Deloitte.

Nudging for Good Behavioral Insights for State Government Agencies

October 17th, 2017

Introductions

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Deloitte Consulting

Behavioral Insights for State Government

Agenda
What is Behavioral Insights?
Behavioral Insights and Public Policy
Behavioral Insights Framework
Analytics + Behavioral Insights
Wrap Up / Questions

What is Behavioral Insights?

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Understand

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Understand → **Design**

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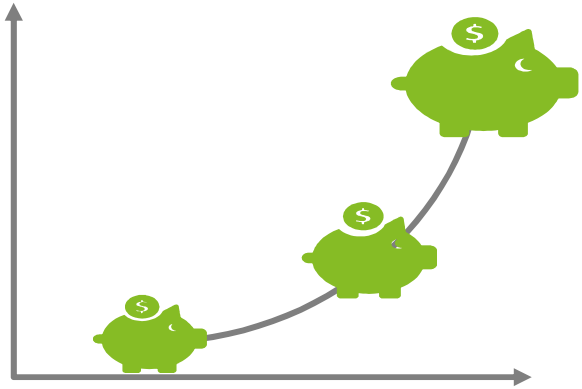
Understand →  **Design** →  **Test**

Behavioral Insights is used to influence behavior

Save More Tomorrow:

Many **401k plans** use an **automatic option** to allow employees to increase their contribution during annual salary increases – **maximizing savings over time**



Understand

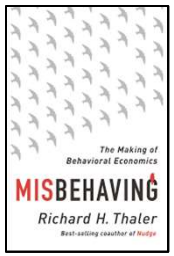
How does this example relate to ***how individuals absorb, process, and react to information?***

Design

How is this an example of ***a practical intervention with human behavior in mind?***

Test

Insight: Humans v. Econs

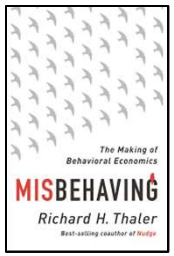


— Richard Thaler

Insight: Humans v. Econs

Econs

Economists assume that the **people** they study, so called **homo economicus**, or what I call Econs, are really smart. They know as much economics as the best economist. They **make perfect forecasts**, have **no self-control problems** and are complete jerks. They'll steal your money if they can and get away with it.



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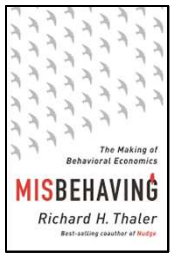

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Humans

Most of the people I meet don't have any of those qualities

They have **trouble balancing their checkbook** without a spreadsheet

They **eat too much and save too little**…

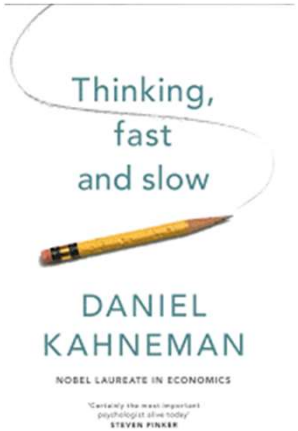
They'll leave a tip at a restaurant even if they don't plan to go back

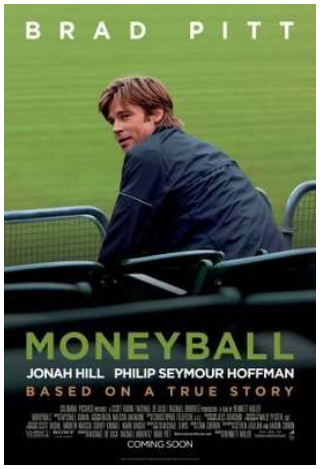
— Richard Thaler

Insight: Humans v. Econs

The three bounds

Bounded rationality: we are terrible natural statisticians. We need help from data science.





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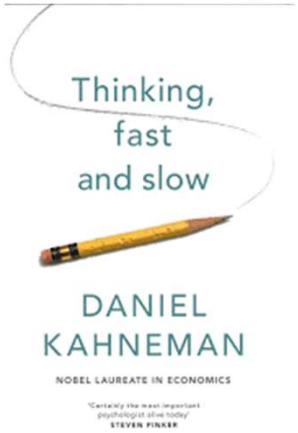

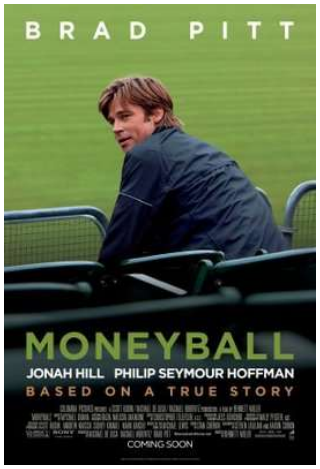

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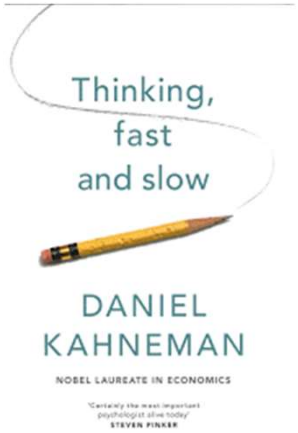
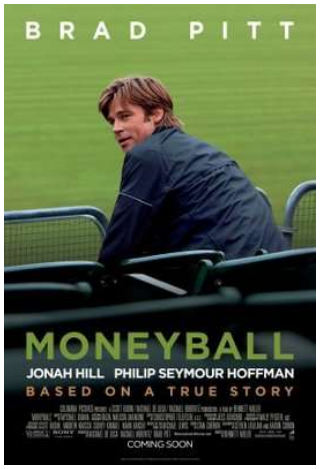
Bounded selfishness: we are driven by fairness, and social norms – not just economic benefits.

The three bounds





Bounded rationality: we are terrible natural statisticians. We need help from data science.

Bounded selfishness: we are driven by fairness, and social norms – not just economic benefits.

Bounded self-control: we make short-term decisions at odds with our long-term goals.

"The mind is a machine made for jumping to conclusions"

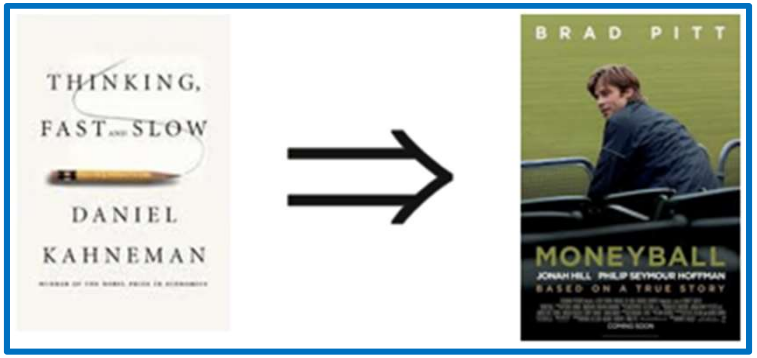
Daniel Kahneman: there are two types of mental operations.

- System 1: automatic, effortless, **associatively** coherent.
- System 2: controlled, effortful, **logically** coherent.

Most of our mental operations are "System 1" in nature.

And "System 1" has a lot of trouble with statistics.

— Daniel Kahneman



There's something about Linda

Think about this person:

Linda is 31 years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.

