Behavioral Insights Toolkit

IRS

Purpose of this Toolkit

This Behavioral Insights Toolkit was created as a practical resource for use by IRS employees and researchers seeking to incorporate Behavioral Insights into their work. This Toolkit describes the field of Behavioral Insights, its potential benefits, and how Behavioral Insights can be practically applied to serve taxpayers and help the IRS achieve its mission. It highlights examples of opportunity areas where Behavioral Insights has been applied both internally at the IRS and across the globe.

Acknowledgments

This Toolkit was sponsored by the Research Directors Coordinating Council (RDCC) and developed in close collaboration with Deloitte and ASR Analytics. We would like to acknowledge the following contributors:

IRS

RDCC Behavioral Insights Team, particularly the contributions of David Cico, John Guyton, Eric LoPresti, Alicia Miller, and Brenda Schafer

Deloitte.

Sarah Godby, Michael Greene, James Guszcza, Sarah Kovar, Greg Lidrbauch, Shrupti Shah, Steve Watkins, and Jacqueline Winters

ASR ANALYTICS

Pearl Chan and Michael Stavrianos

Table of Contents

What is Behavioral Insights?

Recent research in behavioral sciences has brought ***an exciting shift in our understanding of human behavior***, especially about what motivates people and how they make decisions. Behavioral Insights leverages work from the fields of psychology, neuroscience, and behavioral economics in considering what influences how people think and behave.

By blending insights from seemingly disparate fields, Behavioral Insights has created a new perspective – evolving from the traditional "rational actor" model that portrays decision-making from simply a cost-benefit perspective. Instead, Behavioral Insights understands that while some decisions are made rationally, people sometimes make decisions that are not in their best interests, due to factors such as expediency, peer pressure, marketing, and the power of habit, to name only a few. ***Behavioral Insights is the study of why we act as we do***.

Behavioral Insights considers these factors and the impact they have on important life decisions – such as saving for retirement – and aims to better understand behavior for the purpose of humanizing public policies, improving government interaction, and achieving positive outcomes.

Federal agencies are using Behavioral Insights to aid in streamlining access to programs, improving presentation of information, and structuring choices carefully. Like tax agencies in many countries, Behavioral Insights can be used at the IRS to help drive compliance, positively impact taxpayer engagement, and reduce taxpayer burden.

Behavioral Insights

Behavioral Insights (BI) uses principles from the behavioral sciences such as psychology, neuroscience, and behavioral economics to understand how ***individuals absorb, process, and react to information*** *and applies this to* ***design practical policies and interventions*** *with human behavior in mind.*

Foundational Principles of Behavioral Insights

At the foundation of a Behavioral Insights perspective are several key principles:

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.

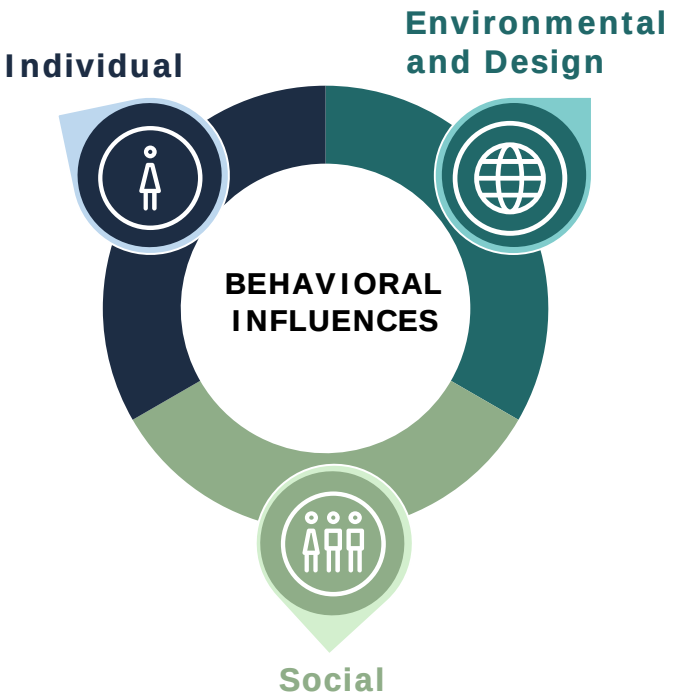
Practical Tools of Behavioral Insights

Considered together, these Behavioral Insights offer the perspective that much decision-making is influenced by a combination of individual, environmental, and social factors. The perspective offered by Behavioral Insights isn't merely explanatory, but offers practical tools that can be applied to help influence behaviors by allowing us to work with, rather than against, human nature. For example:

Individual Factors: Understanding that people are faced with more information than they can process underscores the importance of simplifying complex tasks, processes, and policies. (see Cognitive Load)

Environmental and Design Factors: Drawing on the fact that much of behavior is shaped by our surroundings, prompts and cues can be built into websites and forms to guide behavior so that the desired choice is the easy choice. (see Simplification)

Social Factors: Recognizing the importance we place on our connection to others, we can motivate people to behave better by comparing their behavior to the behavior of others. (see Social Norms)



These practical tools can be applied in several ways:

- **Application:** Viewing current challenges and issues through a behavioral lens to identify the key factors at play and intervene on them
- **Research**: Conducting new research to contribute to the body of knowledge about "what works"

How to Use This Guide

This document serves as a guide for integrating behavioral approaches into tax administration – a toolkit with options and resources to use in testing and implementing Behavioral Insights approaches relevant to tax administration. It is not a comprehensive review of behavioral science but aims to point readers to relevant Behavioral Insights materials, principles, and methods.

To begin, we present a **framework for understanding behavior** that catalogues Behavioral Insights factors and concepts that are most relevant for tax administration. This section also offers examples of how Behavioral Insights is being used in practice and provides guidance applying Behavioral Insights principles. Finally, we provide an overview of the **Behavioral Insights project research process** and discuss **research methods** that may be used in different stages of Behavioral Insights projects, including the role of **data analytics**.

Toolkit Navigation

Icons and text can be used for easy navigation of the document

Table of Contents *(bottom left)*

Forward / Backward *(bottom right)*

Hyperlinked Words / Phrases *(throughout)* Social Concepts; Data Analytics

Further Readings *(bottom right)*

Frameworks *(top right)*

Behavioral Insights in Tax Administration

Many of the processes and customer interactions associated with tax administration can benefit from the application of Behavioral Insights. The following table offers a quick reference guide to ways in which Behavioral Insights can contribute to six key operational areas.

IRS

Quick Reference to Behavioral Insights in Tax Administration

The following table offers a quick reference to some possible applications of Behavioral Insights to the IRS.

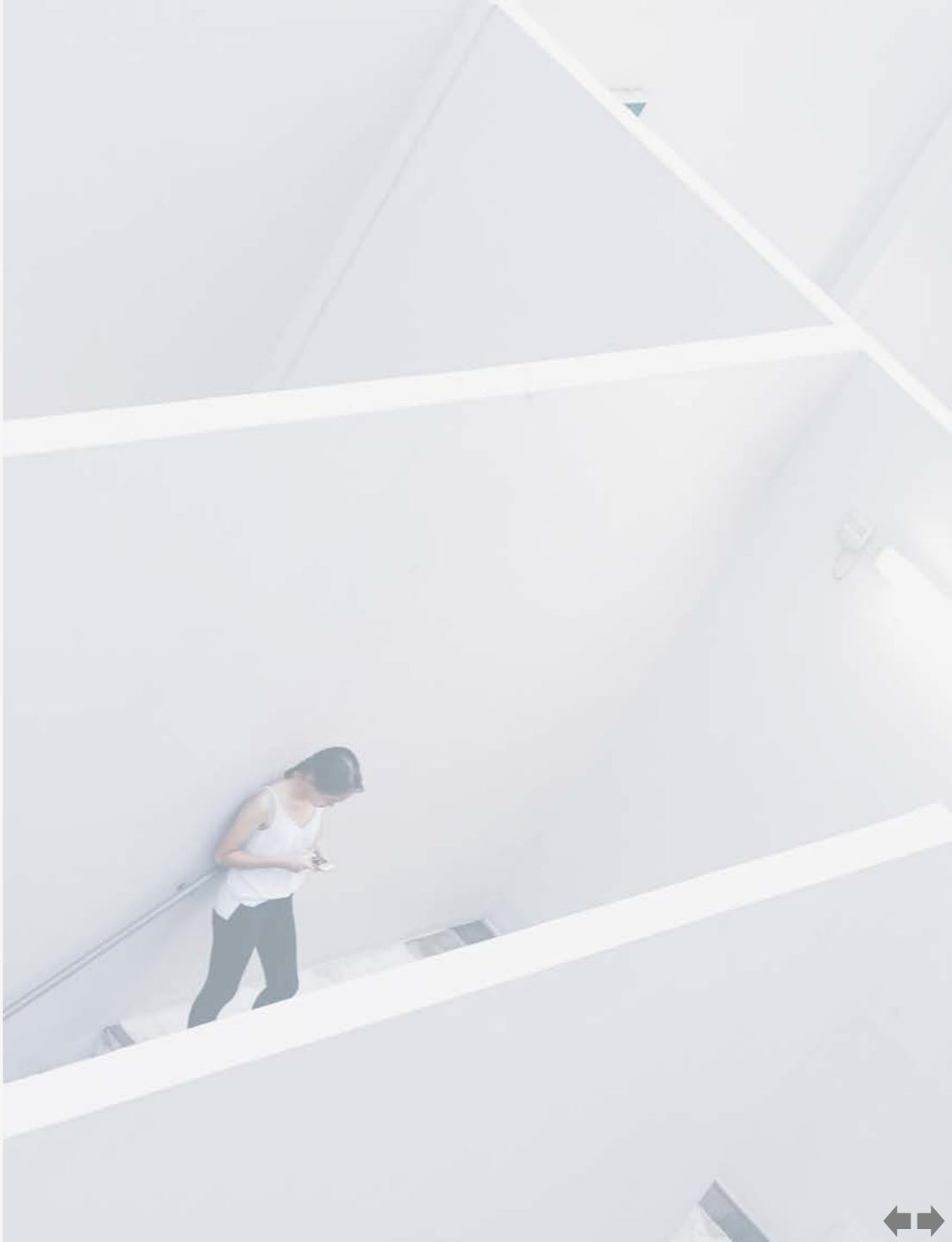
IRS Operational Areas	How Behavioral Insights Can Contribute	Potential Factors
Services  *Allowing us to see where we need to build our capabilities to support arising needs, and where there are gaps we need to fill*	Data analytics tools such as segmentation and usage tracking can identify problem areas across the tax administration process, and BI nudges can be used to improve service delivery and increase efficiency.	▪ Timing ▪ Feedback and Reminders ▪ Cognitive Load
Outreach and Preemptive Communication  *Effectively anticipating needs and providing the appropriate preemptive communication*	BI suggests that the time and way in which communications are delivered can have a significant impact on response.	▪ Messenger Effect ▪ Timing ▪ Framing/ Priming ▪ Self-image
Voluntary Compliance and Self-Correction  *How to promote and assure voluntary compliance and self-correction of errors*	BI points to the importance of feedback and reminders during decision-making to help encourage honest reporting. Simplifying forms and processes and appeals to social norms can also help to keep taxpayers honest.	▪ Feedback and Reminders ▪ Simplification ▪ Social Norms
Math Errors, Soft Notices, and AUR  *Demonstrating where systemic error detection methods can provide effective enforcement methods*	Cognitive load may set in when preparing lengthy tax returns, resulting in declining accuracy. Identifying points at which errors tend to happen enables feedback and reminders to be inserted.	▪ Cognitive Load ▪ Feedback and Reminders ▪ Salience
Examinations and Penalties  *Demonstrating how to use Behavioral Insights to increase examination and penalty effectiveness*	Appeals to image, identity, and social norms encourage socially responsible actions. Strategically implementing rewards and penalties can increase the deterrent effect of existing penalties and uncover new treatment options.	▪ Social Norms ▪ Rewards and Penalties ▪ Timing ▪ Salience
Collection and Dispute Resolution  *Demonstrating how Behavioral Insights can improve the effectiveness of Collection and dispute resolution processes*	A sense of reciprocity can be tapped by appealing to a sense of fairness and can also be complemented with social norms and intention and commitment to emphasize responsibilities for payment.	▪ Intention and Commitment ▪ Reciprocity ▪ Social Norms

Behavioral Insights Framework

Behavior Insights considers three factors that influence behavior:

- Individual factors
- Environmental/design factors
- Social factors

Within each factor are its most relevant concepts related to tax behavior – either an underlying concept to understand behavior (e.g., cognitive load) or a tool that can be used to encourage behavior (e.g., framing). This document is organized by these groups, with one section for each of these three factors and one slide for each concept, describing how and when it can be used.



Behavioral Insights Framework

Click on any of the factors or concepts to jump to its related slide.

Individual Factors
Human decision-making is based on both deliberate and automatic modes of information processing. These processes can be harnessed to make compliance easier.

Environmental and Design Factors
Because most information processing is automatic, our behavior is largely shaped by contextual factors and cues in the environment.

Individual Concepts:
- Cognitive Load
- Self-image
- Fast vs. Slow Processing
- Heuristics and Biases
- Intention and Commitment
- Rewards and Penalties
- Time Distortion

Environmental and Design Concepts:
- Choice Architecture
- Feedback and Reminders
- Framing and Priming
- Salience
- Simplification
- Timing

Social Factors
How people act and think often depends on the actions of those around them. Most people make efforts to conform to social norms and expectations.

Social Concepts:
- Messenger Effects
- Reciprocity
- Social Norms

Organizational Factors
Behavior within organizations is complex, involving individual, environmental, and social factors as well as factors unique to entities (e.g. culture, governance). For a consideration of Behavioral Insights at the organization level, please see the Behavioral Insights and Organizations section.

Behavioral Insights Framework: Individual

Human decision-making is based on both deliberate and automatic modes of information processing. These processes can be harnessed to make compliance easier.

Individual Factors
Human decision-making is based on both deliberate and automatic modes of information processing. These processes can be harnessed to make compliance easier.

Environmental and Design Factors
Because most information processing is automatic, our behavior is largely shaped by contextual factors and cues in the environment.

