STAFFING ANALYTICS

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The Staffing Cycle

- Basic facts about staffing processes
- The value of analysis
- Possible analytic approaches

Hiring: Predicting Performance with Incomplete Data

Selection: A Question

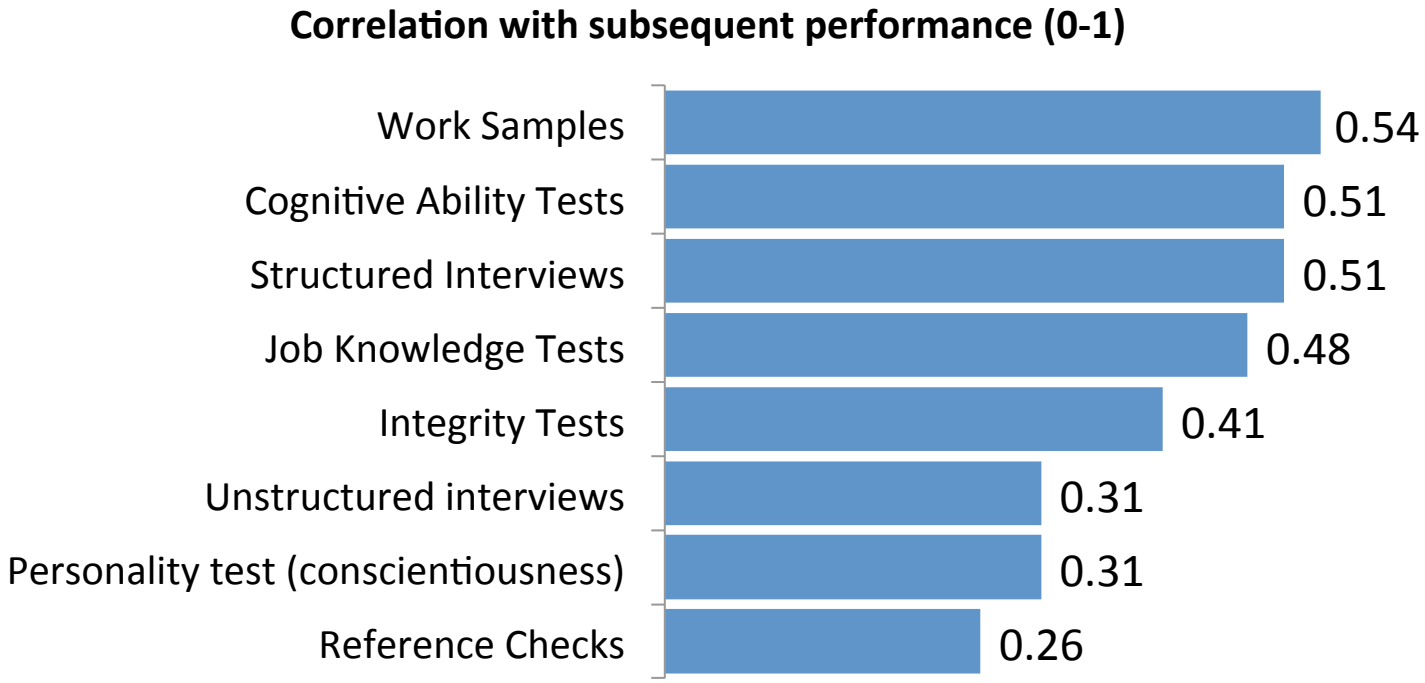
Which of the following methods of evaluating job candidates is most effective at predicting subsequent performance?

Which is least effective?

1. Job knowledge tests
2. Cognitive ability tests
3. Personality tests
4. Reference checks
5. Structured interviews
6. Unstructured interviews
7. Work samples
8. Integrity tests

Source: Ryan and Tippins 2004

Getting Selection Right



Source: Ryan & Tippins (2004)

Fine-tuning your selection

Performance	Predictors

• Performance Evaluations
• Objective Performance Metrics
  - Sales
  - Productivity
  - Customer Satisfaction
• Attrition
• Rate of promotion
	• Background/experience
	• Test scores
	• Interview performance
	  - Specific questions
	  - Specific interviewers

Predicting New Hire Performance: Hints, Tips, Issues

1. Comparing Apples with Apples
   - The work
   - The location
   - The manager / unit
   - The level
   - Time in the Job
2. Disentangling Influences
   - Beware spurious correlations
   - Apply common-sense / understand the mechanism
3. Accounting for Selection
   - Who got hired
   - Who stayed

Approaches to Predicting Hire Performance

Best:
- Use multivariate regression to separate out influences of different characteristics
- Apply selection correction to account for who was hired and attrition from sample

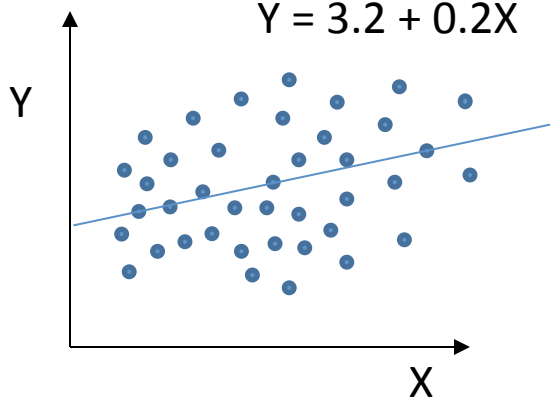
Good:
- Use multivariate regression to separate out influences of different characteristics

Better:
- Compare characteristics of best and worst performers **within same cohort and job**

Okay:
- Compare characteristics of best and worst performers
- Test for statistical significance

$$Y = 3.2 + 0.2X_1 + .5X_2 + 1.8X_3$$

$$Y = 3.2 + 0.2X$$



How Does Data Analysis Compare to Human Judgment?