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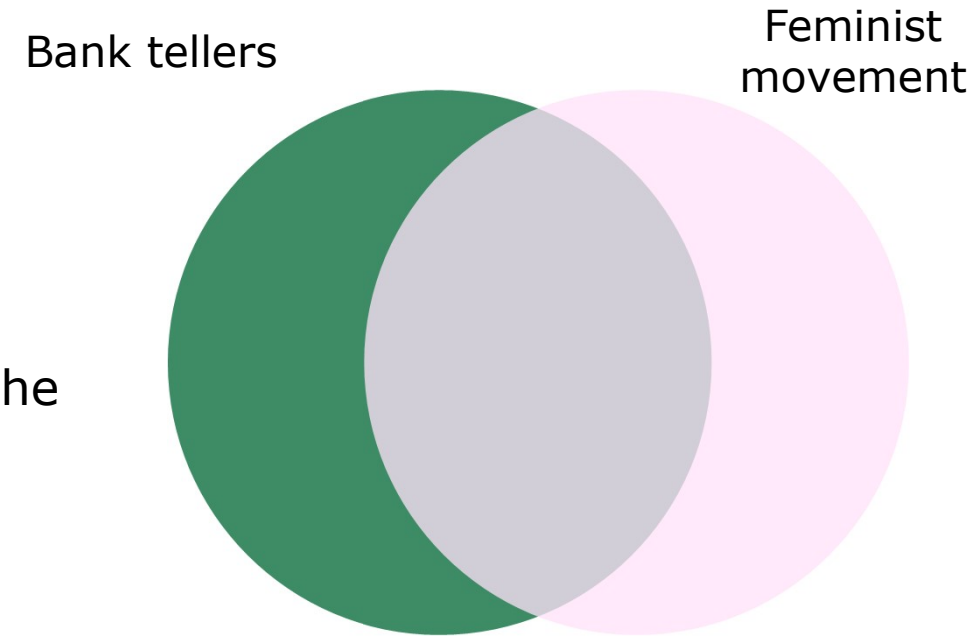

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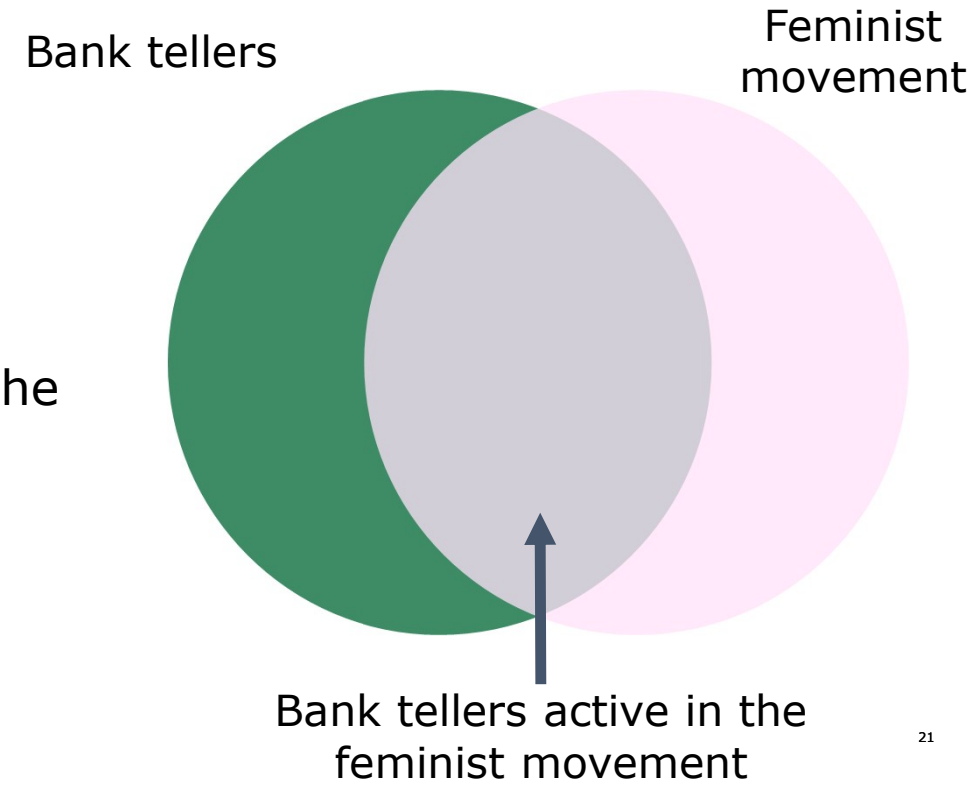


Behavioral Insights and Public Policy

Why is this important today?

Traditional policy levers such as taxation, subsidies and regulations have their limitations


Losing effectiveness


Costly to enforce


Difficult to justify

"Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation… It must identify and use the best, most innovative, and least burdensome tools for achieving regulatory ends."

- Executive Order from President Obama

We can achieve better results at a fraction of the price

Behavioral Insights can enable more efficient achievement of desirable outcomes and behaviors

Tax Repayment

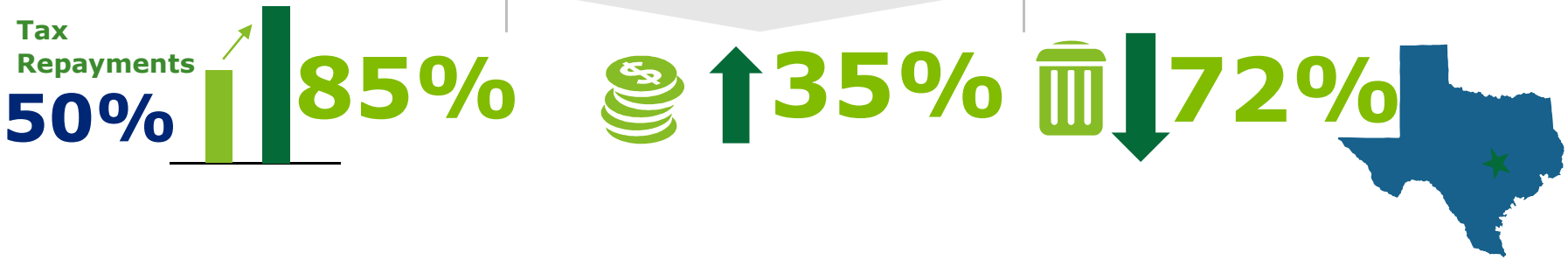
British tax officials increased tax repayment rate from an average of 50 percent to 85 percent by using the power **of social norms** to update tax notices to say "9 out of 10 people in your town pay their taxes on time."[1]

Compliance

New Mexico increased **self reported earnings for unemployment claims** by 35% by using well-timed pop-up messages and behavioral segmentation.[2]