Individual Concepts:
- Cognitive Load
- Self-image
- Fast vs. Slow Processing
- Heuristics and Biases
- Intention and Commitment
- Rewards and Penalties
- Time Distortion

Environmental and Design Concepts:
- Choice Architecture
- Feedback and Reminders
- Framing and Priming
- Salience
- Simplification
- Timing

Social Factors
How people act and think often depends on the actions of those around them. Most people make efforts to conform to social norms and expectations.

Social Concepts:
- Messenger Effects
- Reciprocity
- Social Norms

Organizational Factors
Behavior within organizations is complex, involving individual, environmental, and social factors as well as factors unique to institutions (e.g. culture, governance). For a consideration of Behavioral Insights at the organization level, please see the Behavioral Insights and Organizations section.

Cognitive Load

People's mental resources can become drained by challenges, tedious tasks, and stress, leading to sub-optimal decision-making

Having too many choices or decisions can lead to **choice overload** or **decision fatigue**. In these overwhelming situations, people tend to make impulsive decisions, often by **satisficing** (a combination of sufficing and satisfying). This "short cut" approach to decision-making leads to decisions perceived as "good enough" rather than truly optimal decisions.

How to Use

***Simplify* messages and processes to reduce cognitive requirements**

This prevents people from having to work too hard to determine their action steps and may keep them from the poorer decisions that result from cognitive load.

Provide "do it for me" support when lack of confidence makes control a burden rather than a benefit

Letters with personalized cost information to Medicare Part D consumers made decision-making easier and lowered the costs needed to make comparisons, saving an average of $100 per year per recipient.

Take steps to avoid decision fatigue when important decisions are being made

A study of judges in Israel found that the likelihood of a favorable ruling is highest at the beginning of the day or after a snack break when judges are refreshed. Also, forms may be redesigned to avoid too many decisions in succession.

Addressing cognitive load is important when…

- ***Users are asked to complete complex tasks.*** Decision-making and self-regulation resources can be depleted by the end of a long process, so people with more on their plates may be more likely to misreport or make poor choices toward the end of long days, forms, or processes.
- ***Users must repeatedly make similar evaluations.*** When people have to make routine decisions consistently, they often fall prey to decision fatigue and fail to adequately grapple with important topics before coming to a conclusion. In these circumstances, actions should be taken to keep users refreshed and thinking critically.

Make sure that…

- ***While messages should be simplified, more detailed information is available for those who want it.*** Some people, such as "power users," will want more detail than others. It is important to be able to direct individuals to more detailed information if they desire, as oversimplification can be viewed as manipulative.

Tax Applications and Impacts

- Increase accuracy of filing
- Increase notice responsiveness
- Increase timely payments

Self-image

Our desire to maintain a positive self-image can influence many of our actions

The way people view themselves is a powerful driver of behavior. We want to think of ourselves positively and often make decisions to remain consistent with our self-image. The attributes (e.g., honest, smart, good) that define our self-image differs greatly from person to person, and we may act differently based on which aspect of our identity (e.g., wife, mother, lawyer) is most active at the time.

How to Use

Associate behavior with a positive aspect of a social identity

To reduce littering on highways in Texas, the Texas DOT created a public service campaign focused on state pride rather than admonishment. The campaign's slogan, "Don't Mess with Texas" became a rallying cry for the demographic that was most prone to littering (young men) and reduced litter on Texas highways by 29% during its first year and 72% within ten years.

Include language or offers that make people feel special or valued

A text message intervention to individuals who hadn't enrolled in a program by the City of New Orleans announced that recipients had been selected for a free appointment. Recipients were more than twice as likely to respond to this message than to other appeals – likely because the free appointment seemed like a unique opportunity just for them.

Appeals to self-image work well when…

- ***Behavior can be directly connected to a strong sense of self or core beliefs.*** A successful appeal to a person's self-image evokes the response, "That makes sense for someone like me…"
- ***Action can be framed in terms of fairness.*** People typically want to act in a way that is seen as fair. Messages that encourage people to do their part appeal to the desire to act fairly within their larger group.

Make sure that…

- ***Identification with a particular population is strong and the identity/group has a strong set of values.*** Identity is powerful when a person strongly associates with a particular group, especially a group with clear values.
- ***The appeal is consistent with how people see themselves.*** In terms of both ethics and practice, messaging might not work if the person does not see him/herself in the image or identity being used. People can relate strongly with a particular identity, making it risky if interventions appear to favor one group over another.
- ***Messages appeal to positive aspects of an image or identity.*** At the same time, interventions should avoid highlighting those that may evoke negative stereotypes.

Tax Applications and Impacts

- Appeal to norms during filing
- Reduce abusive behavior
- Increase quarterly payments

Fast vs. Slow Processing

We save our limited mental resources for non-routine tasks

People process information using **two different neurological** systems – **System 1,** which is "**fast**," meaning that it happens automatically without a lot of conscious thought (such as bending down to tie your shoe as soon as you see it is untied) and **System 2,** which is reflective and "**slow**," a result of deliberation and logical thought. Much of our behavior is fast and automatic, a reaction to stimuli in our environments; slow processing is reserved for non-routine or novel situations. *See also* Cognitive Load *and* Heuristics and Biases.

How to Use

Design contextual cues to make the better choice automatic

We react automatically to our environments, which can be designed to discourage or encourage behavior. For example, making higher-fat items in a salad bar harder to reach has been shown to reduce consumption of fatty foods.

Use novelty and salience to trigger slow processing

Slow processing of System 2 is activated by events that do not fit the model for System 1 but require focus. In an experiment, most people did not see a man in a gorilla suit running across a basketball court if they had been instructed to closely watch the ball.

Separate difficult reading tasks and mathematical calculations from instructions and "asks"

People tend to switch to System 1 processing when complex tasks cause high cognitive load.

Considering fast vs. slow processing works well when…

- ***Trying to plan for a task that requires more reflective thought.*** Because most behavior is automatic, special attention must be given to encourage people to use reflective processing.
- ***Allowing for more logical responses to prevail over emotional reactions.*** Some jurisdictions build in "cooling off" periods to allow consumers to reconsider purchasing decisions made in emotional "fast" states using more deliberative processes.

Be careful when…

- ***Tasks require a great deal of reflective processing.*** Reflective mental processes can be worn down by challenges, tedious tasks, and stress (called ego depletion), leading to poor decision-making. For example, tasks at the end of a long tax form may suffer because cognitive resources have been depleted.

Tax Applications and Impacts

- Aid income source calculation
- Reduce mathematical errors
- Design of paper and online forms

Heuristics and Biases

We often take mental shortcuts in complex situations

We are faced with an **overwhelming number of decisions** on a daily basis. To cope with these decisions, we often resort to **heuristics** – quick answers or simple rules to situations that arise. We're also naturally **biased** to use heuristics to expedite decision-making, but they can also lead to less-than-optimal decisions. *See also* Cognitive Load.

How to Use

Use defaults so that the path of least resistance leads to the best option

When people exhibit status quo bias, defaults are powerful tools to leverage that inertia. People are more likely to sign up for retirement savings plans when they have to "opt-out" rather than "opt-in." Studies have shown that employees often won't switch to a new insurance plan, even if it is a superior plan. Making the default the best choice allows people to benefit from a good choice without making changes.

Provide structured processes for decision-making

Having clear guidance on how to go about making a decision may decrease reliance on heuristics and biases.

Design for the fact that people's current feelings won't persist, despite their thinking they will

Tap into present excitement when it is high to help users plan more effectively for the future.

Addressing heuristics and biases is important when…

- ***A task is undesirable or complex.*** In these situations, people are likely to rely on heuristics and biases to find a quick solution.
- ***Time is of the essence.*** People tend to rely on emotion-based biases when they do not have the resources or time to reflect.
- ***People tend to overestimate their abilities and knowledge***. This is especially true for those who have the least knowledge, and is called the Dunning-Kruger Effect.

Make sure that…

- ***Interventions designed to tap emotional biases are connected to a behavior.*** When introducing an intervention, ensure there is an easy path to compliance. Otherwise, people may continue the behavior but with more anxiety or fear.
- ***Guidance does not appear to be an endorsement.*** When adding defaults or suggestions, ensure that this guidance does not come across as endorsement of a given option, and that people understand they can evaluate their own circumstances independently.

Tax Applications and Impacts

- Increase attention during filing
- Fairness in administrative activities
- Increase timely payments

Intention and Commitment

When we make a plan or commitment, we try to follow through

People are motivated to maintain a consistent image of themselves. By indicating an **intention, commitment, or pledge** to complete an action, a person is more likely to follow through on that commitment in the future. This is especially true if the commitment has been declared to others.

How to Use

Write down an appointment time, instead of simply intending to do an action in the future

The Department of the Treasury used letters that included an appointment with a personal call-in time, which increased call-in rates by 23%.

Include a signature box to reaffirm an individual's commitment to answer honestly

Social and Behavioral Science Team included a signature box on an online form to increase honest responses, which led to $1.6 million in remittances in one quarter. This works because people want to validate their identity as honest.

Use high or personally meaningful stakes — financial, social, or emotional — to reward success or punish failure

There are technology solutions where people can pledge to donate money to a cause they find distasteful if they don't follow through on their stated commitment.

Intention & Commitment devices work well when…

- ***The commitment design is specific, feasible, and actionable.*** People are more likely to fulfill their commitment when they have the ability to follow through and make a plan to do so.
- ***Shared with others to promote follow-through.*** For example, announcing your plan to go to the gym three times per week to friends and family allows them to hold you accountable and motivates you to maintain a positive image.
- ***Paired with reminders and timing.*** It is helpful to remind people of their commitment at the most impactful moment.

Be careful when…

- ***Individuals aren't motivated for the specific behavior.*** Intention and commitment devices work because there is a reason to remain engaged. This technique isn't as effective if a person begrudgingly commits to engage in the behavior.
- ***Research continues on commitment that involves an electronic signature.*** Recent evidence suggests that electronic signatures may not always carry the same weight as signing on paper.

Tax Applications and Impacts

- Add signatures up front
- Set personal call-in appointments
- Ask for commitment to comply

Rewards and Penalties

People respond strongly to both carrots and sticks

Rewards can feel remote, and penalties can feel abstract. When rewards and penalties are more **concrete and present**, they have more power to spur action. Interestingly, however, the win-loss math is not as simple as it seems – the prospect of a loss often has more motivational force than an equivalent gain. This phenomenon, known as **loss aversion,** can be leveraged in surprising ways to prompt behavioral change.

How to Use

Build a sense of progress toward a goal

Leading fitness trackers incorporate customizable exercise milestones that provide users with a sense of accomplishment and encourage them to continue to push themselves to improve.

Emphasize minimization of losses over maximization of gains where possible

A comparison study found that a nominal tax on plastic bags in a county in Maryland reduced bag consumption overall, with the reduction being driven by consumers' aversion to paying a five-cent penalty rather than a gain of five-cents for using a reusable bag.

State the risk of future losses to serve as a call to action

A study in England found that the most effective treatment to increase tax payment was to discuss the risk of missing future payments, and encourage enrollment in direct debit. This increased payments even when direct debit accounts did not rise.

Rewards and Penalties work well when…

- ***Losses and gains are easy to quantify.*** Many successful interventions make tax penalties, driving fees, and other circumstances with potential losses more salient, and gains from cheating are clear and quantifiable.
- ***Risks can be severe or are well understood.*** People tend to assign outsized significance to small probabilities. For example, individuals may overemphasize penalties from an audit while discounting the small chance of being selected.

Be careful when…

- ***Losses are not significant to members of the population.*** When penalties are in the future, people may be more willing to take risks due to valuing the present over the future. People usually exhibit temporal discounting, preferring to maximize the present than to protect the future.
- ***Short-term gains can be significant.*** When individuals perceive an opportunity for significant short-term gains, they can be blinded to consequences. For instance, individuals may work to maximize tax refunds, discounting future risk of audit or penalties.

Tax Applications and Impacts

- Increase salience of penalties
- Decrease underreporting of cash
- Impact of outreach efforts

Time Distortion

When choosing rewards for now or later, "now" usually wins

People pay more attention to **present rewards than future ones**, even when this might go against their long-term interests and goals. For example, the pleasure of chocolate cake may be enticing when a waiter offers a dessert tray, even though you have a goal to lose weight in the coming year. Time distortion, or temporal discounting, can also take the form of opting to take a small reward now rather than hold off for a larger reward later, or alternatively, **pushing off unpleasant tasks** to tomorrow.

How to Use

Connect people with their future selves

In one study, people who saw age-progressed avatars of themselves were more likely to accept future financial rewards over immediate ones.

Set short-term goals and provide tangible feedback on progress toward future goals to prevent "now vs. later" slippage

Clearly linking milestones with time frames can help to hold people accountable to specific actions. Setting evaluation points as these milestones pass also reduces procrastination.

Use disclosures and warnings to help bring future consequences into the present

Providing lifetime energy operating cost information for appliances has proven to be effective in guiding consumers toward more energy-efficient shopping behavior.

Addressing time distortion works when…

- ***People want to have and meet their long-term goals.*** However, they need help resolving the "now vs. later" dilemma. Incorporating pressures such as reminders, commitments or penalties can be helpful to reduce impulsiveness or backsliding.
- ***People are required to make a payment.*** Pushing payment into the future (e.g., payment plans) helps to create some mental distance and make it more palatable.
- ***Payment options can be "set it and forget it."*** Setting automatic payments can mean that the mental pain of something, such as making a payment, happens only one time.

Make sure that…

- ***Benefits are felt immediately when adherence is required.*** When given daily rewards for adhering to their medication schedules, seven of ten patients in a study increased their drug compliance.

Tax Applications and Impacts

- Increase timely filing
- Tax planning education outreach
- Estimated payments and withholding

Behavioral Insights Framework: Environmental and Design

Because most information processing is automatic, our behavior is largely shaped by contextual factors and cues in the environment.

Individual Factors
Human decision-making is based on both deliberate and automatic modes of information processing. These processes can be harnessed to make compliance easier.

Environmental and Design Factors
Because most information processing is automatic, our behavior is largely shaped by contextual factors and cues in the environment.