The Bad News

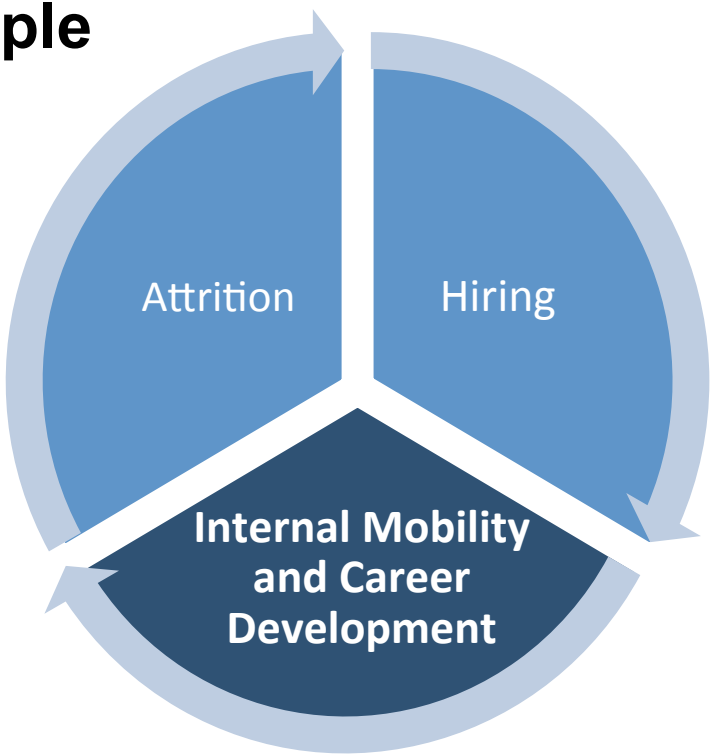
- Combination of various tests and selection methods leaves much of performance unexplained

The Worse News

- Implementation of algorithms reduced turnover in call centers
- Turnover was lower the less often managers over-ruled the algorithm

Ryan and Tippins, 2004; Hoffman, Kahn, Li, 2015

Bringing Data to Internal Mobility: Beyond the Peter Principle



The Peter Principle

"In time, every post is occupied by an employee who is incompetent to carry out its duties"

Peter and Hull, 1969

OR:

How well does success in the current job predict performance in a higher level job?

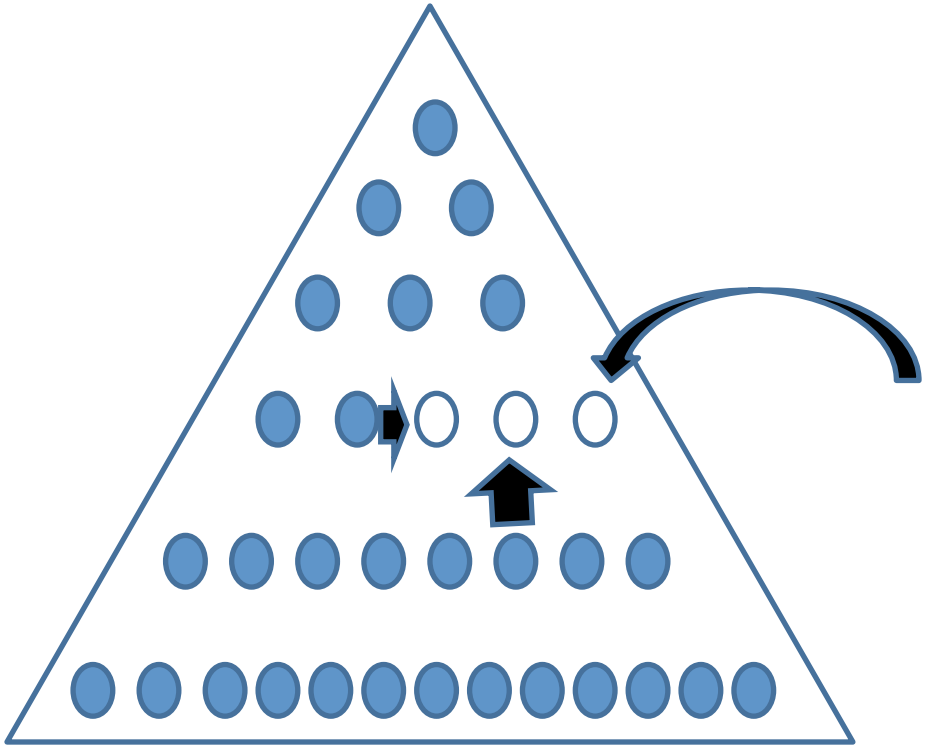
OR:

What does predict success in higher level jobs?