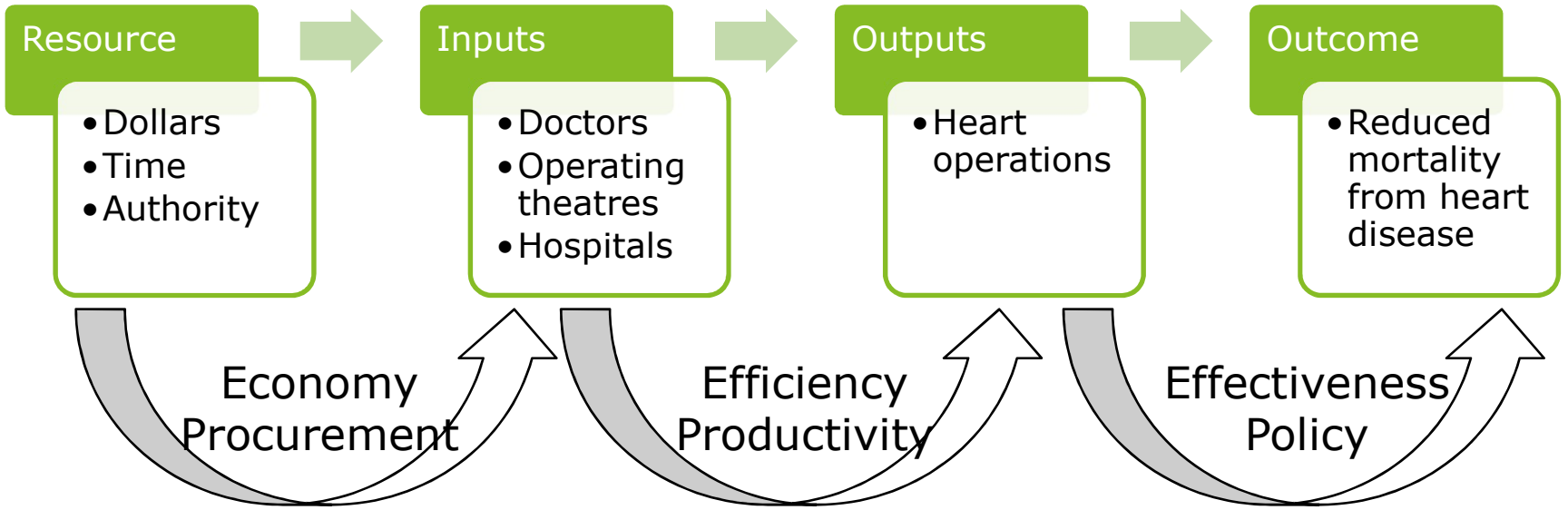
Litter Reduction

The **State of Texas** reduced littering by 29% in one year, and 72% within 10 years with the **"Don't Mess with Texas"** campaign focused on state pride (identity).[3]



Defining the outcome to find out point of entry

Starting with the outcome helps us get identify where innovative approaches, such as the application of behavioural insights can help us move the needle on some of our stickiest public policy challenges



Opportunities

How do we select the appropriate intervention and go about deploying that intervention to solve our problems?

Is the outcome sought driven largely by personal choice that individuals do not consider harmful to others?

Do the choices you wish to influence occur frequently?

Do the choices that drive the outcome occur regularly over a long period of time?

Do you want to influence a large or diverse number of people?

Is the outcome sought in the distant future, but driven by choices that occur now?

Behavioral Insights Framework

Behavioral Insights Framework

Individual Factors

Environmental and Design Factors

Social Factors

Behavioral Insights Principles: Individual Factors

People are faced with more decisions and information than we can consciously process.

Research from the cognitive sciences explains that our brains process information in two ways: 1) using deliberate, logical thought; or 2) in an automatic fashion, without a lot of conscious thought. Most of our behavior is fast and automatic, relying on a myriad of cognitive shortcuts to reserve our deliberate processing for the most salient, non-routine, or novel situations.

Much of our behavior is unconscious and in response to our surroundings.

Because we rely so heavily on our automatic processing system, our actions and decisions are often conditioned by our environment –both our physical surroundings and things like advertising or elements of a task at hand, such as a form we must complete.

Humans are social beings who care what others think and do.

We go to lengths to match our behavior to those around us, and we act in ways to help present a positive self-image, especially when we believe others are watching.

Individual Factor: Fast vs Slow Processing

Refers to the neurological description of the two ways that our brains are thought to process information:

System 1 = Autopilot

- Fast
- Unconscious
- Automatic
- Everyday Decisions
- Error Prone

System 2 = Pilot

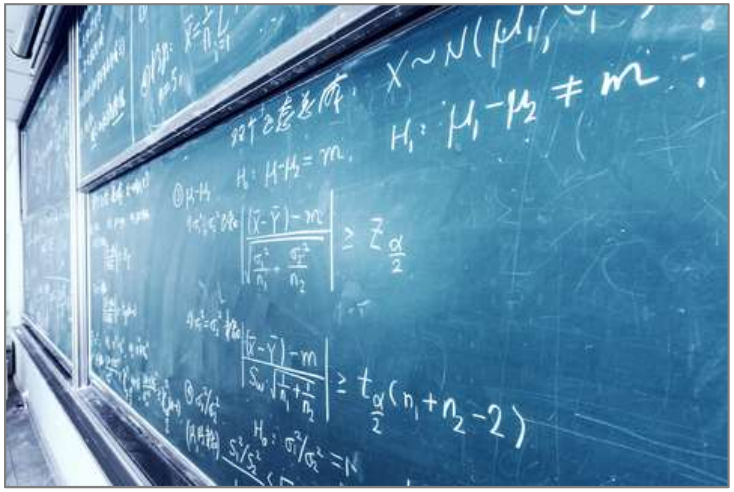
- Slow
- Conscious
- Effortful
- Complex Decisions
- Reliable

System 2 is ***energy intensive and limited in quantity***, so we seek to conserve it once it begins being depleted

Individual Factor: Fast vs Slow Processing

System 2 can be depleted by:

- Emotion regulation
- Making active choices
- Sorting through information
- Switching tasks
- Solving complex problems



Individual Factor: Fast vs Slow Processing

When depleted, we usually switch to autopilot (System 1) processing, which can lead to sub-optimal decision making

=

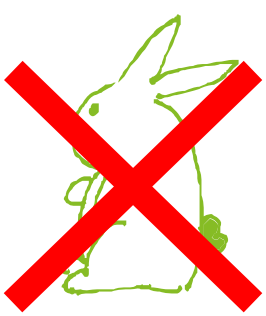
- Impulsive
- Easy
- Emotional
- Habitual
- Stimulus-driven

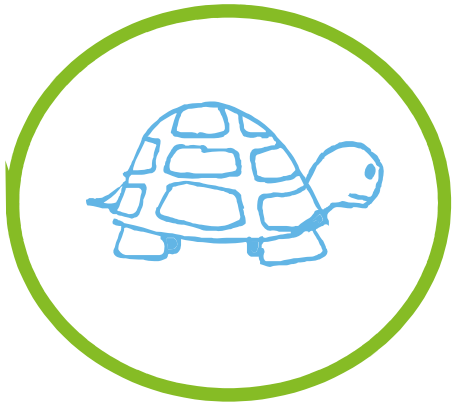
Individual Factor: Fast vs Slow Processing

How can understanding Cognitive Load help?

Prevent people from depleting their cognitive resources

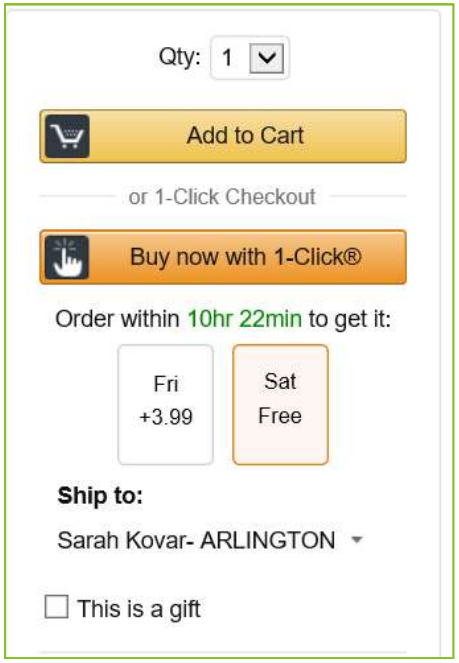
Make sure that people don't use fast processing for tasks that would best be made using slow processing





Cognitive Load: Simplifying Processes

Amazon's 1-Click Ordering



Amazon's 1-click checkout lets you instantly purchase your item and bypass the multi-step process of writing out the shipping address, the credit card information, and desired delivery date. Because you do not have to think about each step, you are more likely to purchase the item.