Individual Concepts:
- Cognitive Load
- Self-image
- Fast vs. Slow Processing
- Heuristics and Biases
- Intention and Commitment
- Rewards and Penalties
- Time Distortion

Environmental and Design Concepts:
- Choice Architecture
- Feedback and Reminders
- Framing and Priming
- Salience
- Simplification
- Timing

Social Factors
How people act and think often depends on the actions of those around them. Most people make efforts to conform to social norms and expectations.

Social Concepts:
- Messenger Effects
- Reciprocity
- Social Norms

Organizational Factors
Behavior within organizations is complex, involving individual, environmental, and social factors as well as factors unique to institutions (e.g. culture, governance). For a consideration of Behavioral Insights at the organization level, please see the Behavioral Insights and Organizations section.

Choice Architecture

Make the best choice, the easy choice

Changing the way **options are ordered or presented** helps **reduce cognitive burden** and enable individuals to make better choices that are in line with their goals. Choice architecture also includes the use of **active choice** (being forced to make a decision, usually "yes or no") and **defaults** ("opt-out" settings).

How to Use

Make the preferred choice a default option

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.

Use categorization to make distribution easier

Research suggests that people are biased to allocate (e.g., time, investments, charitable donations) evenly among whatever categories are presented. Choices can be highlighted by separating them into different categories ("fruits," "vegetables") and can by downplayed by collapsing categories ("sweets and snacks").

Allow users to "set it and forget it" once, rather than having to take the same or similar action repeatedly

401(k) plans have used automatic annual increases to increase savings during annual salary increases.

Choice Architecture works well when…

- ***A user's thought process is easy to guess.*** For example, when setting pricing on a menu, a restaurant may add a very expensive item like a $50 hamburger to guide customers to choose more expensive options than they might otherwise.
- ***A preferred choice is evident.*** Using smart defaults can help drive users toward options that are clearly in the public interest, such as setting opt-out policies for being an organ donor when applying for a drivers license.

Be careful when…

- ***Crafting choices, as they may entail political, ethical, or social considerations.*** Defaults are a strong choice and may suggest endorsement. Public opinion may push back if people feel their choices are being limited.
- ***Developing forms, as absence of choice architecture is still architecture.*** Forms created without considering all aspects of choice architecture could guide users to select options that are not optimal to the mission of an organization or the user – just because it was not implemented intentionally doesn't mean the architecture of the choices has no effect.

Tax Applications and Impacts

- Selection of deductions
- Taxpayer surveys
- Improves taxpayer experience

Feedback and Reminders

People can easily be distracted and lose sight of important priorities

Feedback and reminders highlight a **specific piece of information** to increase the chances that recipients will act on or respond to the information in a desired way. Similarly, providing **ongoing feedback** to people about their behavior can allow people to evaluate their own behavior and change it. Additionally, the **transparency** of providing regular feedback in the form of information on what is happening behind the scenes builds trust and improves satisfaction by reducing ambiguity.

How to Use

Send timely feedback to spur customer action

The UK found that using SMS feedback messages to recurring tax delinquents resulted in a 50% increase in payment rates.

Include all information needed for participants to act

A study on participants of publicly subsidized childcare boosted engagement and enrollment by reminding parents of upcoming deadlines and what they needed to recertify for the program.

Disclose the longer-term costs of actions

Consumers were more likely to choose the higher amount needed to pay down a credit card balance in three years when that option, with its lower interest cost, was shown on the card statement.

Provide regular updates to increase user satisfaction

Domino's online Pizza Tracker shows customers the progression of their pizza being made, offering feedback and transparency. Since implementation, 50% of Domino's sales now originate online.

Feedback and reminders work well when…

- ***Behaviors are unusual or challenging.*** For example, a Social and Behavioral Science Team study found that incoming college students responded positively to notes reminding them to finish their application, resulting in an increase in college enrollment rates.
- ***Penalties or losses are unintuitive or difficult to understand.*** Disclosures and warnings can be an effective call to action when consumers are unaware of the costs they are facing, such as in the case of compound interest rates or tax audit probability. In order to change behavior, penalties must be salient.

Be careful when…

- ***Reminders appear burdensome or overly personal.*** Too many messages and reminders can be irritating – leading to disengagement through message fatigue and a feeling of being targeted or overwhelmed.
- ***No clear next step is identified.*** Messages are only as effective as the timeliness and specificity of the reminder. People may complete the first step, but adding a timeline and directions for specific actions can help with follow-through.

Tax Applications and Impacts

- Payment plan follow-through
- Reminders to file
- Feedback based on prior year

Framing and Priming

Information conveyed before a message is delivered can dramatically affect outcomes

The way that information is introduced and presented can have a significant impact on behavior. **Framing** refers to the fact that information can be presented in different ways, and that small changes in the display of messages or choices can drastically change the way they are perceived and the decisions that result. **Priming** refers to actions being influenced by unconscious cues that are seen or experienced before a decision or behavioral prompt.

How to Use

Activate people's desired identities

People may identify with different identities depending on a variety of factors. Decisions and actions differ based on which identity is triggered in an environment. For example, priming someone's identity as a good student has been shown to boost performance on an exam.

Use subconscious cues to drive behavior changes

When asked to pay for a meal by an unsupervised cash box, individuals whose decision to pay was primed with an image of watchful eyes printed on a sign paid 2.76 times more than people whose decision to pay was primed by an image of flowers.

Build options to encourage desired behaviors

A suggested option influences decision making. For example, the suggestion of a $100 donation acts as an anchor, causing people to increase their donations to approach the anchored amount.

Framing and priming work well when…

- ***A low-cost intervention is preferable.*** Framing and priming are some of the most proven and least expensive behavioral interventions. They can be added to existing messaging to encourage desired behavior and change customer mindsets.
- ***Consumers will not spend considerable time with messaging.*** Priming takes place outside of conscious awareness; simple exposure to words associated with certain behaviors can cause individuals to exhibit those behaviors, meaning individuals may not even notice the intervention.

Be careful when…

- ***It is not known how people will react.*** When prompting people to act in accordance with a certain identity (e.g., honest, hardworking), the person should relate to the identity or they may not react as expected.
- ***Recipients of messaging may feel manipulated.*** Ethical considerations should be taken into account to avoid manipulation or the perception of manipulation.

Tax Applications and Impacts

- Increase taxpayer honesty and care
- Increase survey response validity
- Increase effectiveness of soft notices

Salience

We pay attention to what seems important

Much behavior is driven by what we pay attention to. Salience is the ability **to command attention** to something by **giving it more weight or putting it in a position** that will capture attention and influence choices.

How to Use

Bring the consequences of an action to the forefront of the message

Slovenian tax authorities used the salience of the chance of an audit to increase tax compliance of small accounting companies.

Present information in a way that is directly related to personal experience

For example, framing the USDA's budget as an amount per taxpayer catches attention better than simply presenting it as an overall amount.

Use design and novelty to draw attention to a desired message or behavior

Simple design changes can have significant impact. A HHS BIAS study reported better response rates when notices are sent out on pink rather than white paper.

Salience is effective when…

- ***Messaging can be matched to a specific audience.*** Messages should be matched carefully to their intended audience. Campaigns can be made salient by customizing messages to an individual's demographic.
- ***The scale of information can be made more relevant.*** Expressing numbers on a "per-person" basis or reducing the number of choices available are all ways that choices and information can become more relevant for a person.

Be careful when…

- ***A message might draw attention to the wrong information.*** Just as salience can be used to increase a desired behavior, it can also have the opposite effect. When individuals see a negative outcome of a desired action, they may be less willing to complete that action.
- ***Challenging an enduring anchor with new information.*** People are drawn to what they know and may resist when long-held beliefs are confronted. It may require additional effort to change behaviors that are particularly well established.

Tax Applications and Impacts

- Increase response to tax notices
- Remind Sch C filers of mid-year rules
- Increase timely payments

Simplification

Keep it simple

Simplification makes tasks easier to accomplish by reducing complexity, using clear language, and making action items straightforward. Conversely, aspects of a task that make it seem more difficult, called **friction costs,** can be the reason people put off or are unable to complete a task.

How to Use

Limit, cluster, or simplify the amount of information people have to process when making decisions

Polish tax authorities simplified its tax letters, which increased the average amount paid between $40-$326, and increased the payment rate by 17%.

Take advantage of information already provided

When personal information was pre-populated into the Free Application for Federal Student Aid (FAFSA), college enrollment increased by 8% over a two-year period.

Shorten the number of steps necessary to complete a task

The UK's HMRC directed mail recipients to a specific form that they needed to complete instead of a webpage to get to the form, which improved tax collection rates. Every additional step increases the psychological burden of completing a task.

Simplification works well when…

- ***Sub-processes of a task can be eliminated or altered.*** In many cases, small changes like shortening URLs or reducing required pages to click through can result in a marked increase in effectiveness.
- ***There are non-essential steps or options that can be eliminated.*** For a long form, designers and requestors of information can re-examine the elements of the form to determine where the scope of information presented and/or collected can be reduced.

Be careful when…

- ***Making changes without testing.*** Any effort to simplify a form or process only makes sense if the end product is actually better for the person. Without conducting testing to confirm that people prefer a new, simpler option, people may find themselves equally burdened or even more confused.
- ***Implementing changes in the costs associated with choice pathways.*** The IRS needs to balance taxpayer rights and taxpayer compliance costs with the objectives of promoting certain desired behaviors.

Tax Applications and Impacts

- Accurate and complete forms
- Simplify outbound correspondence
- Increase response to tax notices

Timing

Nudge at the right time for maximum effect

Attitudes, beliefs, and behavior are influenced by the ideas and environments that we experience **from moment to moment**. Our reactions to a decision prompt can vary widely based on the timing of the prompt. The impact of reminders, warnings, and other feedback mechanisms can **be enhanced by determining the most effective point** in time to place them.

How to Use

Insert a decision prompt at the time when people are most receptive

Research shows that people are especially amenable to changing behavior at certain points in the year – like January 1 – or during certain life events, such as after starting a new job. Addressing tax behaviors at the beginning of tax season can leverage this finding.

Strategically-placed interactions can elicit positive attitudes toward an experience

An experiment showed that if while drinking orange juice people viewed advertisements for orange juice, their experiences were improved and they remembered it more favorably after the fact.

Insert a delay, or cooling-off period, between a decision and an action to reduce impulsive behavior

Gmail Goggles tests email senders with math problems to prevent "drunk emailing," and users can trigger a one-minute delay in Microsoft Outlook to reduce accidental or regrettable emails from reaching senders immediately.

Changing timing is effective when…

- ***Paired with other concepts such as reminders, warnings, and other feedback.*** Timing can amplify these results by finding the most effective intervention point at a relatively low cost.
- ***Determined through data analytics.*** The State of New Mexico has identified those who are more likely to commit improper reporting for unemployment benefits based on the time of day they go online and applies a nudge to them at the moment of potential dishonesty. Intervening at exactly the right moment has boosted self-reported earnings by 35%.

Be careful when…

- ***A second behavior is required in the distant future.*** For example, people are more likely to use a ticket they purchased yesterday than a year ago. Instead, tightly link payment and action to increase compliance.
- ***There is a small amount of data available.*** User testing is important to identify the optimal timing for an intervention.

Tax Applications and Impacts

- Increase response to tax notices
- Leverage the tax cycle
- Increase timely payments

Behavioral Insights Framework: Social

How people act and think often depends on the actions of those around them. Most people make efforts to conform to social norms and expectations.

Individual Factors
Human decision-making is based on both deliberate and automatic modes of information processing. These processes can be harnessed to make compliance easier.

Environmental and Design Factors
Because most information processing is automatic, our behavior is largely shaped by contextual factors and cues in the environment.

Individual Concepts:
- Cognitive Load
- Self-image
- Fast vs. Slow Processing
- Heuristics and Biases
- Intention and Commitment
- Rewards and Penalties
- Time Distortion

Environmental and Design Concepts:
- Choice Architecture
- Feedback and Reminders
- Framing and Priming
- Salience
- Simplification
- Timing

Social Factors
How people act and think often depends on the actions of those around them. Most people make efforts to conform to social norms and expectations.

Social Concepts:
- Messenger Effects
- Reciprocity
- Social Norms

Organizational Factors
Behavior within organizations is complex, involving individual, environmental, and social factors as well as factors unique to institutions (e.g. culture, governance). For a consideration of Behavioral Insights at the organization level, please see the Behavioral Insights and Organizations section.

Messenger Effects

Reactions to messaging often relate directly to opinions about who delivers it and how it is delivered

Reactions to information are often **influenced by the messenger** delivering it. Opinions about information, including **moral judgments, legal judgments**, and **social judgments** can be directly affected by the deliverer or source and the form in which the information is delivered.

How to Use

Leverage messengers who have authority

A study found that messages to parents – who become the messenger rather than the school – increased homework completion and reduced absenteeism.

Design delivery methods to increase relevance

In a sample of small accounting firms, compliance was improved when a letter was delivered to company representatives in person by tax officers from the financial administration rather than simply mailed.

Draw on relationships and emotional ties

Mothers Against Drunk Driving (MADD) has seen increased success in messaging against drunk driving when mothers appeal to audiences through emotional messaging rather than when messaging is delivered by others.

Messenger effects work well when…

- ***A message can be made more personal.*** Rather than sending messages signed by the IRS, correspondence can be signed by a named person, personalizing the sender.
- ***It comes from a trusted source.*** People are more likely to respond to a request from a friend than to a generic appeal. Voting campaigns often leverage this technique.
- ***Information comes from a perceived expert.*** We are greatly influenced by those with authority or expertise. Messages from tax preparers may carry great weight, especially if they are trusted.

Be careful when…

- ***It is difficult to find the right messenger.*** When relevant and appealing messengers are difficult to identify, messenger effects can be small or even negative. Choosing a messenger that people do not respect can be a waste of resources or even hurt public perception.
- ***Government is the messenger.*** Not everyone has the same view of government. For those who have a negative view or less trust, messages from the government can take on a different meaning than intended.

Tax Applications and Impacts

- Practitioner as messenger
- Revenue Officer allocation strategy
- Increase timely payments

Reciprocity

People tend to return the treatment they receive

People generally tend to return favors and pay back debts, engaging in a practice known as reciprocity, and they can feel obligated to provide preferential treatment to those who have given to them. There are three forms of reciprocity: **direct –** immediate exchange of a good or behavior in kind; **indirect –** being aware of an exchange between two parties and responding *on behalf of* one; and **generalized –** experiencing actions from one party, and later responding to those behaviors in interactions with the same or third party.