Analyzing Promotability

Requirements	Potential
• Multiple dimensional performance indicators - Output measures - Competence - Assessments	• Which dimensions of lower level performance best predict performance in the higher level job?

Evaluating Staffing Options



- Which routes lead to better performance?
- What is the effect on cost?

A Practical Example

- Personnel data from large investment banking division
- Wide variety of functions
- Annual snapshots of employees from 2003-2009
  - Performance Evaluations
  - Compensation
  - Job

- Focus on effect of how workers entered their **current** job (hired versus promoted)
- Use very detailed job controls to compare workers entering similar jobs by different routes
- Study only jobs that
  - Can be entered by promotion
  - I observe being filled

Does it matter how people enter jobs?

Performance

- Hires performed substantially worse than similar promotes
  - *75% less likely to get top rating*
  - *270% more likely to get lowest rating*
- Takes 3 years to acquire similar performance to those promoted into the job

Pay

- New hires receive 18% more compensation than promotes
  - *Pay gap only closes very slowly (up to 7 years)*

Bidwell, 2011

Comparing Hiring Inside Firms

Internal Posting

Internal market

- Manager posts job & invites interested candidates to apply
- Creates competition for jobs within the firm

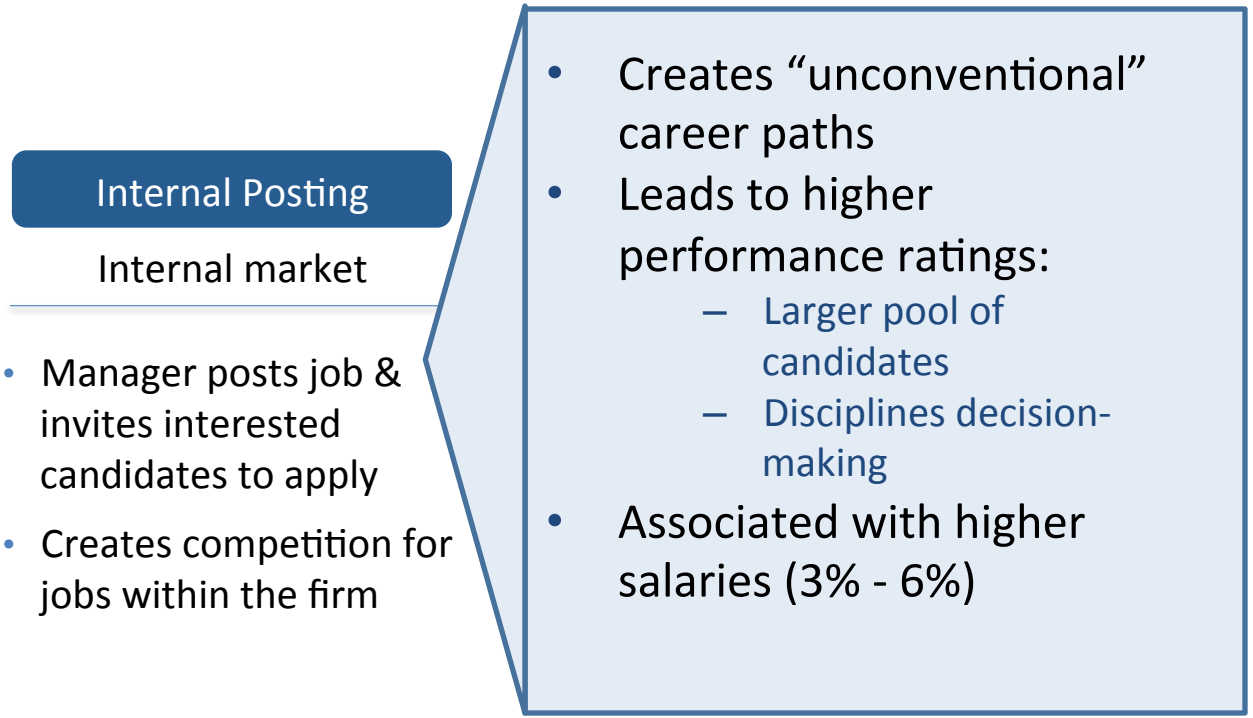
Vs.

Sponsorship

Social network

- Manager identifies candidates through her personal network
- Appoints preferred candidate to the job

Comparing Hiring Inside Firms



ISSUES OF CAUSALITY

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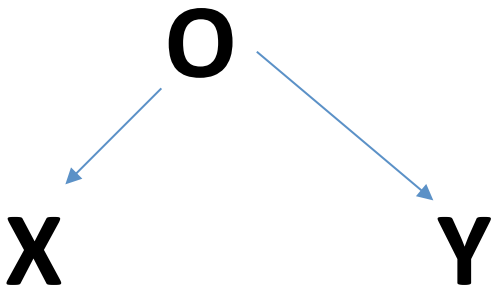
Why We Care About Causality

- People who enter jobs through formal posting perform worse → Should we avoid posting?
- People who have been in the job longest have lower performance → Should we move people around more?
- People who have taken a training program perform better → Should we send more people to training?
- People who have taken a training program show greater performance improvements → Should we send more people to training?

Two Types of Causality Problems

Omitted Variable Bias



- Do we only post when jobs are hardest to fill?
- Do people only get trained following dips in their prior performance?