Behavioral Insights Principles: Environmental Factors

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Environmental Factor: Choice Architecture

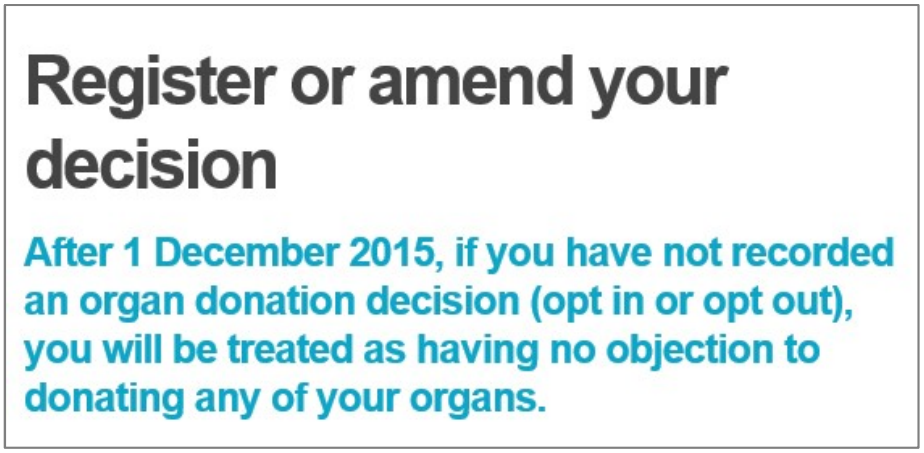
Choice architecture is aimed at minimizing the impact of the most common and predictable biases that lead to sub-optimal results.

Basic tools:

- ☑ **Defaults**
- ☑ **Expecting error**
- ☑ **Understanding mappings**
- ☑ **Feedback**
- ☑ **Structuring complex choices**
- ☑ **Creating incentives**

Choice Architecture Example: Default Options

Opt-Out Organ Donation



Making organ donation the default option has proven to be a significant driver of number of people registered as organ donors. Donation rates typically exceed 90% in opt-out countries and fail to reach even 15% in opt-in countries.

Behavioral Insights Principles: Social Factors

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Social Factor: Social Norms

Social norms are the **values, actions, and expectations of a society or culture** and offer both implicit and explicit guides to behavior.

Norms are often identified as **descriptive norms** (observation of what others do, providing information about what is "normal") and **injunctive norms** (perceived behavior of what most people approve of, providing information on what one "should" do).

Social Norms in Action

Compare a person's behavior to that of their peers

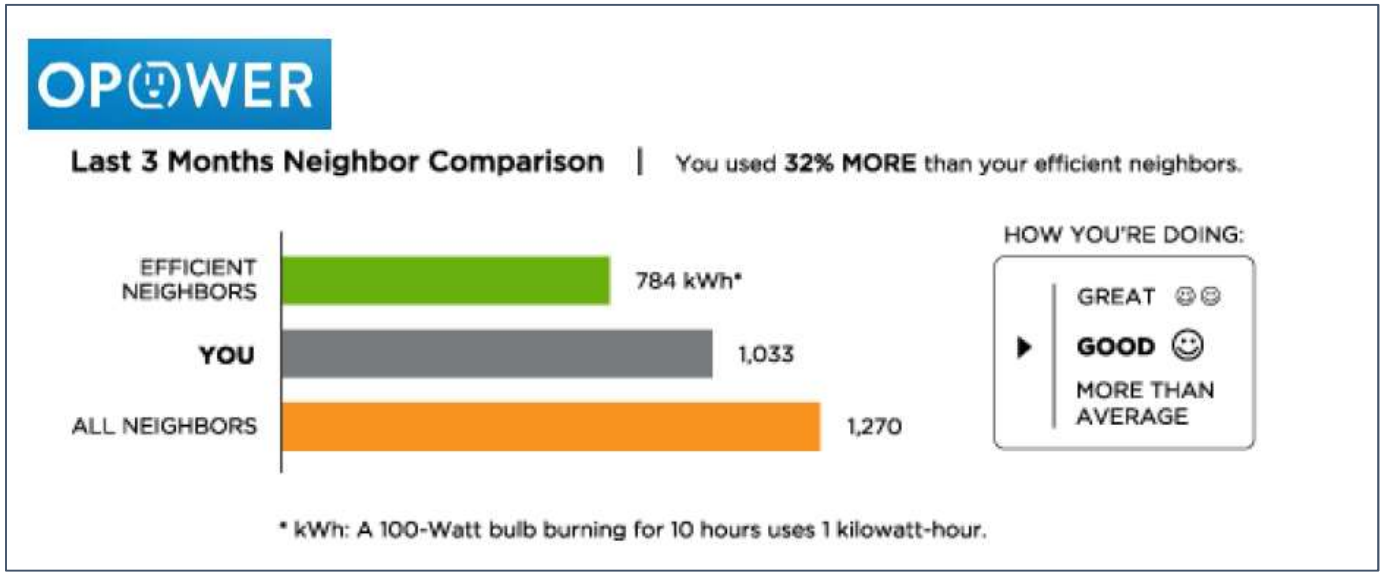
Utility companies compare a household's consumption to that of their more efficient neighbors to reduce water and energy consumption.

State that others either approve or disapprove of a person's behavior

The National Park Service used injunctive norms by showing an image of one person stealing (rather than a group) to decrease theft by 7.92% vs. 1.67%.

All we need is a little encouragement

Case Study: Opower



- Comparing households to their neighbors has increased **energy savings of 2 to 4%, saving millions of kilowatt hours**

Social Norms and Self-Image

- The way people view and define themselves is a powerful driver.
- The attributes (e.g., honest, smart, good) that define our self-image differs greatly from person to person and are influenced by culture.
- Each person's identity has multiple facets (e.g., mother, lawyer, New Yorker)
- Someone may act differently based on which aspect of their identity is most active at the time.

Basketball Player

OR

Business Professional

Understanding the choices we have – and their consequences

Case Study: UK Department of Transportation

- Drivers weren't convinced that **40mph was more dangerous than 30mph**
- Difference between **80%** chance of **death** versus **80%** chance of **survival**
- Advertisement **reduced child deaths** and serious injuries **by 59%**

Resource: IRS Behavioral Insights Toolkit

IRS has published a toolkit on the web for practitioners applying behavioral insights

Available at: https://www.irs.gov/pub/irs-utl/17rpirsbehavioralinsights.pdf

Analytics + Behavioral Insights

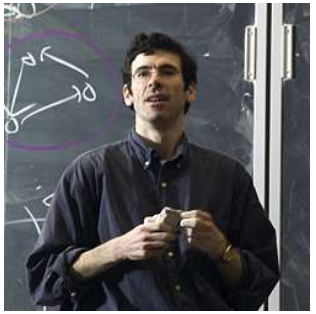
Two forces reshaping the world

Data

"The term itself is vague, but it is getting at something that is real…

Big Data is a tagline for a process that has the potential to transform everything."