How to Use

Appeal to people's desire for fairness

One study of individuals who were late in paying property taxes found that they were more likely to respond to appeals to public service and civic duty than to individual benefits, reflecting a desire to do their part and not to be viewed as a free-rider.

Highlight the reasonableness of the request

Research suggests that taxpayer compliance is correlated with trust in the IRS and government and that unnecessary burden or unfair penalties correlates with future noncompliance. When asking a taxpayer to take an action, consider whether they will view it as fair, reasonable, helpful, and good.

Capitalize on people's need to return a favor

When people are given a gift, the natural reaction is to respond in kind. Charities found that sending a sheet of customized address labels along with requests for donations nearly doubles response.

Reciprocity can be leveraged when…

- ***There is an opportunity to appeal to fairness.*** Many people see themselves as honest and fair. Reminding people of what they have received, or how they have benefited, when asking them to help others can inspire them to "pay it forward." The most effective messages in an RCT to encourage organ donation reminded people that organs would be available if they were to need a transplant before encouraging them to help others.

Be careful when…

- ***Making interactions feel transactional.*** People respond poorly to feeling like they are being manipulated or "bought." In one study, when people were handed a free gift and asked for a donation, rates increased relative to those who did not receive a gift, but this generated a sense of resentment that lasted beyond the interaction.
- ***The intentions of an agency could be questioned.*** Reciprocity is believed to be based on the perception of another's intentions, and when people feel slighted or cheated, they may choose to retaliate. A study of hospital patients found that when the hospital cancelled appointments, patients were less cooperative in the future.

Tax Applications and Impacts

- Build sense of fairness in filing
- Credits such as EITC
- Benefits taxpayers get from taxes

Social Norms

We are social creatures and care what other people think

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).

How to Use

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.

Highlight that someone is an outlier – not behaving as others do

When the Guatemalan Tax Authority highlighted that most taxpayers had already paid their tax, the government increased both the rate of payment and the average amount paid.

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%.

Social norms can be leveraged well when…

- ***Strong norms about a behavior exist.*** For example, one study in Denmark found that social norms inventions were effective in discouraging littering but not in promoting the use of stairs, indicating that strong social norms existed about littering, but not about taking stairs.
- ***Norms can be tested with different populations.*** Social norms vary among cultures and subcultures. Citing a norm on tax repayment may not work in a country where paying taxes is perceived as naïve. Testing is important to determine which messages resonate with the targeted groups.

Be careful when…

- ***Descriptive norms might emphasize the prevalence of a negative behavior.*** Robert Cialdini calls this "the big mistake" because it reminds people that negative behavior is the norm and thus gives them license to behave badly.
- ***Assuming that a population identifies with the reference group*** (e.g., neighbors, work peers). Telling someone that their neighbors recycle (descriptive norms) would only be effective if the person relates to them or cares about their opinion.

Tax Applications and Impacts

- Increase response to tax notices
- Increase EITC program uptake
- Increase timely payments

Behavioral Insights and Organizations

Much of the literature around Behavioral Insights so far has focused on the individual. An untapped opportunity exists to research how and when Behavioral Insights applies to Organizations.

IRS

Behavioral Insights and Organizations

Behavioral Insights has traditionally been applied to factors that influence the behavior of individuals, but there is growing interest within the IRS to consider **how *Behavioral Insights applies to partnerships, corporations, and other entities***. While organizations are normally considered to be rational actors, free from the cognitive biases of individuals, they are, in fact, groups of people making decisions, meaning that many of the same behavioral principles apply.

The understanding of how Behavioral Insights applies to behaviors within organizations is still in its early stages of research, but it seems that there are many ways that Behavioral Insights can help to improve both the experiences of organizational taxpayers and the IRS's tax administration outcomes. Research results thus far suggest that organizations engaging with tax processes act neither as simple groups of individuals nor as monoliths subsuming the individuals within them. This section offers several key points to consider when applying Behavioral Insights to organizations:

- *Decisions of organizations are made by people.*
- *The behavior of an organization may be more than the aggregate of the behavior of individuals.*
- *Entities have identities to protect and norms that constrain them, just as people do.*

Behavioral Insights and Organizations

Decisions of organizations are made by people.

Businesses, nonprofits, and government organizations are made up of people who, individually and collectively, make decisions on behalf of the entity. Taken as a whole, this can be considered the behavior of the organization.

Even organizational decisions that appear to be guided by the bottom line are weighed and carried out by people, which means that Behavioral Insights has direct applicability.

For example, as with individual taxpayers, organizations demonstrate compliant behavior at higher rates than can be accounted for by the threat of audit and penalties. Why does this occur – and what makes compliant organizations different from noncompliant ones?

One study has shown that noncompliant firms are much more likely than compliant firms to be led by executives who have understated personal taxes. Other work has suggested that as noncompliant managers move from organization to organization, their noncompliant behavior goes with them too. Behavioral Insights can help the IRS to better understand the relationship between individual and entity noncompliance and develop interventions to discourage the noncompliant behavior of individuals from crossing over to the organizations they manage.

Where Does BI Apply?

Cognitive Load: When the individuals responsible for an organization's decisions suffer from cognitive load that is caused in part by tax complexity, this cognitive load can influence the decisions they make about compliance.

Satisficing: Individuals within an organization can resort to satisficing, deeming their work "good enough" rather than striving for complete accuracy during tax activities, which can result in unintentional miscalculations or noncompliance.

Behavioral Insights can identify the points where interventions can help to alleviate cognitive load, increasing the chances that organizations will not fall victim to noncompliance-through-satisficing.

Behavioral Insights and Organizations

The behavior of an organization may be more than the aggregate of the behavior of individuals.

While Behavioral Insights concepts are sometimes directly applicable to entities, organizations have additional complexities and drivers that make their decisions unlike the ones that would be made by a simple collection of people.

Research suggests the importance of identifying key decision points and decision-makers. For example, some organizational decisions are made by one or a few people (e.g., owner, CFO, accountant, accounting group), while some have more structured functions, with policies and rules dictating roles and a chain of command or accountability. In some cases, different individuals or groups within an organization might be responsible for smaller decisions or determinations that feed into an ultimate decision.

Managerial controls (e.g., professionals such as accountants, independent auditors) can tamp down the effects of Behavioral Insights. Larger organizations with more of these controls tend to exhibit more of the rational actor behaviors that traditional economic theory would suggest.

Where Does BI Apply?

Risk appetite: Risk appetite is defined as the amount and type of risk that an organization is willing to take to meet its strategic objectives. While tax aggressiveness might not commonly be thought of as a component of risk appetite, it falls within the model and could be an explicit part of a board's decision-making.

Examinations can trigger a change in an entity's internal assessments of audit risk, so research into the longer-term effects of audits is useful in helping the IRS decide when to time a later intervention for greatest impact.

Behavioral Insights and Organizations

Entities have identities to protect and norms that constrain them, just as people do.

The identity of an organization might include its "brand" (in the outward-facing sense of how others perceive it) or its self-concept (in the inward-facing sense of how it defines itself). In both cases, entities exhibit behavior that shows that they care about their identities.

Organizational missions, statements of corporate values, and employee codes of conduct might be considered analogous to personal norms. These feed into an organization's culture and are expressed in expectations regarding behaviors such as honesty, fairness, and serving the public and/or their customers. To maintain a consistent, positive identity, the entity's actions should align with those expectations.

In addition, organizations have peers that they look to as benchmarks and guides to acceptable and unacceptable behavior. These peers, along with the public, can exert social norm pressure. This peer influence can operate on many levels (e.g., sector, industry, competitors). If the peers are bad actors, this conveys that bad behavior is permissible. If the peers are good actors, this sets a standard against which the organization must measure up.

Where Does BI Apply?

Norms: The IRS can explore ways to craft and deliver normative messages to entities appealing to their own statements of norms and values.

Transparency: There has been growing energy behind sunshine campaigns to publicly identify those engaged in tactics to avoid or evade taxes. These campaigns frame their critiques in terms of morality and fairness.

While reputational risk (and the effect of damage to reputation) is hard to measure, Behavioral Insights approaches have the potential to increase good corporate tax citizenship.

Behavioral Insights Research Guide

Behavioral Insights projects typically follow a four-step process from problem definition to final evaluation. This section provides a high-level guide for conducting these projects, as well as the research methods that may be used.

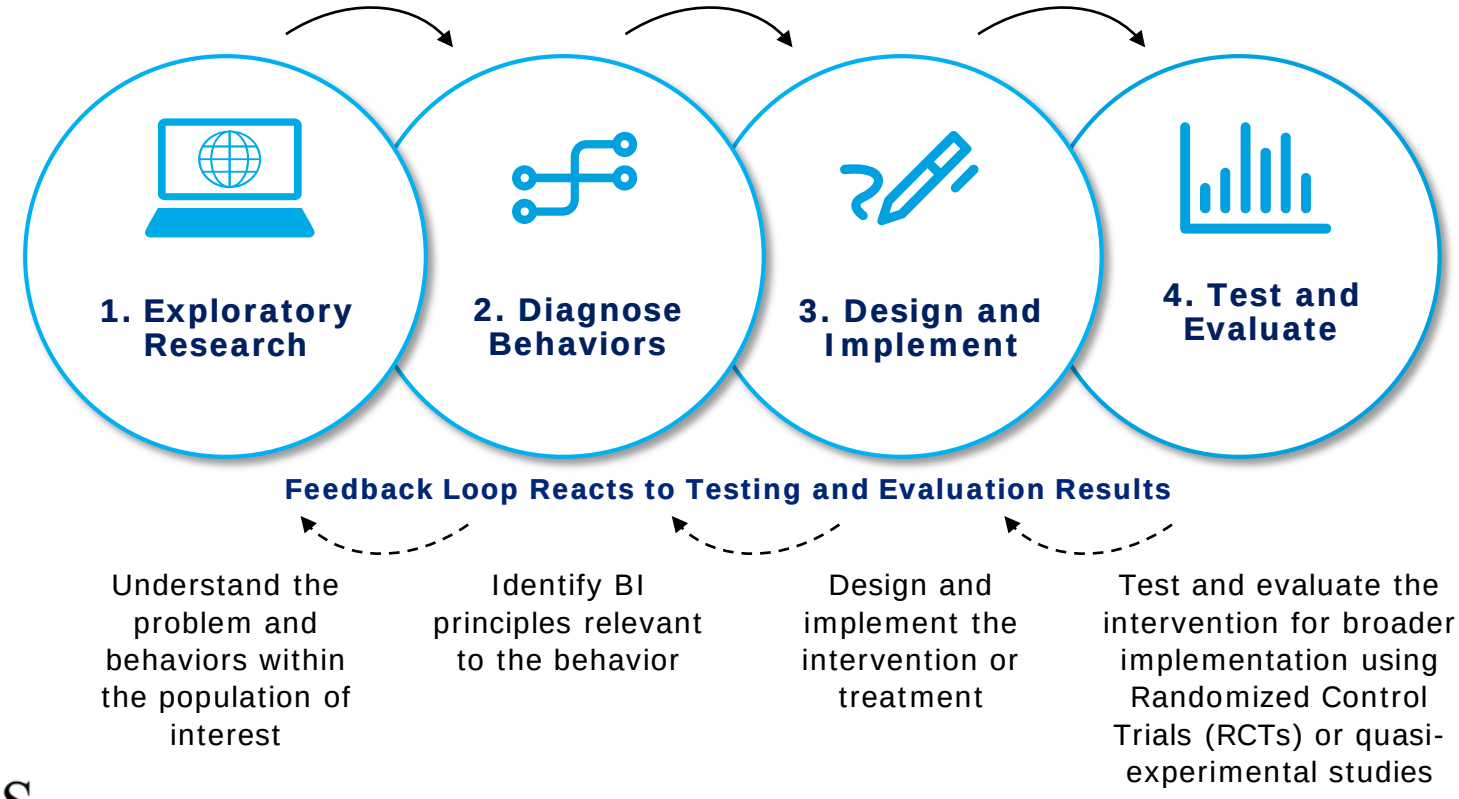
IRS

Process for Behavioral Insights Projects

An effective Behavioral Insights project should be built on research focused on two key objectives:

1. Building an understanding of behaviors to design an appropriate intervention or alternative treatment
2. Testing the effectiveness of the intervention using proven research methods

Behavioral Insights projects typically follow a four-step process from problem definition to final evaluation. Though this process is described linearly, it is more often iterative. The section that follows provides an overview of the purpose and objectives of each stage in the process.



Step One: Exploratory Research

Behavioral Insights is based on the idea that an **understanding of human behavior leads to more effective policies and processes designed to achieve better results**. Research is fundamental to form that understanding, and the first step in a Behavioral Insights project is to explore the problem, relevant populations, barriers, and behaviors involved, as well as to consult the existing evidence base. Failing to properly understand these elements can lead to less effective treatments or interventions.

In this stage of the project, concentrate on identifying:

The problem. Behavioral Insights projects are most effective when seeking to address a *specific* problem. First, clearly identify and quantify the problem of interest – using evidence rather than assumptions and anecdotes. For example, this might be self-employed taxpayers under reporting income.

The population(s). After identifying the people or entities who make the key decisions involved in the problem, it is important to quantify and describe them. Segmenting the population based on the behaviors, values, or other characteristics that affect how and why they make the decisions they do is often helpful. For example, there may be many sub-groups of taxpayers who do not file returns online – all for different reasons. Each subgroup faces different barriers, so multiple strategies may be needed to promote e-filing.

The behavior. For effective human-designed policies, it is important to understand how people actually behave. For example, if the problem identified is improper claiming of credits, is it due to misunderstanding of rules? Are forms too complex? Or are taxpayers acting fraudulently? Each of these cases has different underlying drivers, calling for different tools.

The evidence base. Consulting the behavioral sciences literature is a critical aspect to designing and studying Behavioral Insights projects – for both designing interventions and testing for impact.

First, the existing literature can provide a knowledge base for shaping the conceptual understanding of the issue at hand and the factors that affect it. Drawing from existing research can also help to manage risk by building from a conceptual approach with a tested track record of external validity.