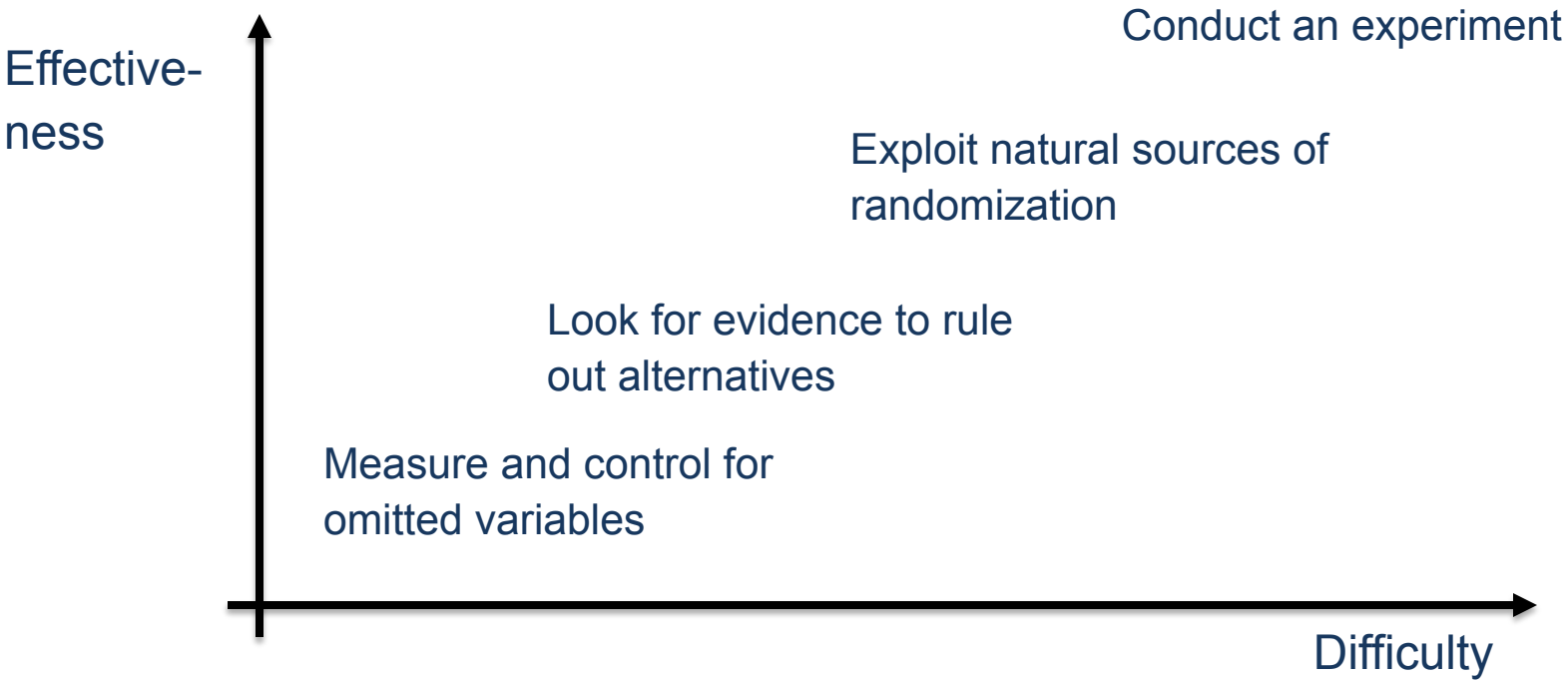
Reverse Causality

- Are our highest performing people getting promoted out of the job leaving middle performers?
- Are our highest performing people being trained?

