and showing how it fits into the literature. Often a full blown lit review is neither necessary nor feasible. You don't have the time, it's already in your paper, and it's not vital to creating the gap in knowledge that motivates your research. Remember, a gap in knowledge is not equivalent to a gap in the literature.

But if you must do a lit review, do it compactly. We have seen this already, in the bubble plot a few slides back, and here's another example. This slide does, indeed, have words. But look at what it accomplishes. It provides structure, quickly organizing the literature and illuminating its key themes. It lets you address the main points quickly, mentioning occasional details as appropriate. Best of all, discussing it is a breeze!

Often, a slide like this can not only review the literature, but also describe where your own study fits in. Perhaps you can place your own study within the table, pointing out how it differs from others in the same column. My analysis of Zero Tolerance laws, for example, fell into the third column of this table. It differed from the other studies in this column by addressing two points that appear in the bottom row of the table: one involving theory, the other measurement (which accidents to focus on). Thus, in the process of discussing this table, I can introduce the key features that make my paper—and its findings—different.

(This research is also from "Dead on Arrival: Zero Tolerance Laws Don't Work," *Economic Inquiry*, 48(3):756-770, 2010, https://onlinelibrary.wiley.com/doi/full/10.1111/j.1465-7295.2009.00196.x .)

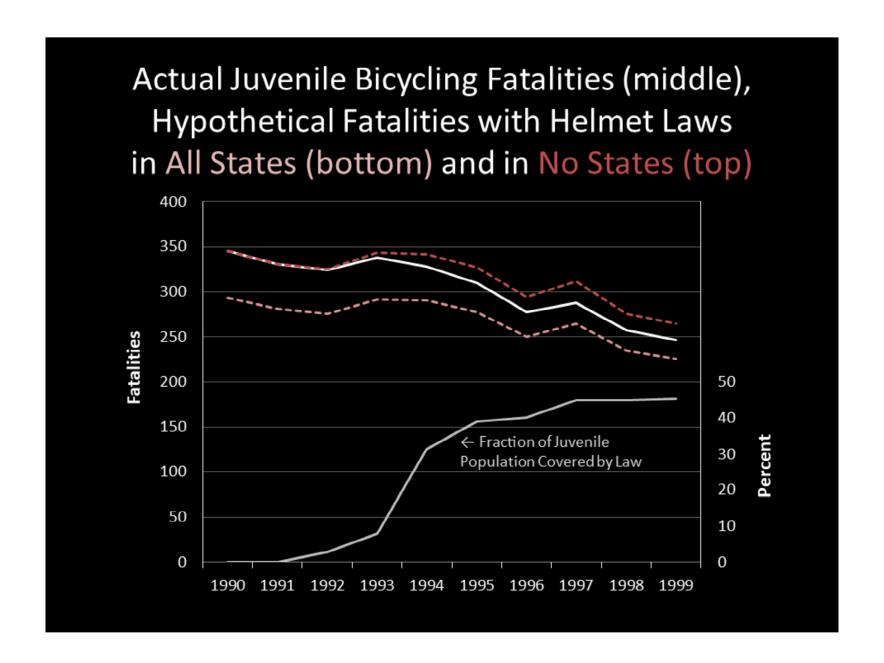


This slide pertains to the ultramarathoning paper I mentioned earlier. As simple as it looks, it was not easy to design. It does *not* come directly from the paper—I made it just for the talk. It *does* boil the theoretical content of that paper down to its essence, organizing and *illustrating* the ideas that I *discuss* in the talk.

This slide sets up three theoretical points and three econometric points that are essential to the paper. So I spend several minutes here going through them, with nary a bullet point in sight. I begin laying out the structural parameters, which are described here in words, not symbols, to eliminate confusion. Then I pose the question: where will you find the information needed to identify these parameters? To answer this question, I describe the relationship between ability and effort that this slide depicts, tying the sources of information in blue to the three structural parameters. Throughout, the slide provides structure and basic information that helps me convey my message and helps my audience understand it.