Additionally, consulting the behavioral literature can also guide behavioral analytics approaches and can suggest appropriate testing design and research methods.

Step Two: Diagnose Behaviors

The bridge from exploratory research to designing an intervention is determining which Behavioral Insights concepts may help to explain the behavior of interest. Creating this theoretical explanation for behavior helps to isolate an intervention point and identify what policy/messaging/design changes are needed. A testable theoretical framework also provides greater external validity – understanding what will work in other settings and why.

Sometimes the behavior in question -- particularly at a segment level -- is the standard economic model of self-interested rational actors. Other times, behavior deviates from a rational explanation of behavior. When considering which Behavioral Insights concepts may be most applicable, some questions to consider include:

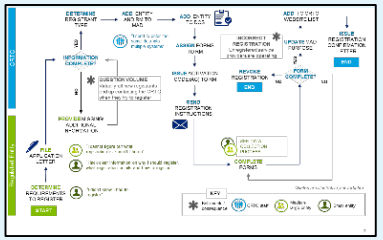
- ***Individual factors*** **-** Is behavior due to human limitations – like procrastination or over-valuing the present?
- ***Design Factors*** **-** Which design factors might be involved – for example, are there too many choices or details that paralyze action?
- ***Social Factors*** **-** What are the social influences on this population/behavior?

Working with behavioral scientists, review the literature to identify how Behavioral Insights concepts might explain behaviors involved with compliance, honest reporting, and other policy-related behaviors. Several sections of this document – the **Behavioral Insights framework and concepts** and **the matrix of Behavioral Insights studies** – are resources for applying behavioral science findings to policy problems.

It may be helpful to compare a list of findings from the research phase to a checklist of the behavioral concepts described in this document. For example, if research suggests that users find a required form has too many inputs and become careless towards the end, the problem may be related to **cognitive load** or **simplification**.

What is behavioral mapping?

For process-related behaviors, the exploratory research phase can be used to gather information on the flow of relevant taxpayer behaviors. This information can be diagrammed as a behavioral map to visually display each step a user takes to complete a certain process. Behavioral maps help to identify bottlenecks and barriers that interfere with performing the desired behaviors.



Sample Behavioral Map

Step Three: Design and Implement

After appropriate intervention points are identified in the diagnose phase, **Behavioral Insights concepts can be applied to designing treatments**.

Depending on the problem, target population, and intervention point, the IRS can develop treatments based on the following broad possibilities and related Behavioral Insights concepts:

- **Changing the question being asked** (Cognitive Load, Choice Architecture)
- **Changing the information being provided** (Framing and Priming, Salience)
- **Helping people follow through on good intentions** (Intention and Commitment, Time Distortion)
- **Helping people be more timely** (Feedback and Reminders, Timing)
- **Making it easier** (Fast vs. Slow Processing, Heuristics and Biases, Simplification)
- **Influencing the decision** (Self-image, Rewards and Penalties, Social Norms, Messenger Effects, Reciprocity)

Interventions can focus on one behavioral concept (e.g., a reminder letter appealing to a business owner's identity) or several concepts at once (e.g., a reminder letter appealing to the recipient's identity as a business owner *and* framing the desired behavior in terms of benefits that flow back to the business community). Data gathered in the formative research phase may suggest whether the problem calls for a "single-pronged" or "multi-pronged" intervention design.

Design Considerations and Questions

In designing a Behavioral Insights intervention or treatment, it is important to keep in mind that **it must not only be effective** in achieving the desired behavioral outcome – **it must also be feasible** and worthwhile for the IRS to implement on the needed scale. Although this determination will depend in many ways on the data collected in Step 4, some questions to keep in mind are:

- Is it ethical? Does it respect the autonomy and agency of taxpayers?
- Can the target population be clearly defined and accessed to receive the treatment/ intervention?
- Is it complex to administer correctly?
- Can it be administered fairly and consistently across the target population?
- Is it costly, and if so, is it likely to bring in a return that will balance out that cost?
- How long will it take to show results, and how long are those effects likely to persist?

Step Four: Test and Evaluate

Test

A study design and evaluation plan should be considered as the intervention is being developed. In collaboration with research groups, choose the most appropriate methods (e.g., randomized control trial, longitudinal study) to address the intervention planned. See the Research Methods section for advantages and disadvantages of each study design, but in general, project plans should include a consideration of:

Outcome measurement: It is important to carefully define the outcome behavior, specify how and when it will be measured, and ensure that this measurement is applied consistently across the population. The evaluation will be most useful if the measure chosen most represents the behavior of interest, rather than a process measure (e.g., focusing on tax payments when measuring compliance rather than click-throughs to information on making payments).

Randomization and sample size calculation: The study design should include an explanation of the randomization plan separating study participants into treatment and control groups and sample size estimates to ensure sufficient power to detect anticipated differences in outcomes. It is important to carefully consider statistical power; Behavioral Insights interventions may have small to moderate effects. Consult the literature to determine effect sizes for similar interventions.

Data collection and analysis: The study design should include how and when data will be collected among all individuals or organizations in the study, including any survey instruments or data queries. An initial analysis plan should be developed to ensure that all necessary variables can be collected.

Evaluate

After the intervention/treatment has been implemented and data have been collected, appropriate analyses should be conducted to determine the effectiveness of the intervention and to develop conclusions and recommendations about the potential for scale-up. Considerations should include:

- Effect size calculations, include differentials in varying populations
- Possible explanations for negative or null findings
- Lessons learned, including opportunities for follow-on refinement and testing
- Impact calculation (e.g., savings in taxpayer burden, audit time)
- Up- and downstream impact (e.g., audits avoided)
- Ways in which findings can be communicated to other business units

Data Analytics for Behavioral Insights Projects

Data analytics is a key component of behavioral research. While statistical tools are commonly used to analyze survey responses and experimental data, analytics are increasingly able to draw insights from information already captured in administrative databases or from previous research.

Retrospective Analysis

Definition

Retrospective analysis involves applying statistical, computational, and machine-learning techniques to previously existing databases.

How to Use in Behavioral Insights

Many behavioral research projects start with exploratory data analysis – analyzing previously collected data to look for patterns and examples of Behavioral Insights.

- For example, natural experiments may already exist based on changes in policy or differences between similar geographic areas. Advances in the field of causal inference such as propensity score matching can allow researchers to draw conclusions from observational data of similar quality to RCT results.
- Machine learning methods are increasingly used to segment populations based on characteristics, behaviors, or attitudes. For example, unsupervised analyses such as clustering and nearest-neighbor methods can identify multidimensional patterns in data to locate groups of similar observations to empower segmentation.

Prospective Analysis

Definition

In **prospective analysis**, the data gathering is itself part of the research.

How to Use in Behavioral Insights

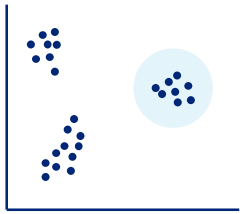
Behavioral research often involves a significant amount of prospective analysis. Research protocols and experimental design involve setting up data collection mechanisms such as surveys, lab experiments, and randomized controlled trials (RCT).

Importance to Behavioral Insights

These experiments gather data and statistical techniques are often applied to navigate the results and draw conclusions. Of particular importance in behavioral research, researchers must define outcome measures to analyze, focusing on short-term change in behavior, but also analyzing the stickiness of that behavioral change in the longer term.

Behavioral Segmentation and Behavioral Insights Projects

Behavioral segmentation is an emerging topic in behavioral research. While much research has focused on key insights and how people respond, the next logical question is to understand how different people respond differently to treatments and behavioral stimuli.



Some segments might be motivated by **risk aversion** and consideration of **penalties**; others might respond more strongly to appeals to **civic duty**. Still others might respond more strongly to **social norms**. Analytics techniques such as **cluster analyses** can identify homogenous populations segments in order to then match the most effective Behavioral Insights concept with each particular population. Examples of these cluster analysis techniques include:

- Hierarchical clustering
- K-means clustering
- Principal Component Analysis
- K-Nearest Neighbors

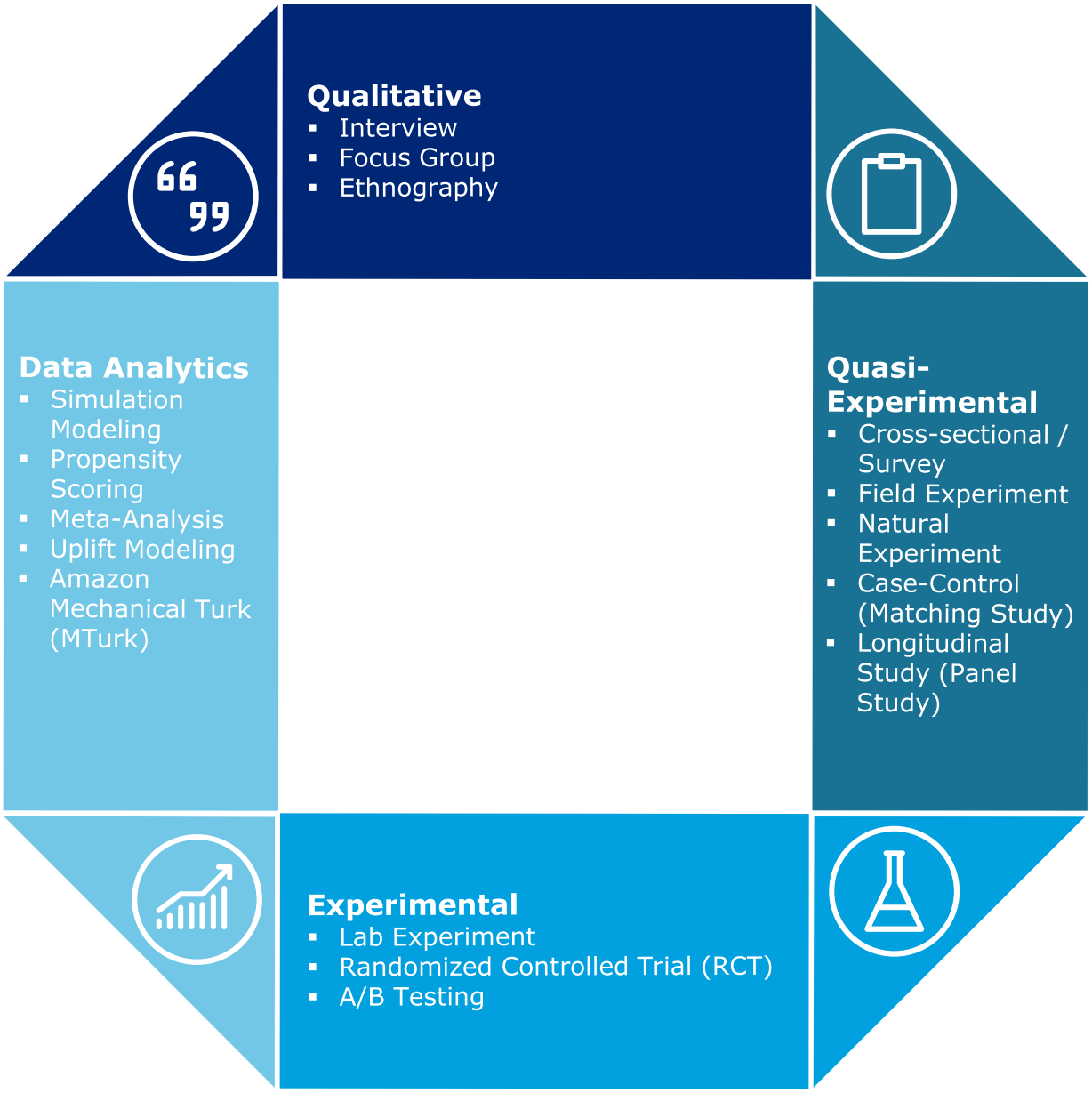
These conceptual explanations can help guide the identification and interpretation of behavioral segments.

Once segments have been identified, the next step is to **match treatments to the segments**. This can be done through an emerging field of causal inference, which aims to **identify and apply customized treatments**. **Uplift modeling**, or persuasion modeling, intends to match treatments with individuals to enhance the impact. Rather than sending a single message to all, uplift modeling identifies individual-level impacts, estimating which treatment is likely to work for which individuals.

Research Methods for Behavioral Insights Projects

The following slides describe methods that might be considered for Behavioral Insights research, ranging from those most suited to the early phases of investigation through to large-scale testing, evaluation, and validation.

Choosing appropriate methods (and combining methods as necessary) can help to build a deeper understanding of the behaviors of interest and more robust behavioral interventions/treatments because the insights gleaned from different methods can complement each other. Use of appropriate research methods for testing the conceptual framework being utilized can also aid external validity and the build on existing research.



Qualitative: Interview

*Structured or semi-structured discussion between the researcher and an **individual participant**, who is usually selected based on background characteristics and/or experience in the subject of interest. The researcher follows an interview guide to elicit information from the participant, and in the case of semi-structured interviews, may probe (ask follow-up questions) to clarify or collect further information on particular topics.*

Best Practices:

Strengths / Benefits

- Get information directly from respondents about their beliefs, attitudes, opinions, and activities
- Ability to explore new or complex issues
- Can obtain clarification or additional detail when information provided is ambiguous or vague

Cautions / Limitations

- Not representative or generalizable
- Can be resource intensive and time-consuming
- Cost

Examples:

- Interviews of EITC-eligible taxpayers who either have not claimed or have cycled in and out of the program, to gain insight into their circumstances, concerns, and stumbling blocks

Phase of Research:

Early

Exploratory or as part of the research design process

Intermediate

After survey to investigate issues that emerge

Late

To debrief

Best Used When

- Goal is to gain insight into perspectives, perceptions, and experiences

Execution Considerations

- Matching length, depth, and degree of structure to research need
- Selection of interviewees

Qualitative: Focus Group

*Researcher-led semi-structured or unstructured discussion around a common theme or topic **with a specially selected group of participants**. Focus groups allow for wide-ranging exploration of issues and can be used in conjunction with more structured data collection through surveys, interviews, or other methods.*

Best Practices:

Strengths / Benefits

- Get information directly from respondents about their beliefs, attitudes, opinions, and activities
- Time- and cost-efficient way to collect qualitative data

Cautions / Limitations

- Dependent on group dynamics
- Need for the moderator to effectively guide the discussion to maintain focus
- Reliability

Examples:

- Focus group with taxpayers who file paper returns to understand their attitudes and perceptions, reasons for filing on paper, and barriers to adoption of e-filing
- Focus group with tax preparers to understand their experiences of changes in tax administration that have occurred over the last few years, what they think has become better or worse, and ideas for improvements to facilitate their work

Phase of Research:

Early

Exploratory or as part of the research design process

Intermediate

After survey to investigate issues that emerge

Late

For feedback in intervention development or preliminary testing

Best Used When

- Need is to explore or to understand findings from other methods on a deeper level

Execution Considerations

- Selection of participants and composition of groups

Qualitative: Ethnography

Observation and/or participant-observation of individuals or groups engaged in everyday activities in their natural environment. Ethnography enables the researcher gain an immersive understanding of the people or phenomena of interest while being minimally intrusive or disruptive.