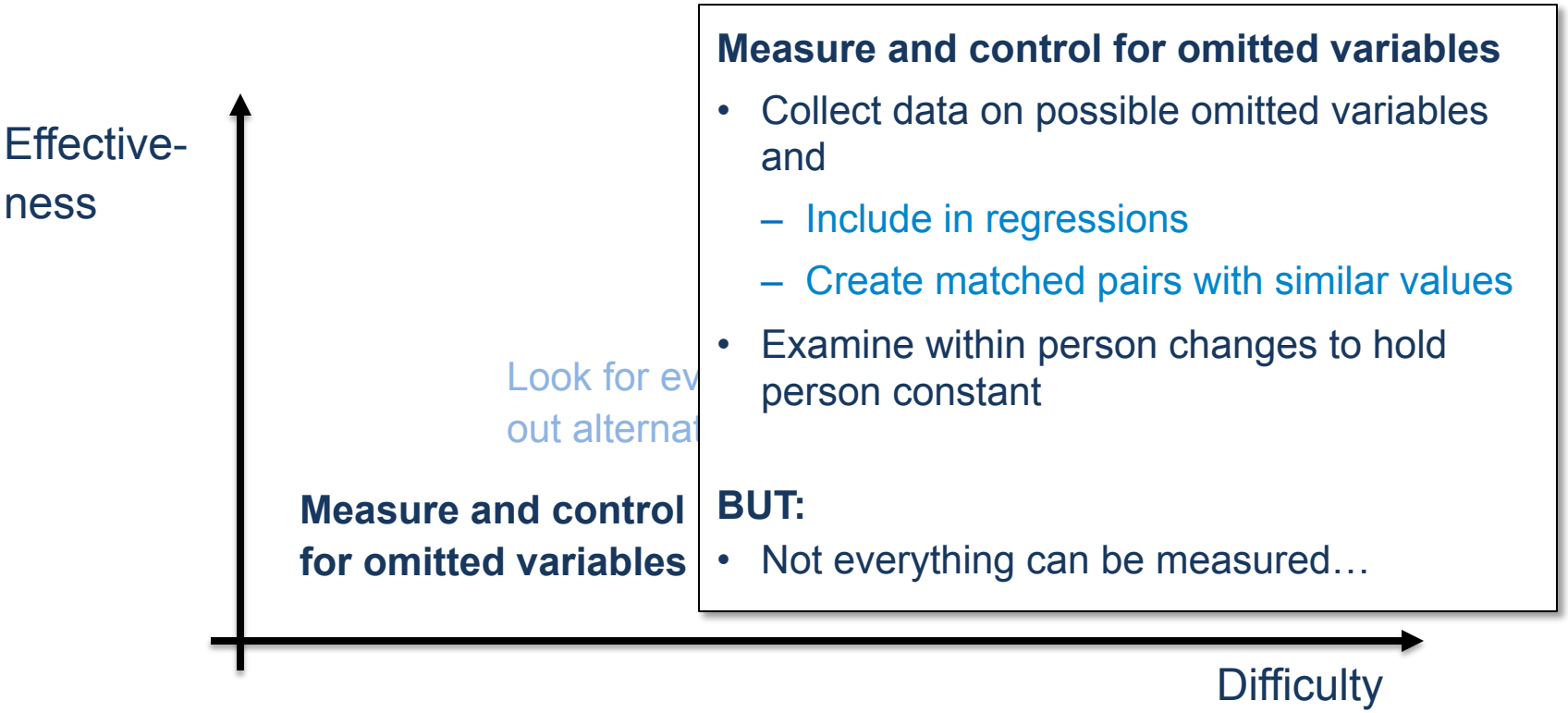
The Central, Underlying Question

What is leading to difference in our main predictor variable?

Approaches to Addressing Causality



Approaches to Addressing Causality



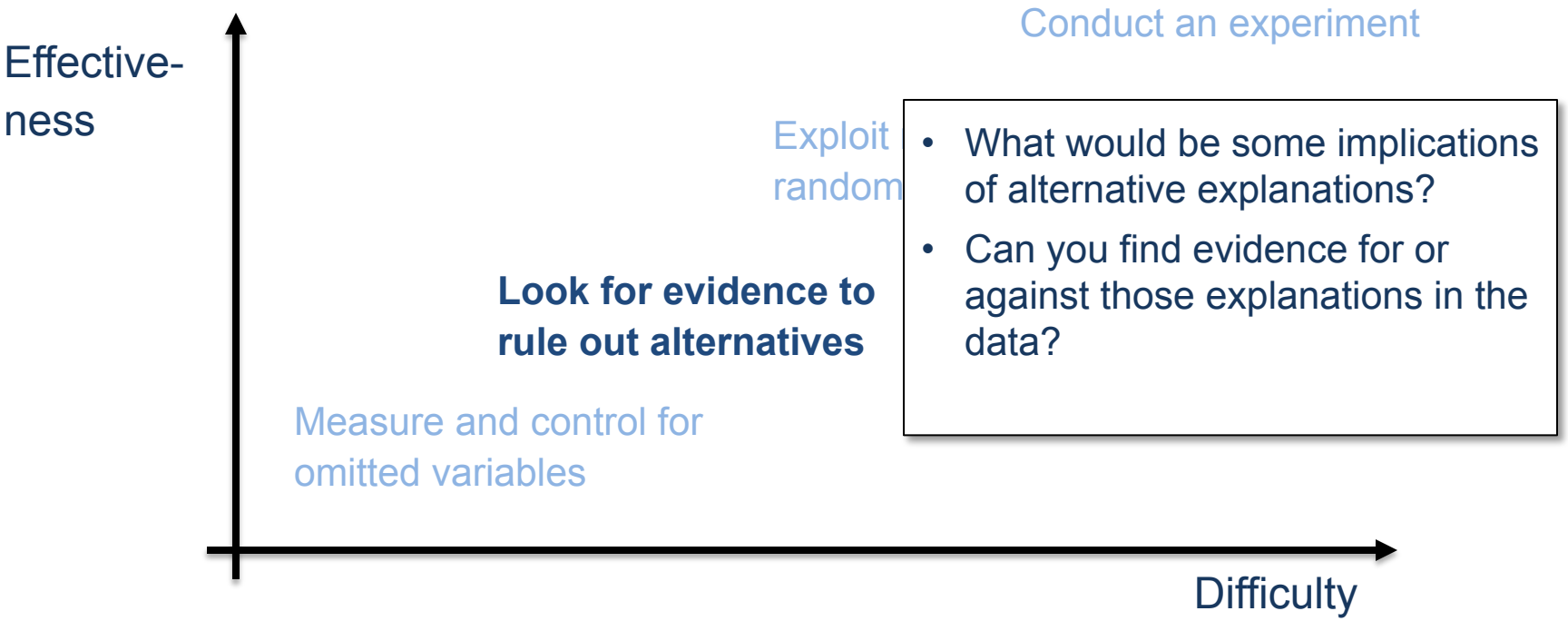
Measure and control for omitted variables