— Jon Kleinberg, Cornell University



Digital Technology

"Digital is the technological enabler of this century … The lifeblood of organizations that have embraced it, and a death sentence for those that haven't."

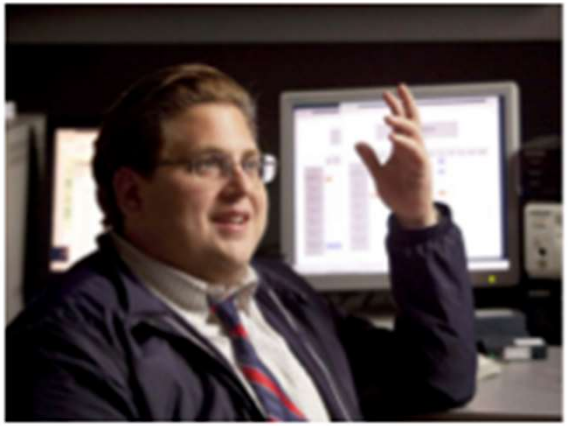
— Mike Bracken, Founder - UK Govt Digital Service

The emergence of data science

Data Scientist:
The Sexiest Job of the 21st Century

Meet the people who can coax treasure out of messy, unstructured data.
by Thomas H. Davenport and D.J. Patil

When Jonathan Goldman arrived for work in June 2006 at LinkedIn, the business networking site, the place still felt like a start-up. The company had just under 8 million accounts, and the number was growing quickly as existing members invited their friends and colleagues to join. But users weren't seeking out connections with the people who were already on the site at the rate executives had expected. Something was apparently missing in the social experience. As one LinkedIn manager put it, "It was like arriving at a conference reception and realizing you don't know anyone. So you just stand in the corner sipping your drink—and you probably leave early."



Data science is entering public policy

Machine learning

Of prediction and policy

Governments have much to gain from applying algorithms to public policy, but controversies loom

Aug 20th 2016 | From the print edition

Timekeeper

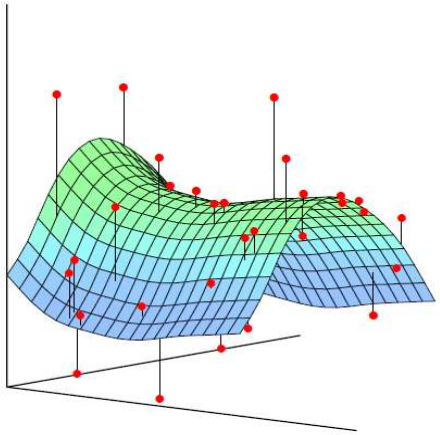
FOR frazzled teachers struggling to decide what to watch on an evening off, help is at hand. An online streaming service's software predicts what they might enjoy, based on the past choices of similar people. When those same teachers try to work out which children are most at risk of dropping out of school, they get no such aid. But, as Sendhil Mullainathan of Harvard University notes, these types of problem are alike. They require predictions based, implicitly or explicitly, on lots of data. Many areas of policy, he suggests, could do with a dose of machine learning.

The Economist, August 20th 2016

Predictive models can be used to:

- Hire more effectively and reduce bias in hiring (Moneyball)
- Underwrite, price insurance risks
- Predict claim durations for injured workers
- Predict recidivism
- Identify episodes of waste, fraud, abuse
- Identify unsafe workplaces
- Identify physicians at highest risk of being sued for malpractice
- Identify police officers at risk of using excessive force
- Identify divorced parents most likely to lapse on child support payments
- Predict healthcare utilization
- Predict lifestyle disease states (diabetes, obesity, hypertension)
- Predict success at university
- Identify kids at risk of dropping out of school
- …

But there is a challenge…



Prediction

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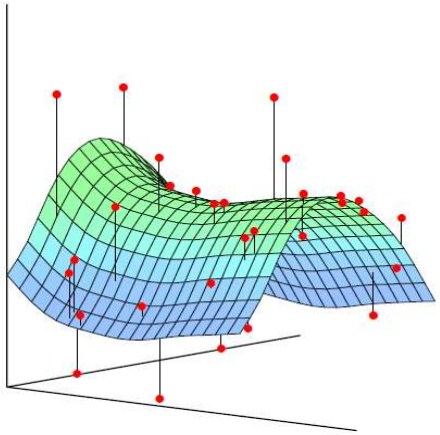


Prediction **Action?**

The City of New York does data science

Big Data in the Big Apple

How New York's first "director of analytics" revolutionized the city's building inspections.

407

By Viktor Schönberger and Kenneth Cukier

A new way to figure out which old buildings are most at risk

Push the worst, nudge the rest

Data science

The city of New York built predictive models to deploy building inspectors to the highest-risk buildings.

Behavioral science

Behavioral nudge tactics could be employed to ameliorate lesser risks that don't merit immediate physical inspections.

… similarly with health / safety inspections, tax / premium audits …

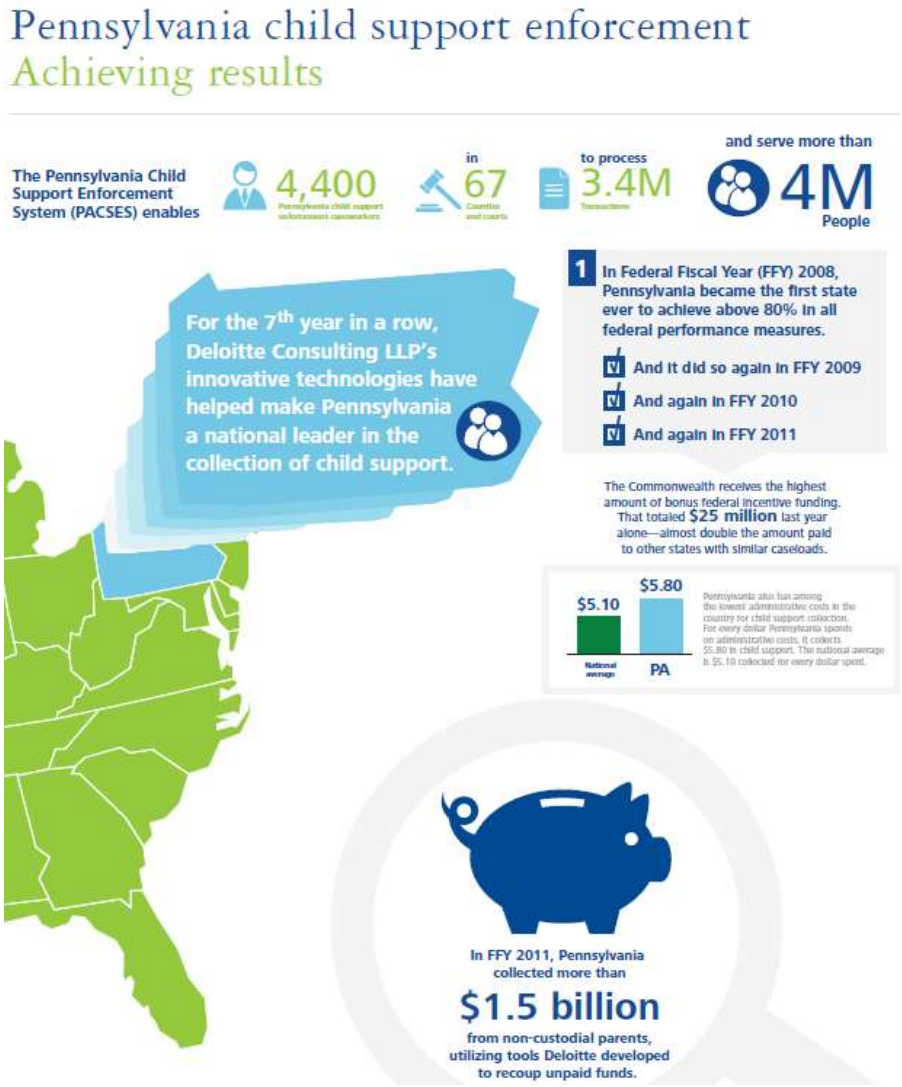
Supporting child support

Data science

Models can identify non-custodial parents most likely to fall behind on child support payments.