Best Practices:

Strengths / Benefits

- Provides context
- Allows for depth and richness
- Can uncover relevant issues and variables that may not be expected

Cautions / Limitations

- Can be time-, cost-, and researcher-intensive
- Quality of findings is highly dependent on the skill and experience of the researcher
- Participants often behave differently when they know they are being observed (the Hawthorne effect)
- Not generalizable

Examples:

- Ethnographic study of small businesses (selected based on categories identified by the IRS as having particular challenges with filing and reporting compliance) to understand their knowledge, attitudes, and day-to-day activities, and how those affect their ability to comply

Phase of Research:

Early

Exploratory, to better understand the nature of the problem

Intermediate

Late

Best Used When

- Existing knowledge or understanding is thin
- Issue of interest is subject to recall or desirability bias

Execution Considerations

- Selection of research sites
- Plan for data collection, organization, and interpretation
- Participants often behave differently when they know they are being observed (the Hawthorne effect)

Quasi-Experimental: Cross-sectional / Survey

Questionnaire to elicit information from selected individuals about a specific topic of interest. Surveys can be conducted on an entire population of interest (census) or among a small subsample. They can be done one time to gather baseline information, pre/post experiment, or at regular intervals (series cross-sectionly) to track trends over time. Panel surveys are also possible when appropriate to the research objectives (See Panel Study).

Best Practices:

Strengths / Benefits

- Broadly gather information directly from respondents about their beliefs, attitudes, opinions, and activities
- Can collect data quickly
- Allows for easy comparison

Cautions / Limitations

- Response rate and non-response bias
- Social desirability bias if questions are related to sensitive or stigmatizing behaviors
- Misclassification or information biases due to memory or misperception problems
- Intention to act (as expressed by respondents) does not always align with actual behavior
- Causality cannot be inferred due to temporality issues

Examples:

- Survey of owners or partners in small-to-medium-sized businesses to understand barriers to voluntary compliance and conditions that may encourage intentional noncompliance
- Survey to gather data from taxpayers who have interacted with IRS online services both before and after changes

Phase of Research:

Early

Exploratory or as part of the research design process

Intermediate

To track trends when conducted at regular intervals

Late

For evaluation or feedback

Note: Surveys can also be done pre/post experiment

Best Used When

- Research aims to understand perspectives and perceptions of the population, or activities that can be easily recalled and accurately described
- Population of interest can be clearly defined and accessed

Execution Considerations

- Choice of survey vehicle (e.g., paper, online, mobile)
- Construction (e.g., length, complexity, question format)
- Selection criteria and sampling to be relevant and representative of the population of interest
- Potential response bias and oversampling

Quasi-Experimental: Field Experiment

*Research investigating the cause-and-effect relationship of an intervention **applied live in a business or real-world setting** (versus a lab setting) through a pilot or experiment that tend to be population or program based. Most population-based experiments tend to be based on convenient samples, unlike an RCT. However, a field experiment can still use an RCT depending on the feasibility, goals, and outcomes.*

Best Practices:

Strengths / Benefits

- Research is conducted in the settings in which the behavior occurs
- Greater external and ecological validity since interventions are implemented as they would be if scaled up

Cautions / Limitations

- Cost and ROI
- Difficult to control for outside variables
- Harder to replicate
- There are proper constraints concerning the rights of study participants

Examples:

- Test of the impact of soft notices versus revenue officer visits on taxpayers at risk of noncompliance on Federal Tax Deposits (FTD), and measurement of the subsequent network effects on untreated taxpayers connected to the treated subjects
- New training program piloted in a subset of purposively selected regional offices compared to "business as usual" results when randomization is not possible due to system or operational constraints

Phase of Research:

Early

Intermediate

For testing / evaluation / validation

Late

Best Used When

- There is a need to study something on a program or population level
- Program evaluations must be done on an entire population or census

Execution Considerations

- Outcomes of interest are associated with covariates as well as interventions and may require complex sampling
- Additional complexity of conducting an experiment in the field due to interaction with customers or other non-experimental subjects

Quasi-Experimental: Natural Experiment

*Retrospective study of observational data in which subjects are not assigned to treatment and control conditions. Rather, a change or phenomenon **produced reasonable treatment and control groups naturally**, allowing the researcher to study results in previously gathered data.*

Best Practices:

Strengths / Benefits

- Observations come directly from behavior in a natural setting
- Findings may be more straightforward to translate to future applications because the "experiment" occurred in situ
- Large amounts of data may already have been collected
- Lower cost

Cautions / Limitations

- Difficult to control for outside variables
- Reliance on naturally occurring phenomena to produce good experimental conditions
- Can be subject to missing data or censoring issues

Examples:

- Study of the effect of a tax credit on college attendance. The study would use administrative data to look at the behavior before the introduction of the credit ("control") and after ("treatment")
- The rollout of a new call center script sequentially over a period of six months allowing for analysis of changes over time as centers began using the new script
- A rule change affecting two otherwise-similar observations differently because of an exogenous factor such as location on opposite sides of a state border

Phase of Research:

Early

Exploratory or as part of the research design process

Intermediate

Late

Best Used When

- There are ethical or practical issues associated with using other research methods
- Forensic analysis of prior events or treatments

Execution Considerations

- Data generation mechanism
- Outcomes of interest are linked to covariates and not to the experimental "treatment"
- Scale of data and nature of the analysis may require specialized skills or tools

Quasi-Experimental: Case-Control (Matching Study)

Used to determine if an observed outcome (i.e., condition of interest) is associated with an explanatory factor (typically, exposure to a treatment or risk factor). Individuals who have the outcome of interest (cases) are compared to individuals who match the cases with respect to defined characteristics (e.g., status, socio-demographics) but who do not have the specified outcome (controls). The research looks back retrospectively to compare how frequently or intensely the explanatory factor is present in each group to determine the relationship between the explanatory factor and the outcome. A form of matching study is propensity scoring.

Best Practices:

Strengths / Benefits

- Cost-effective and quick because the outcome has already happened
- Relatively easy to conduct
- Can look at multiple factors simultaneously

Cautions / Limitations

- Difficult to generalize results (causality cannot be inferred without additional assumptions that may not be testable from within the study)
- Selection bias in selecting the control group
- Hard to anticipate the influence of confounding variables
- Recall bias or non-differential recall bias for surveys because cases and controls might not remember events the same way

Examples:

- Study comparing EITC claimants and seemingly eligible non-claimants, in order to evaluate the impact of various explanatory factors on participation (e.g., informational notices sent by the IRS, employment and income characteristics).

Phase of Research:

Early

To explore or better understand the relationship between an outcome and exposure

Intermediate

Late

Best Used When

- Need is to study an uncommon or rare outcome
- Interest is to explore a specific relationship between an outcome and an exposure or risk factor
- Forensic analysis of prior events or treatments

Execution Considerations

- Sampling to be relevant and representative of the population of interest
- Appropriate matching of the cases and controls to avoid the effects of confounding variables

Quasi-Experimental: Longitudinal Study (Panel Study)

*A study that follows the same sample **over a period of time** and makes repeated observations, enabling the researcher to track change over time and relate them to variables that might explain any changes that occurred. A cohort study is a specific type of longitudinal study in which two or more sample groups (cohorts) – similar in many characteristics but different in certain initial variables of interest – are followed prospectively to see if they exhibit different outcomes. A longitudinal study can also be conducted to examine the long-term or indirect effects of a treatment.*

Best Practices:

Strengths / Benefits

- Can follow a pattern of behavior over time and look for trends
- Possible to do retrospectively with data the IRS already has
- Cohort studies make it easier to evaluate the effects of different factors on an outcome of interest

Cautions / Limitations

- High data requirement over an extended period of time
- Prospective studies are time-consuming and expensive
- Potential for imbalances in participant characteristics because there is no randomization

Examples:

- Retrospective longitudinal analysis to look for early indicators of problem behavior (or, conversely, exemplary behavior)
- Cohort study of taxpayers who are subject to an operational or NRP audit versus those who are not, in order to compare their long-term behavior with respect to filing, reporting, and payment compliance

Phase of Research:

Early

To better understand the nature of a behavior or problem as it evolves

Intermediate

Late

Best Used When

- There is a need to understand change over time
- It takes a long time to accurately evaluate the outcomes

Execution Considerations

- Accounting for incomplete data due to attrition, censoring
- In the case of a cohort study, matching of the control and treatment groups
- Additional analytical complexity needed to account for multiple temporal observations per subject

Experimental: Lab Experiment

*Research conducted **in a controlled environment** with standardized procedures. In the context of Behavioral Insights, this includes psychological experiments in which participants perform prescribed tasks under different manipulated conditions, or ones in which groups of participants engage in structured "games" with precisely defined rules.*

Best Practices:

Strengths / Benefits

- Replicability
- Ability to manipulate specific variables
- Easier to define experiment and study group to strip out known confounding variables

Cautions / Limitations

- Generalizability to behavior in the real world
- Representativeness of experimental participants

Examples:

- Study to understand how the choice of different payment options affects compliance
- Experiment to investigate the contagiousness of witnessing cheating behavior in order to develop hypotheses about the network effects of evasion

Phase of Research:

Early

To understand the mechanisms that underlie behaviors under different conditions

Intermediate

Late

Best Used When

- Goal is to understand psychological processes or actors' decisions with precision or granularity
- Natural experiments are too costly or complex to implement initially
- Studying factors unobservable or confounded in the field

Execution Considerations

- Defining parameters of tasks or games to reasonably mirror or model behavior in other contexts

Experimental: Randomized Controlled Trial (RCT)

*Experimental method where the researcher explicitly **uses randomization to assign participants to groups** (i.e., treatment and control), with the purpose of reducing selection bias and controlling for external factors. This allows the researcher to measure and evaluate the effects of the intervention being tested. While many RCTs are conducted as field experiments, they can also be performed in a laboratory setting.*

Best Practices:

Strengths / Benefits

- Broad validity, but still benefits from a conceptual framework for the test
- Good randomization will reduce the effects of some biases
- Causality is easier to infer than with quasi- or non-experimental methods

Cautions / Limitations

- Cost and ROI
- Ethical considerations in the application of interventions
- Ability to interpret or understand underlying drivers of behaviors is limited, absent a conceptual framework for the test
- May not be possible in all situations

Examples:

- RCT of different "soft-touch" instruments to improve awareness and utilization of IRS resources among taxpayers at risk for noncompliance due to lack of knowledge
- Test of letters aimed at varying the perceived audit probability of randomly chosen firms

Phase of Research:

Early

Intermediate

Late

For testing/ evaluation/ validation

Best Used When

- Intervention needs to be broadly tested to evaluate suitability for application to a large population – can test the effects of changes to a system, process, or program

Execution Considerations

- Participant allocation (e.g., restricted, stratified, dynamic)
- Proper randomization to reflect the population of interest
- Time to insight: a long lag between test and observed outcomes may suggest a more deliberate study design
- External validity of results

Experimental: A/B Testing

*A special type of **RCT with a feedback loop**, where participants are randomly shown different versions of a treatment, the "A" or "B," and asked to choose between them. A/B Tests are often set up dynamically, in that the randomization is weighted and adjusts based on the choices of prior participants, in effect implementing the most effective version quickly. A/B testing is most commonly used in an online environment with rapid time to insight.*

Best Practices:

Strengths/ Benefits

- Inexpensive
- Research is conducted in the settings in which the behavior occurs
- Results can immediately be put into operation

Cautions/ Limitations

- Relevance of the "A" and "B" versions being tested to the underlying problem or issues of concern
- Ability to interpret or understand underlying drivers of behaviors is limited
- Ethical concerns over treating different subjects differently
- Unintended consequences driven by poorly understood underlying behavior

Examples:

- Serving different versions of a landing page to online visitors to test site interactions and rates of click through
- Testing and tailoring of online and mobile messaging to different taxpayer segments

Phase of Research:

Early

Intermediate

Late

For testing/ evaluation/ validation

Best Used When

- Changes to systems, processes, or interfaces are specific and finite
- The desired outcome is clear and well-known
- Feedback is rapid

Execution Considerations

- Test population reflects the universe of users
- Effectively implementing a feedback loop
- Time to insight: a long lag between test and observed outcomes may suggest a more deliberate study design

Data Analytics: Simulation Modeling

The use of models, often expressed using mathematical algorithms, to simulate an unknown outcome based on known information about the factors involved in producing the outcome. Common types of simulation models include agent-based models, system dynamics models, micro-simulation modeling, discrete event simulation, and Monte Carlo simulation.