- Collect data on possible omitted variables and
  - Include in regressions
  - Create matched pairs with similar values
- Examine within person changes to hold person constant

BUT:

- Not everything can be measured…

Approaches to Addressing Causality



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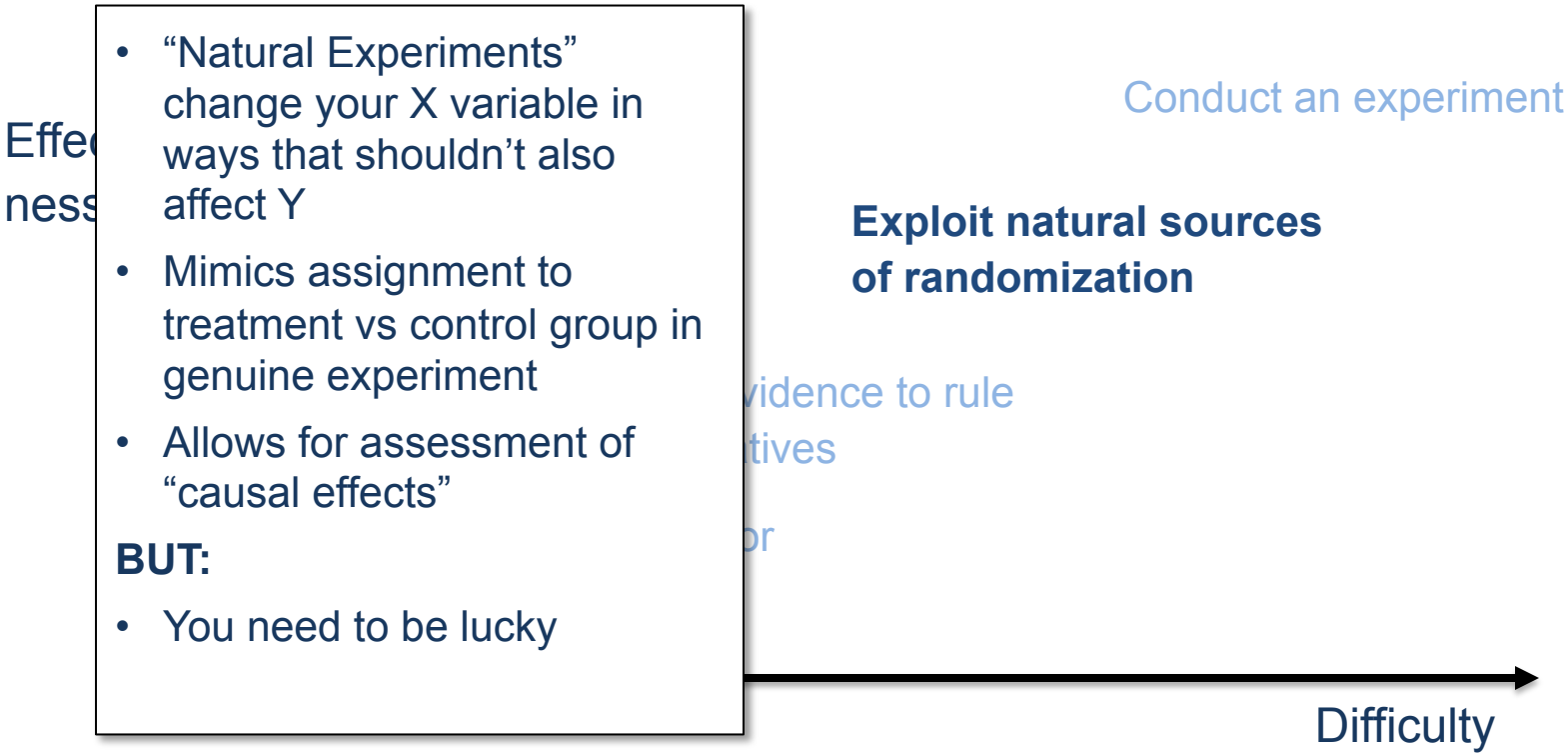
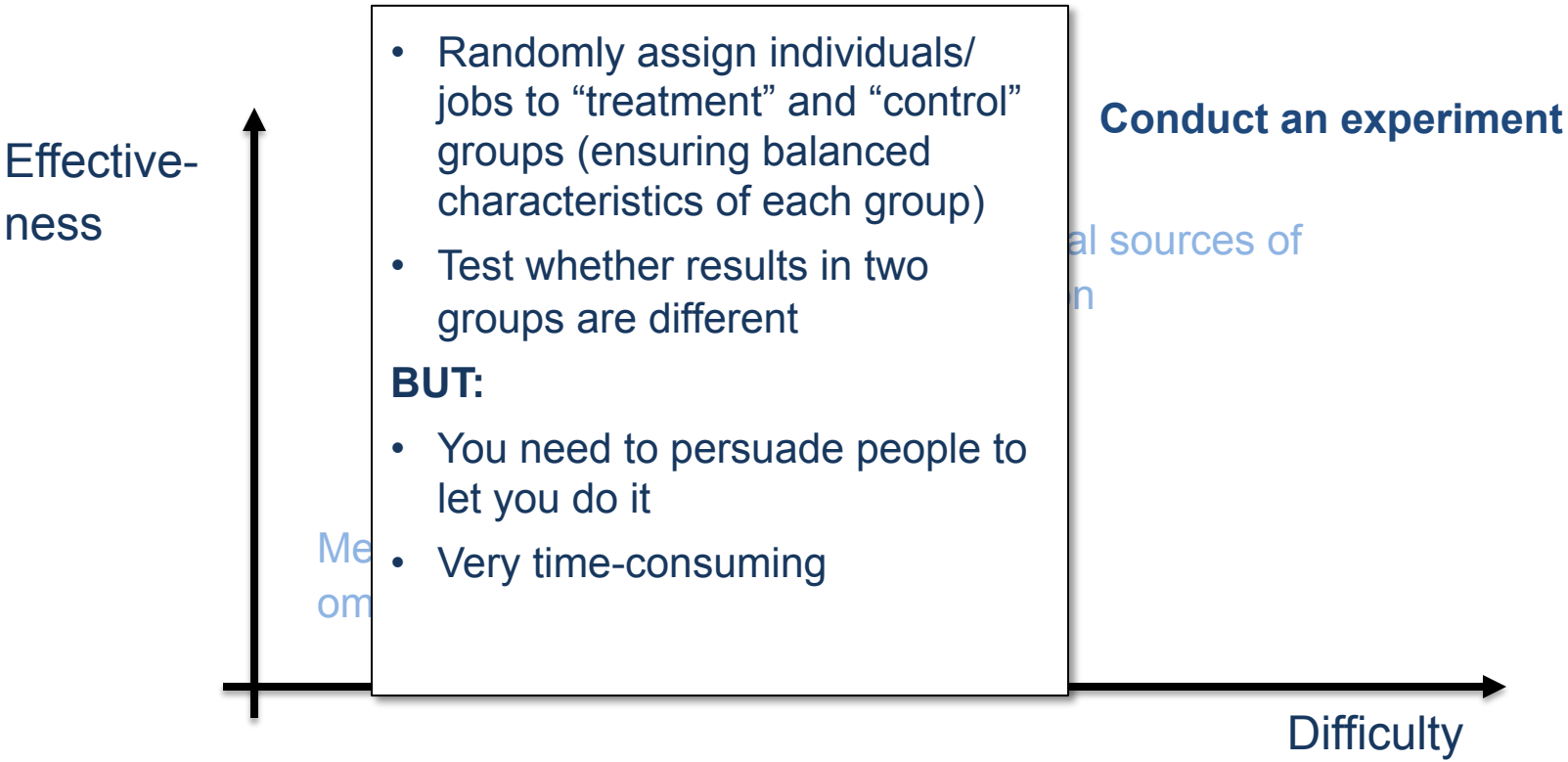