Behavioral science

Nudge tactics like reminders, pre-commitment, social proof, "mental accounting", …



Case study: Nudging New Mexico

Issue: Overpayments in unemployment insurance

Nearly

1 dollar out of 8

distributed by

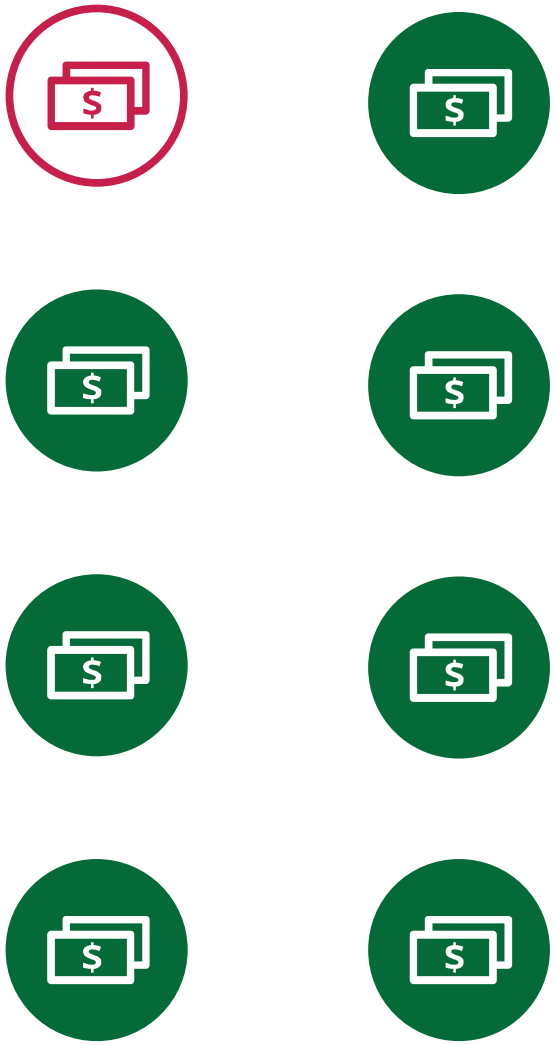
states in the U.S.

went to someone

who was ineligible

for unemployment

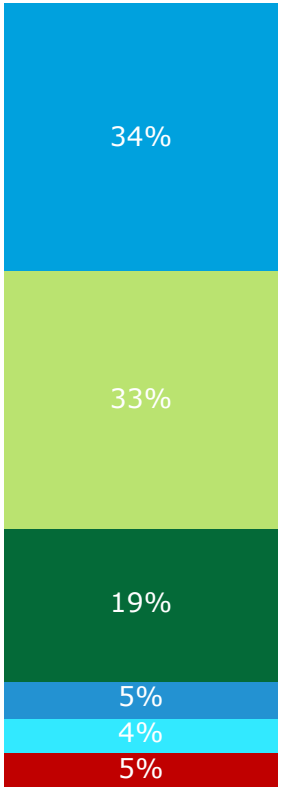
benefits



Issue: Overpayments in unemployment insurance

The State of New Mexico asked Deloitte Analytics to identify improper unemployment insurance (UI) cases, which cost the state millions of dollars.

Cause of overpayment



Work Search: claimant not performing required search for work

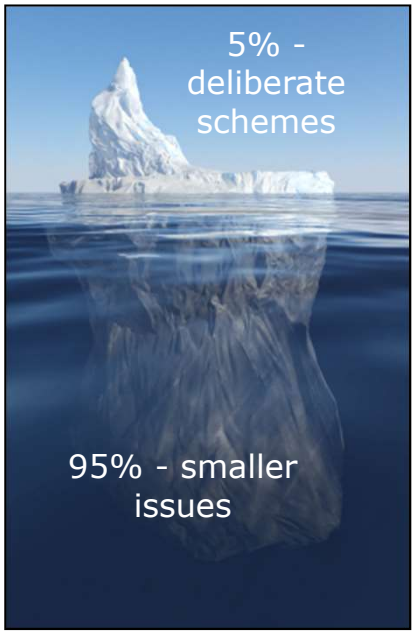
Benefit Year Earnings: claimant doesn't properly report earned income while on benefits

Separation: claimant was not eligible due to reason for separation (e.g., terminated for cause)

Able & Available

Base Period Wages

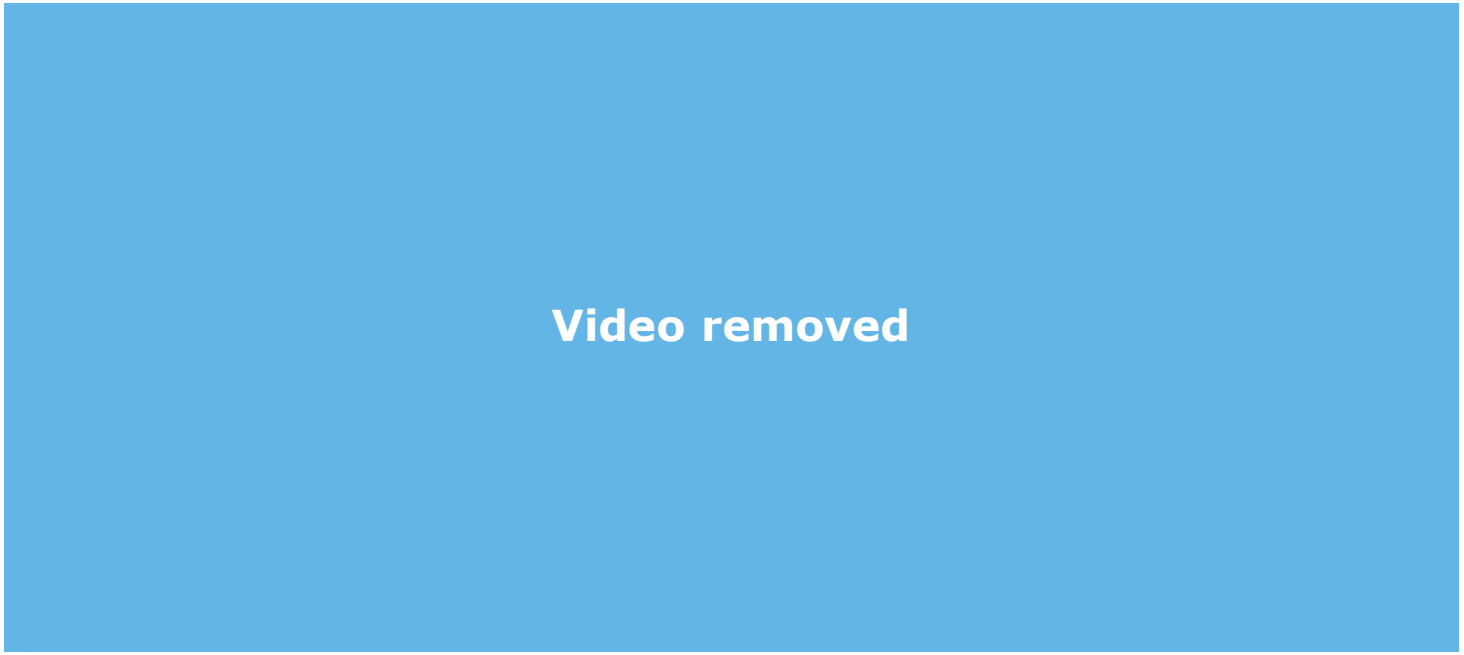
Other (including identity theft)