Best Practices:

Strengths / Benefits

- Allows researchers to predict the behavior of a system under various assumptions
- Ability to simulate the differential impact of various interventions on an outcome of interest

Cautions / Limitations

- Quality of the results depends heavily on the quality of the input data and the underlying model
- Systems that involve interaction among agents can be extremely complex and difficult to model
- Data and computational requirements can be intensive

Examples:

- Using a simulation model to predict taxpayer behavior with respect to the use of IRS online services as a function of awareness, availability of services, and prevalence of service usage in their community. The model could then be used to simulate the population-level impact of various interventions designed to increase service awareness and adoption (e.g., advertising campaigns, targeted notices)

Phase of Research:

Early

To simulate the potential impact of proposed interventions before implementation

Intermediate

Late

To simulate the population-level impact of interventions that have been tested and analyzed through smaller-scale RCTs or surveys

Best Used When

- A real-world test of an intervention would be prohibitively expensive or time-consuming
- The goal is to understand the variability in outcomes in addition to the average outcome

Execution Considerations

- Data generation mechanism
- Missing data issues
- Scale of data may require specialized skills or tools to analyze

Data Analytics: Propensity Scoring

*Algorithmic method for identifying matched observations in observational data, typically used to **answer causal inference questions retrospectively** based on previously recorded data in administrative databases. Propensity scoring attempts to remove selection biases by identifying comparable treatment and control populations (i.e., populations that are similar except for having received a certain treatment). Propensity scoring is a form of a matching study.*

Best Practices:

Strengths / Benefits

- Takes advantage of the considerable amounts of administrative data that have already been collected and stored in IRS and external databases
- When done properly, propensity scoring is as accurate as RCTs in measuring causal effects

Cautions / Limitations

- Previously captured data may not contain comparable test and control populations
- May require specialized statistical knowledge and software
- Conceptual framework can aid causal interpretation and external validity

Examples:

- Analysis of previously captured behavior such as response to a penalty where a good natural experiment did not occur, by allowing the researcher to explicitly identify and remove self-selection and response biases
- Blending of data from multiple observational sources to provide control cases not previously available
- Application as a method to evaluate the quality of randomization in a small trial

Phase of Research:

Early

Exploratory or as part of the research design process

Intermediate

Late

Best Used When

- Databases already contain information on treated and untreated cases but not necessarily in a natural experiment
- Transitioning from behavioral issue identification via a natural experiment (how many exhibit behavior) to a tailored treatment design (see uplift modeling)

Execution Considerations

- Need to identify the treatment and control in the database
- Defining the variables that need to be "balanced" between the treatment and control populations
- Whether an RCT is feasible and more desirable for examining the questions of interest

Data Analytics: Meta-Analysis

*Statistical **analysis of the results of multiple studies** to pool information and better understand effects as discovered (or not) across disparate studies. As with any new field of science, Behavioral Insights may have greater external validity in some situations but not others.*

Best Practices:

Strengths / Benefits

- Provides a robust analysis of multiple underlying studies
- Can identify true effects in the face of replication issues

Cautions / Limitations

- Requires multiple similar studies to have been performed

Examples:

- Meta-analysis merging a dozen research projects conducted in different areas on the impact of social norms on improved tax collections, in order to understand the expected effect and measure the variability

Phase of Research:

Early

Intermediate

Late

After multiple studies of the same phenomena have been completed

Best Used When

- Multiple studies have been conducted with inconclusive or mixed evidence in the results
- Concerns exist regarding replication

Execution Considerations

- Identification of underlying studies that can be compared

Data Analytics: Uplift Modeling

Rather than focusing on propensity for taking a certain action, uplift modeling attempts to measure the difference in taking an action as a result of a given treatment. Sometimes referred to as "persuasion modeling," uplift modeling intends to identify those who are likely to change their behavior due to treatment (as opposed to those who would change irrespective of treatment or those who would not respond to treatment at all).

Best Practices:

Strengths / Benefits

- Highly efficient in terms of treatment resources, because it turns the focus from those likely to exhibit a behavior to those who would exhibit a behavior only with treatment
- Leverages causal inference theory for a more robust application
- In some cases, uplift modeling can identify individual-level causal inference

Cautions / Limitations

- More complex analysis
- Requires data collected on response to treatment gathered through survey or pilot
- Uplift modeling may not identify intention in predictions on changing behavior

Examples:

- For a campaign to persuade taxpayers to sign up for Online Account, uplift modeling can help focus resources on taxpayers who would sign up for the service under a treatment but would not otherwise
- In analyzing responses to soft notices, uplift modeling can identify which taxpayers respond to social norms and which respond to salience of audits and penalties

Phase of Research:

Early

Intermediate

Late

After initial feedback is gathered on propensity for action under treatment

Best Used When

- Previous work has been done to understand the effectiveness of different treatment streams
- Resources for a given treatment are expensive to deploy

Execution Considerations

- Need to gather data on covariates important to behavior propensity and persuasion

Data Analytics: Amazon Mechanical Turk (MTurk)

*Method in between a field experiment and a lab experiment in nature, the MTurk platform is a marketplace for matching individuals with online tasks that need completing. More recently, researchers have started using the MTurk platform as a way to **do rapid prototyping** and inexpensively gather survey responses on how design choices impact perceptions.*

Best Practices:

Strengths / Benefits

- Inexpensive and quick to achieve results
- Allows for rapid collection of data on differences in wording, format, design, etc., without the need to involve IT resources

Cautions / Limitations

- Sample may not be representative of the broader population

Examples:

- Pre-testing the phrasing and graphic design of an online progress bar by designing a few different options to be randomly shown to MTurk participants, along with questions on comprehension, beliefs, interpretation, etc. After collecting feedback on the versions through the platform, the findings would be used to adapt the design before a live pilot with taxpayers

Phase of Research:

Early

To gather information on versions of a treatment before full lab tests or representative surveys are performed

Intermediate

Late

Best Used When

- Developing prototypes or multiple versions and rapid feedback is needed on how people will interpret design, framing, choice architecture, etc.

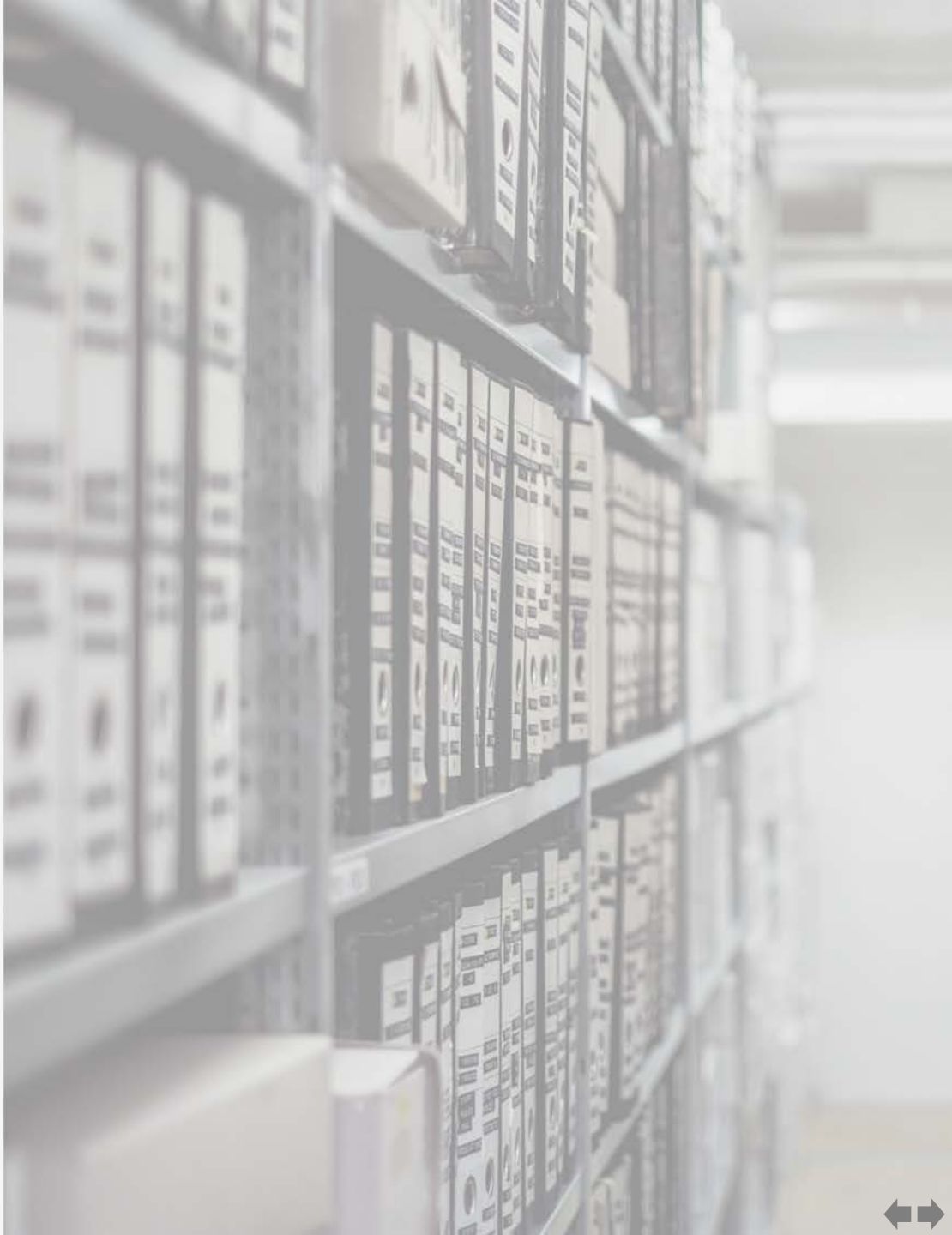
Execution Considerations

- Because test versions will be publicly shared, anonymization or masking may be required for sensitive campaigns

Resources

Numerous governments, academics, and organizations have tested Behavioral Insights, and have published their results.

The following is a list of resources for further reading and learning related to Behavioral Insights.



Further Reading: Governments

***Governments** around the world have begun experimenting with Behavioral Sciences across services, from tax administration to delivery of benefits.*

US Federal

- Social and Behavioral Sciences Team, National Science and Technology Council, General Services Administration
- Office of Planning, Research, and Evaluation, Department of Health and Human Services
- Consumer Financial Protection Bureau

International

- Australia: Behavioral Economics Team (BETA)
- United Kingdom: Behavioral Insights Team (BIT)
- France: Secretariat-General for Government Modernisation (SGMAP)
- Singapore
- European Union: Joint Research Center (Country Overviews)
    - European Union: Joint Research Center (Behavioral Insights Report)
- Selected EU Country Reports:
    - Denmark
    - France
    - Germany
    - The Netherlands
    - The United Kingdom

Further Reading: Literature

*Psychologists, Economists, and other **Academics** have conducted studies and research projects that explore the effectiveness and replicability of Behavioral Insights.*

Introductory and Overview

- Misbehaving (Richard H. Thaler, 2015)
- Nudge (Thaler & Sunstein, 2008)
- Scarcity (Mullainathan & Shafir, 2014)
- Thinking, Fast and Slow (Daniel Kahneman, 2011)
- Inside the Nudge Unit (David Halpern, 2016)

Additional Examples and Deeper Reading

- The Design of Everyday Things (Don Norman, Rev. Ed. 2013)
- The Honest Truth About Dishonesty (Dan Ariely, 2012)
- Influence (Robert B. Cialdini, 2005)
- Predictably Irrational (Dan Ariely, 2007)
- Superforecasting (Tetlock & Gardner, 2016)
- Predictive Analytics (Eric Siegel, 2013)

Related and Topic Specific

- Drive (Daniel H. Pink, 2009)
- Grit (Angela Duckworth, 2016)
- The Last Mile (Dilip Soman, 2015)
- The Marshmallow Test (Walter Mischel, 2014)
- Mindset (Carol Dweck, 2016)
- Mindware (Richard Nisbett, 2015)
- Pre-suasion (Robert B. Cialdini, 2016)
- Simpler (Cass R. Sunstein, 2015)
- The Smarter Screen (Shlomo Benartzi, 2015)
- Thrive (Layard & Clark, 2014)
- The Upside of Irrationality (Dan Ariely ,2010)
- Work Rules (Laszlo Bock, 2015)
- What Works (Iris Bohnet, 2016)
- Wiser (Cass R. Sunstein, 2014)

Academic Journals

- American Economic Review
- Behavioral Science and Policy (BSP)
- Journal of Behavioral and Experimental Economics
- Journal of Business Ethics
- Journal of Economic Perspectives (JEP)
- Journal of Economic Psychology
- Journal of Personality and Social Psychology
- Journal of Public Policy & Marketing
- Kyklos: International Review for Social Sciences
- Quarterly Journal of Economics

Further Reading: Non-Profits

Beyond governments and the academic space, ***non-profits and non-governmental organizations*** *have continued to advance the behavioral field.*

University Groups

- Behavioral Economics in Action at Rotman (BEAR), Rotman School of Management, University of Toronto
- Behavioral Insights Group, Center for Public Leadership, Harvard University
- Behavioral Science Laboratory, Moody College of Communication, University of Texas at Austin
- Center for Customer Insights, Yale School of Management
- Chicago Experiments, University of Chicago
- Cognitive and Behavioral Economics Initiative, Columbia University
- Duke-UNC USDA Center for Behavioral Economics and Healthy Food Choice Research (BECR)
- Initiative for Behavioral Economics and Finance, Berkeley University
- International Behavioral Economics Association (iBEAF), Brandeis
- MIT Media Lab
- Persuasive Technology Lab, Stanford University

Tax Associations

- American Tax Policy Institute (ATPI)
- National Association of Tax Professionals (NATP)
- National Society of Tax Professionals (NSTP)
- National Tax Association (NTA)

Conferences

- Design for Action Conference
- Behavioral Economics and Global Health Conference (UC Berkeley)
- Behavioral Exchange
- Behavioral Science and Policy Association (BSPA)
- Digital Behaviour Change Conference (UCL)
- Habit Summit
- International Conference on Management, Behavioral Sciences and Economics (WASET)
- The Society for Judgment and Decision Making
- The WINK Nudge Conference (The Netherlands)

Behavioral Groups, Non-Profits, and NGOs

- Action Design Network
- The Abdul Latif Jameel Poverty Action Lab (J-PAL)
- Academy of Behavioral Finance and Economics
- Behavioral Science and Policy Association (BSPA)
- The Behavioral Insights Team (BIT)
- Center for Applied Behavioral Science, MDRC
- Office for Economic Co-Operation and Development (OECD)
- World Bank- Global Insights Initiative (GiNI)
- Society for Judgment and Decision Making (SJDM)
- Society for the Advancement of Behavioral Economics (SABE)

Further Reading: Thoughtware

*While much of the research and innovation in the field has taken place in the non-profit space, the **private sector** is increasingly making contributions to Behavioral Insights.*

Consultancies

- The Behavioural Architects
- Behavioral Science Lab
- BVA Nudge Unit
- Deloitte: Behavioral Economics and Management
- Ideas42

Blogs and Web

- Behavioral Economics
- Dan Ariely
- iNudgeYou
- Misbehaving Blog
- Nudge Blog
- World Bank Blogs

Further Reading: Behavioral Insights Framework

Individual Concepts

Cognitive Load

- Benartzi, S., & Thaler, R. (2013). Behavioral Economics and the Retirement Savings Crisis. Science, 339(6124), 1152-1153.
- Kling, J. R., Mullainathan, S., Shafir, E., Vermeulen, L., & Wrobel, M. V. (2011). Misprediction in Choosing Medicare Drug Plans. Cambridge, MA: Harvard University Press.
- Lamberton, C. (2013). A Spoonful of Choice: How Allocation Increases Satisfaction with Tax Payments. Journal of Public Policy & Marketing, 32(2), 223.
- Brown, T. (2007). Coercion versus Choice: Citizen Evaluations of Public Service Quality across Methods of Consumption. Public Administration Review, 67(3), 559-572.