- "Natural Experiments" change your X variable in ways that shouldn't also affect Y
- Mimics assignment to treatment vs control group in genuine experiment
- Allows for assessment of "causal effects"

BUT:

- You need to be lucky

Approaches to Addressing Causality



- Randomly assign individuals/ jobs to "treatment" and "control" groups (ensuring balanced characteristics of each group)
- Test whether results in two groups are different

BUT:

- You need to persuade people to let you do it
- Very time-consuming

Understanding and Managing Attrition

Problems

- Hiring Costs
- Training Costs
- Loss of Critical Knowledge
- Impact on Customer Relationships

Levers

- Inform hiring strategy
- Target interventions
  - Improve conditions
  - Address unmet needs
  - Train managers
  - Focus retention efforts

Understanding Attrition – A Simple View

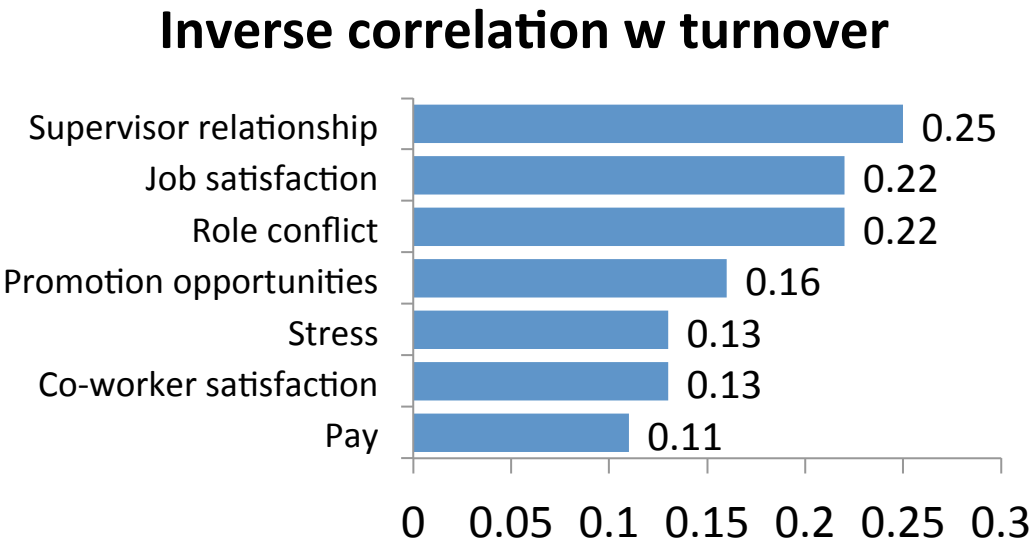
People leave their jobs because there is something else that they would rather be doing

- Attractiveness of outside opportunities
  - Demand for skills
  - Industry / regional growth
- Planned career evolution

Vs.