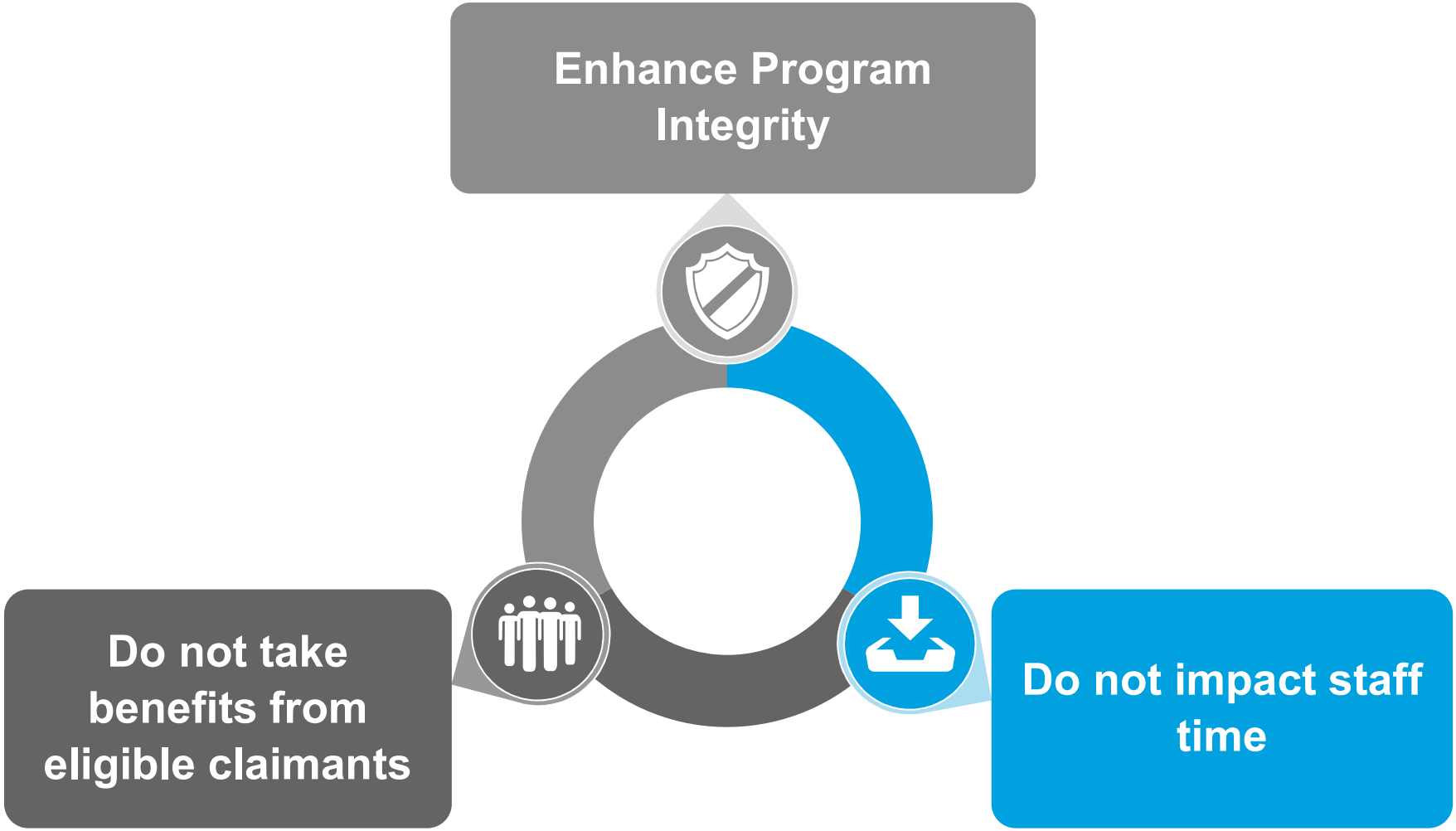
Source: USDOL http://www.dol.gov/dol/maps/map-ipia.htm

Behavioral Insights applied

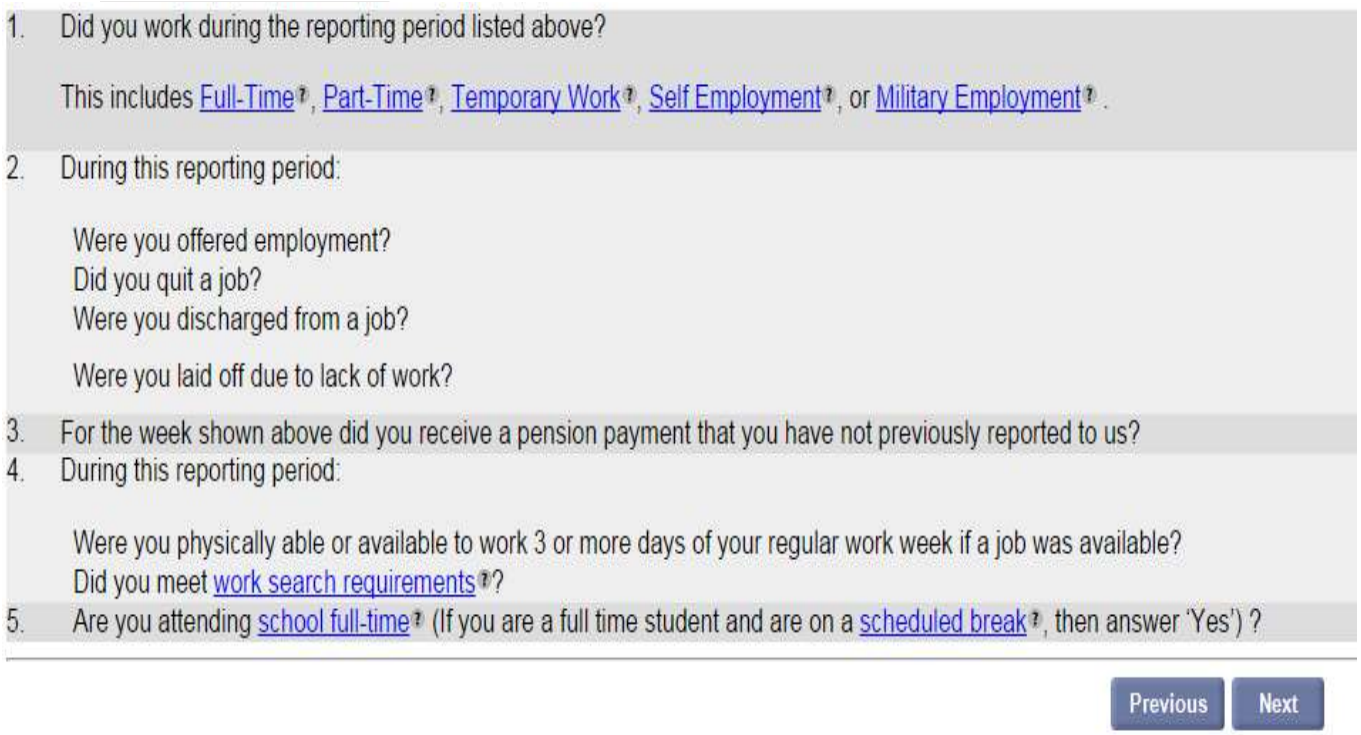
Behavioral Insights applied



New Mexico's Improper Payment Prevention Initiative (IPPI)