Now, in fact, the full theory and parameter identification are quite mathematical and fairly complex. But I don't need to get into that here. It's what the paper is for! Harboring all the nitty-gritty, it complements the slides and the talk.

(This research is also from "The Essential Economics of Threshold-based Incentives: Theory, Estimation, and Evidence from the Western States 100," *Journal of Economic Behavior and Organization*, 130:180-197, 2016, https://www.sciencedirect.com/science/article/pii/S0167268116301421.)



And now to some results. Previously I displayed some empirical results with a table. The alternative method used here illustrates both results and policy implications using neither words nor numbers!

As before, I don't even have to describe this slide at length, because it is clear, fully-labeled, self-contained. The moment you see it, you can start taking in my empirical findings and figuring out what they mean. Rather than present a single, static coefficient estimate for the effect of helmet laws, this graph directly shows these laws' estimated impact on fatalities. Actual fatalities initially match the no-law hypothetical, but as helmet laws are adopted in more and more states, realized fatalities plunge further and further below this hypothetical. The coefficient estimate of -13% is nowhere to be seen and would be mentioned in the talk.

And there is no reason to stop there. The policy implications are also in the same graph, whose second, lower hypothetical—also a dashed line, for clarity—estimates fatalities if these laws were universal. It is easy to see how many additional fatalities would be prevented if the remaining states adopted helmet laws. I have taken a single, static coefficient estimate and turned it into a kinetic display of the retrospective and prospective effects of the policy I am studying.

This paper had just one coefficient of primary interest. If you had, say, three instead, you could do three of these graphs in quick succession. Kinetic, easy to explain, easy to transition from empirical estimate to policy implication. The structure propels the narrative. But if you need to discuss more than three coefficients, a sequence of graphs might become unwieldy and a table preferred.

These last three slides are quite different, yet in one way they are all the same. They are simple. That simplicity helps your verbal presentation, too, by making your slides easy to explain. There are no complex equations to parse or dense tables to unpack. It becomes easier for you to be a engaging host, a good "tour guide." In the end, well-designed slides don't just help your audience—they help you.

(This research is from "The Effect of Bicycle Helmet Legislation on Bicycling Fatalities," *Journal of Policy Analysis and Management*, 23(3):595-611, 2004, with Steven Rutner, https://onlinelibrary.wiley.com/doi/abs/10.1002/pam.20029 .)

A Presentation Is a Journey

A presentation is a journey. To make that journey as satisfying to the audience *and* to you, the presenter, don't drag your audience behind you. Which is what you will be doing if you have lots of slides with long lists of bullet points and you turn and face the screen and read them. When we do that we put a protective cushion around ourselves that may give us comfort, but which also insulates us and isolates us from our audience. Their interest flags and their attention wanders.

Instead, give yourself and your audience a chance to connect. It is thrilling to stand before them, draw them in with the gap in knowledge that you create, observe their peering interest as they decipher causal connections in your slides, as you guide them to the satisfying conclusion of your narrative.

I am not going to lie – the first couple of times it can be scary. Without bullet-point-laden slides, your crutch is gone. But you still have support. The structure of your talk, contained in your slides, is going to help you. The opening, creating a gap in knowledge, will rarely be technical, so you can start on territory that is comfortable for you and your audience. Identifying the core point of your talk, phrasing it as a question, a gap in knowledge that needs to be filled, and designing slides to motivate that question – that's not easy. But once you have done so, those slides will help you start strong and connect with your audience.

And then the rest of your talk, slides with graphs, simple tables – OK, discussing those isn't too hard. You don't have lots of slides to cover, because each slide is highly informative and you've left out extraneous material, which is in your paper. So now you can slow down a little. You can relax, exude some natural enthusiasm, be approachable, relate to your audience. Who knows? You might even enjoy yourself a little!

We live in a world of ideas, so let's make that world as fascinating as we can. Why should we settle for anything less?