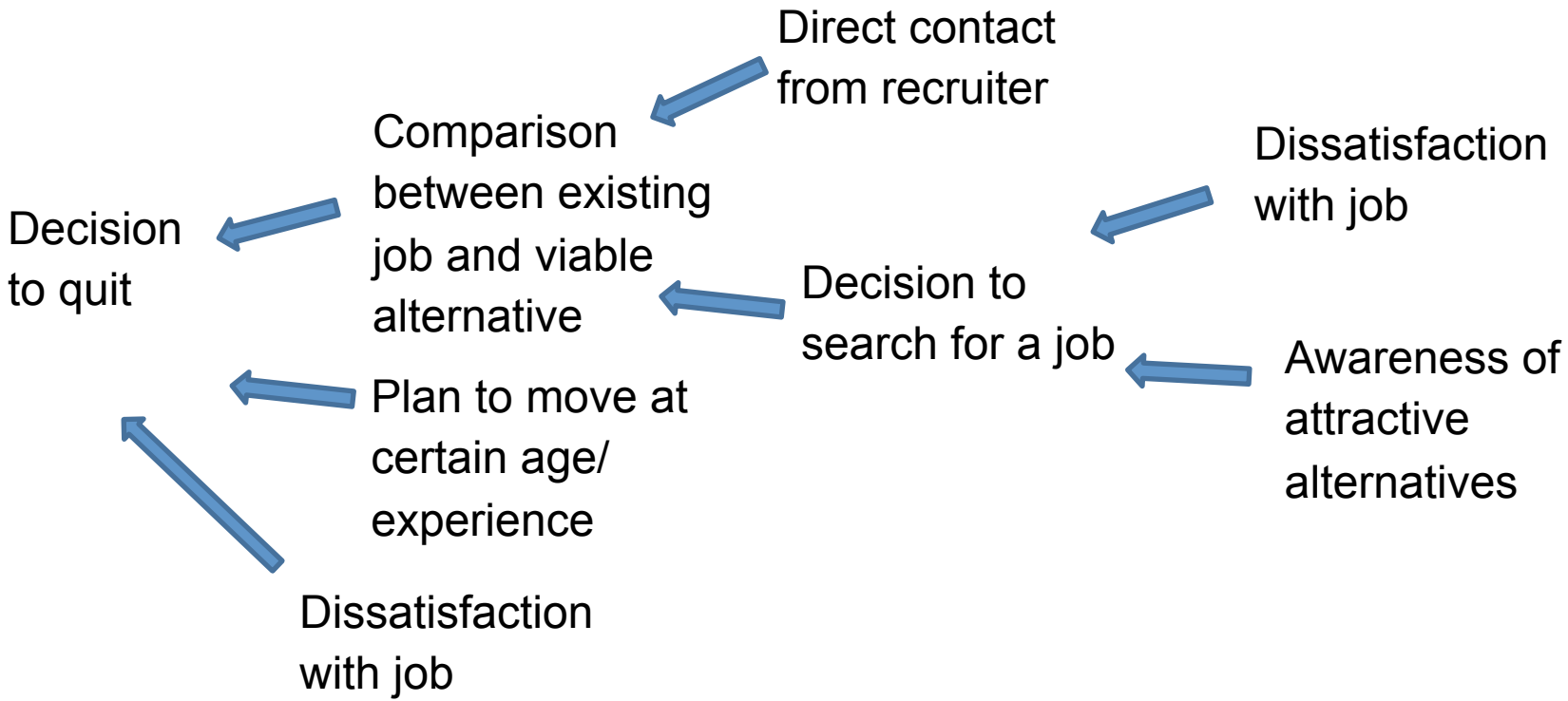
- Satisfaction with current job situation
- Perception of future opportunities/trajectory in organization

Why People Move – Some Basic Predictors



Allen, Bryant and Vardaman 2010

Process Perspectives on Turnover



Adapted from Lee and Mitchell, 1994

Turnover as a Search Process

Assumptions:

1. We will enjoy and be better at jobs that are a better fit with our abilities and preferences
2. We can only assess fit once we are actually in the job
3. If we turn out to be a poor fit, we will quit

Implications:

1. Probability of turnover decreases the longer people have spent in the job
   - Have learned whether it is a good fit or not
2. Rate of turnover falls as workers get older
   - More likely to know what fits and what doesn't

Based on Jovanovic, 1979

Some Common Predictors of Turnover

- Manager
- Pre-hire background
- Type of work / project / function
- Performance evaluations
- Geography
- Social network behavior…

Approaches to Predicting Attrition

Best:
- Use of survival / hazard rate models to test which factors accelerate risk of exit

Good:
- Use multivariate regression to predict who reaches each milestone

Better:
- Comparison of % leaving before specific milestones
  - 3 months
  - 6 months
  - 1 year

Okay:
- Comparisons of % attrition across time and across units
- Test for statistical significance

The Survival Model