The nudge: delivering a personalized message in real-time



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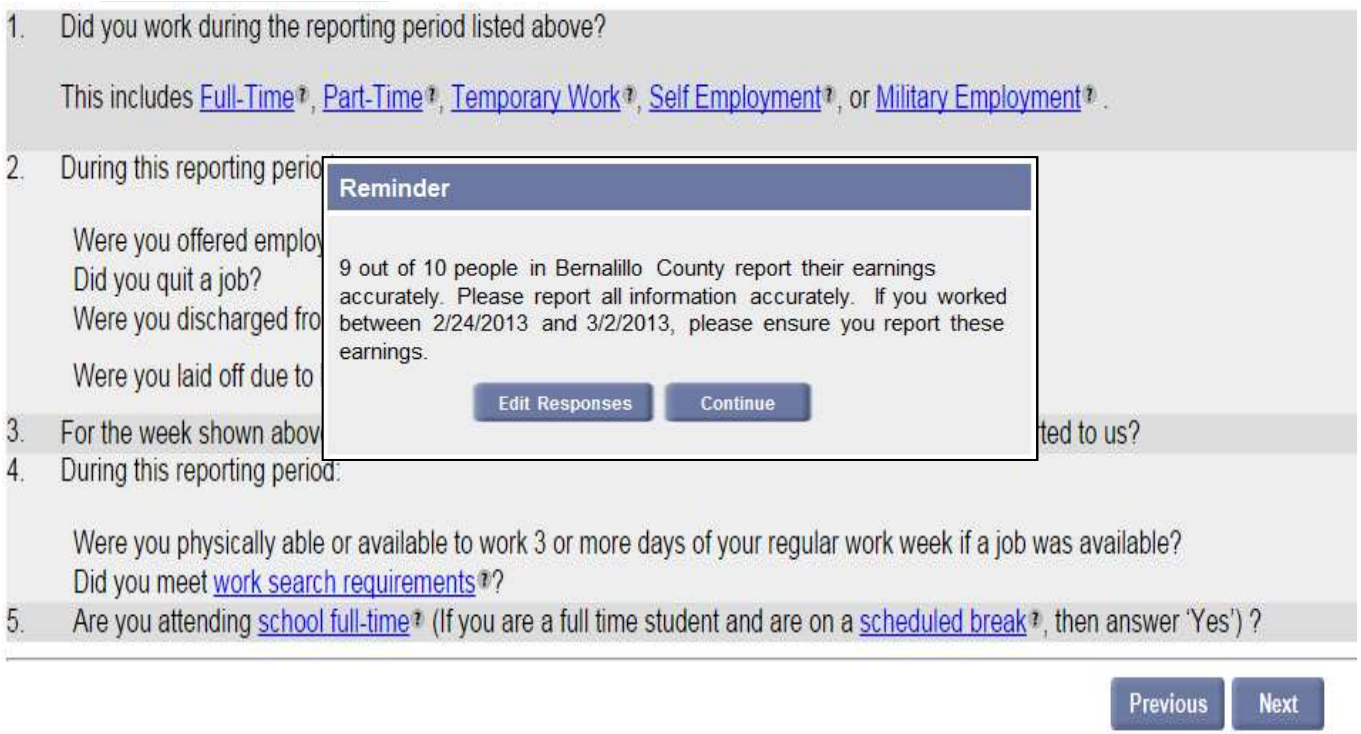
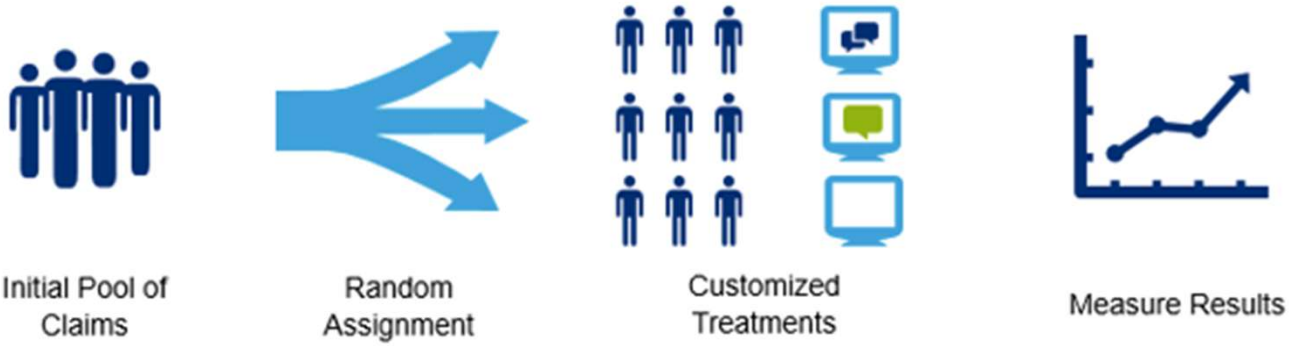
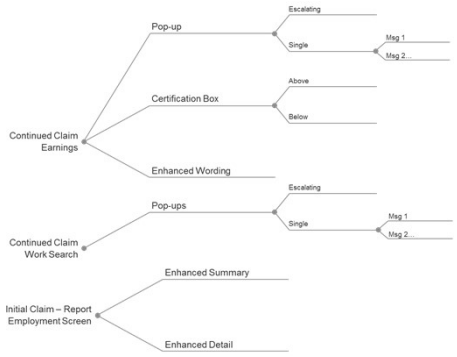


Test and Learn

Treatments are assigned randomly to similar claimants, enabling rapid assessment of results by comparing differences post treatment.





- **Customized**: multiple "arms" in the experiment.
- **Flexible**: can adjust for continual improvement.
- **Real-time**: results evident after only a few days.

Impact on the bottom line

	Before	After
	April 2014 - March 2015	April 2015 - March 2016
Benefits Paid	$180,127,051	$182,926,549
Overpayments*	$18,610,576	$9,559,473
Underpayments	$580,754	$728,536
Overpayment Rate	10.3%	5.2%
Recoveries	$9,154,513	$7,028,069
Recovery Rate	49%	74%
Net Overpayments*	$9,456,063	$2,531,404
Net Overpayment Rate	5.2%	1.4%
Fraud Rate	4.20%	2.12%

* - Excluding work search issues

Source:
http://www.dol.gov/dol/maps/xls/2015-12-MonthData.xls
https://www.dol.gov/sites/default/files/2016-TwelveMonthsEndingMarch31.xlsx

Impact on the bottom line

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Fewer overpayments

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More recoveries

* - Excluding work search issues

Source:
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Fraud Rate	4.20%	2.12%

Net overpayments down 75%

* - Excluding work search issues

Source:
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https://www.dol.gov/sites/default/files/2016-TwelveMonthsEndingMarch31.xlsx

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Fraud down 50%

Questions?

Further reading: Behavioral Insights on Deloitte University Press

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