Self-image

- Mazar, N., Amir, O., & Ariely, D. (2008). The Dishonesty of Honest People: A Theory of Self-Concept Maintenance. Journal of Marketing Research, 45(6), 633-644.
- Kettle, S. and Hernandez, M. and Sanders, M. (2016). Behavioral Interventions in Tax Compliance : Evidence from Guatemala (The World Bank; Policy Research Working Papers). Washington, DC: The World Bank
- Cornwell, J. M., & Krantz, D. H. (2014, September). Public policy for thee, but not for me: Varying the grammatical person of public policy justifications influences their support. Judgment and Decision Making, 9(5), 433-444.
- Taylor, Natalie, 2002. 'Understanding Taxpayer Attitudes Through Understanding Taxpayer Identities.' In *Taxing Democracy*, edited by Valarie Braithwaite, 71-92. Ashgate Publishing Ltd.

Fast vs. Slow Processing

- Maciejovsky, B., Schwarzenberger, H., & Kirchler, E. (2012). Rationality Versus Emotions: The Case of Tax Ethics and Compliance. Journal of Business Ethics, 109(3), 339-350.
- Van Berkum, J. (2008). Understanding Sentences in Context: What Brain Waves Can Tell Us. Current Directions in Psychological Science, 17, 376-380.

Further Reading: Behavioral Insights Framework

Individual Concepts

Heuristics and Biases

- "Schmidt-Daffy, M. (2013). Fear and anxiety while driving: Differential impact of task demands, speed, and motivation. Transportation Research Part F: Traffic Psychology and Behaviour, 16, 14–28."
- Joulfaian, D. (2000). Corporate Income Tax Evasion and Managerial Preferences. The Review of Economics and Statistics, 82(4), 698-701.
- Molero, J., & Pujol, F. (2012). Walking Inside the Potential Tax Evader's Mind: Tax Morale Does Matter. Journal of Business Ethics, 105(2), 151-162.
- Organization for Economic Co-operation and Development (2010). Understanding and Influencing Taxpayers' Compliance Behavior. Information Note from the Forum on Tax Administration: Small/Medium Enterprise (SME) Compliance Subgroup.
- Bohnet, I., Frey, B., & Huck, S. (2001) More Order with Less Law: On Contract Enforcement, Trust, and Crowding. American Political Science Review, 95(1), 131-144.
- Trivedi, V., Shehata, M., & Lynn, B. (2003). Impact of Personal and Situational Factors on Taxpayer Compliance: An Experimental Analysis. Journal of Business Ethics, 47(3), 175-197.
- Carter, L., Schaupp, L., & McBride, M. (2011). The U.S. e-File Initiative: An Investigation of the Antecedents to Adoption from the Individual Taxpayers' Perspective. E-Service Journal, 7(3), 2-19.

Intention and Commitment

- United States, Social and Behavioral Sciences Team. (2015). 2015 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- United States, Social and Behavioral Sciences Team. (2016, September). 2016 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- Short, J., & Toffel, M. (2010). Making Self-Regulation More Than Merely Symbolic: The Critical Role of the Legal Environment. Administrative Science Quarterly, 55(3), 361-396.

Further Reading: Behavioral Insights Framework

Individual Concepts

Rewards and Penalties

- Pai, C. & Wang, P. (2013) "Automobile drivers' willingness to pay for moving violation behavior—Compared to motorcyclists". Accident Analysis and Prevention, vol. 59, pp. 55–63.
- Cooper, C., Knoll, M., Sieminski, D., & Zimmerman, D. (2016). Tools for saving: Using prepaid accounts to set aside funds.
- Homonoff, T. A. (2013). Essays in Behavioral Economics and Public Policy. http://dataspace.princeton.edu/jspui/bitstream/88435/dsp01jw827b79g/1/Homonoff_princeton_0181D_10641.pdf
- Hössinger, R., & Berger, W. J. (2012). Stated response to increased enforcement density and penalty size for speeding and driving unbelted. Accident Analysis and Prevention, vol. 49, pp. 501–511
- The Behavioural Insights Team. (2016). Update Report 2015-16. http://38r8om2xjhhl25mw24492dir.wpengine.netdna-cdn.com/wp-content/uploads/2016/09/BIT_Update_Report_2015-16-.pdf
- Murphy, K. (2005) Regulating More Effectively: The Relationship between Procedural Justice, Legitimacy, and Tax Non-compliance. Journal of Law and Society, 32(4), 562-589.
- Homonoff, Tatiana A. (2013). Can Small Incentives Have Large Effects? The Impact of Taxes versus Bonuses on Disposable Bag Use. (Princeton University Working Paper #575). Princeton University Industrial Relations Section.
- National Taxpayer Advocate 2015 Annual Report to Congress vol. 2, 67-100 (Sebastian Beer, Matthias Kasper, Erich Kirchler, and Brian Erard, Audit Impact Study), https://taxpayeradvocate.irs.gov/Media/Default/Documents/2015ARC/ARC15_Volume2_3-AuditImpact.pdf
- Eisenhauer, J., Geide-Stevenson, D., & Ferro, D. (2011). Experimental Estimates of Taxpayer Ethics. Review of Social Economy, 69(1), 29-53.

Time Distortion

- LeBoeuf, Robyn. (2006). Discount Rates for Time versus Dates: The Sensitivity of Discounting to Time-Interval Description. Journal of Marketing Research, Vol. 43, No. 1 (Feb., 2006), pp. 59-72.
- Ariely, D., & Wertenbroch, K. (2002). Procrastination, Deadlines, and Performance: Self-Control by Precommitment. Psychological Science, 13(3), 219-224.

Further Reading: Behavioral Insights Framework

Environmental and Design Concepts

Choice Architecture

- United States, Social and Behavioral Sciences Team. (2016, September). 2016 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- Gabriel D. Carroll, James T. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Optimal Defaults and Active Decisions," The Quarterly Journal of Economics, Vol. 124, No. 4 (Nov., 2009): 1639-1674.

Feedback and Reminders

- The Behavioural Insights Team. (2016). Update Report 2015-16. http://38r8om2xjhhl25mw24492dir.wpengine.netdna-cdn.com/wp-content/uploads/2016/09/BIT_Update_Report_2015-16-.pdf
- Anne Brockmeyer, Marco Hernandez, Stewart Kettle, and Spencer Smith. "Casting the Tax Net Wider: Experimental Evidence from Costa Rica". World Bank Group: Macroeconomics and Fiscal Management Global Practice Group (October 2016)
- Purnell JQ, Thompson T, Kreuter MW, McBride TD. Behavioral Economics: "Nudging" Underserved Populations to Be Screened for Cancer. Prev Chronic Dis 2015;12:140346. DOI: http://dx.doi.org/10.5888/pcd12.140346
- Dechausay, Nadine, Caitlin Anzelone, Leigh Reardon (2015). The Power of Prompts: Using Behavioral Insights to Encourage People to Participate. OPRE Report 2015-75. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Baird, Peter, Leigh Reardon, Dan Cullinan, Drew McDermott, and Patrick Landers (2015). Reminders to Pay: Using Behavioral Economics to Increase Child Support Payments. OPRE Report 2015-20. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Depart-ment of Health and Human Services.
- Social and Behavioral Sciences Team. (2015). 2015 Annual Report. Retrieved from https://sbst.gov/assets/files/2015-annual-report.pdf
- Social and Behavioral Sciences Team. (2016). 2016 Annual Report. Retrieved from https://sbst.gov/assets/files/2016%20SBST%20Annual%20Report.pdf
- Mayer, Alexander, Dan Cullinan, Elizabeth Calmeyer, Kelsey Patterson (2015). Engaging Providers and Clients: Using Behavioral Economics to Increase On- Time Child Care Subsidy Renewals. OPRE Report 2015-73. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Organization for Economic Co-operation and Development (2010). Understanding and Influencing Taxpayers' Compliance Behavior. Information Note from the Forum on Tax Administration: Small/Medium Enterprise (SME) Compliance Subgroup. 18-19.
- Fellner et al. (2011), Testing Enforcement Strategies in the Field: Threat, Moral Appeal and Social Information, Journal of the European Economic Association.
- Pomeranz, Dina. "No Taxation Without Information: Deterrence and Self-Enforcement in the Value Added Tax." American Economic Review (forthcoming). (This was Harvard Business School Working Paper, No. 13–057, April 2013.)

Further Reading: Behavioral Insights Framework

Environmental and Design Concepts

Framing and Priming

- Farrell, Mary, Jared Smith, Leigh Reardon, and Emmi Obara (2016). Framing the Message: Using Behavioral Economics to Engage TANF Recipients. OPRE Report 2016-02. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- United States, Social and Behavioral Sciences Team. (2016, September). 2016 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- Melissa Bateson, Daniel Nettle, and Gilbert Roberts, "Cues of Being Watched Enhance Cooperation in a Real World Setting," Biology Letters 2 (2006): 412-414

Salience

- "Chetty, Raj., ""The Simple Economics of Salience and Taxation"" (2009). NBER. Working Papers.Paper 15246."
- Chetty, R., Looney, A., & Kroft, K. (2009). Salience and Taxation: Theory and Evidence. The American Economic Review, 99(4), 1145-1177.

Simplification

"United States, Health and Human Services, Administration for Children and Families' Office of Planning, Research and Evaluation. (2015, September). Behavioral Buzz Newsletter. Retrieved from http://www.acf.hhs.gov/sites/default/files/opre/behavioralbuzz_sept2015_b508.pdf"

- United States, Social and Behavioral Sciences Team. (2015). 2015 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- United States, Social and Behavioral Sciences Team. (2016, September). 2016 Annual Report. Retrieved from https://sbst.gov/assets/files/2016 SBST Annual Report.pdf
- Behavioral Insights Team. (2016, September) Update Report 2015-16. Retrieved from http://38r8om2xjhhl25mw24492dir.wpengine.netdna-cdn.com/wp-content/uploads/2016/09/BIT_Update_Report_2015-16-.pdf
- Behavioural Insights Unit, Allianz and the Department of Education, "Applying Behavioural Insights to Return to Work" (1st August 2016) http://bi.dpc.nsw.gov.au/assets/Behavioural-Insights/Library/Applying-Behavioural-Insights-to-Return-to-Work.pdf
- Dynarski, S., & Scott-Clayton, J. (2008). Complexity and Targeting in Federal Student Aid: A Quantitative Analysis. Tax Policy and the Economy, 22(1), 109-150.

Timing

- Kathryn A. Braun-LaTour, & Michael S. LaTour. (2005). Transforming Consumer Experience: When Timing Matters. Journal of Advertising, 34(3), 19-30. Retrieved from http://www.jstor.org.azp1.lib.harvard.edu/stable/4189306
- 2016 SBST Annual Report https://sbst.gov/assets/files/2016%20SBST%20Annual%20Report.pdf

Further Reading: Behavioral Insights Framework

Social Concepts

Messenger Effects

- Laura Haynes, Donald P. Green, Rory Gallagher, Peter John, and David J. Torgerson. "Collection of Delinquent Fines: An Adaptive Randomized Trial to Assess the Effectiveness of Alternative Text Messages" (2013).
- Daniel Ortega and Carlos Scartascini, Development Bank of Latin America, Don't Blame the Messenger: A Field Experiment on Delivery Methods For Increasing Tax Compliance 31 (Nov. 2015).
- Druckman, J. (2001). On the Limits of Framing Effects: Who Can Frame? The Journal of Politics, 63(4), 1041-1066. Retrieved from http://www.jstor.org.azp1.lib.harvard.edu/stable/2691806
- Johnson, E. J., Shu, S. B., Dellaert, B. G., Fox, C., Goldstein, D. G., Häubl, G., ... & Wansink, B. (2012). Beyond nudges: Tools of a choice architecture. *Marketing Letters*, *23*(2), 487-504.

Reciprocity

- Michael Chirico, Robert Inman, Charles Loeffler, John MacDonald, and Holger Sieg "An Experimental Evaluation of Notification Strategies to Increase Property Tax Compliance: Free-Riding in the City of Brotherly Love", University of Pennsylvania. October, 2015.
- De Neve, Jan-Emmanuel, Lamberton, Cait and Norton, Michael I. (2014) Eliciting taxpayer preferences increases tax compliance. CEP Discussion Papers, CEPDP1270. Centre for Economic Performance, London School of Economics and Political Science, London, UK.

Social Norms

- Blumenthal et al. (2001), Do Normative Appeals Affect Tax Compliance? Evidence from a Controlled Experiment in Minnesota, National Tax Journal.
- Chung, J., & Trivedi, V. (2003). The Effect of Friendly Persuasion and Gender on Tax Compliance Behavior. Journal of Business Ethics, 47(2), 133-145.
- UK Cabinet Office Behavioural Insights Team. (2011). Applying Behavioural Theory to Collecting Tax Debts. Organization for Economic Co-operation and Development (OECD) Observatory of Public Sector Innovation (OPSI). Retrieved from https://www.oecd.org/governance/observatory-public-sector-innovation/innovations/page/applyingbehaviouraltheorytocollectingtaxdebts.htm#
- Hallsworth, M., List, J., Metcalfe, R., and Vlaev, I. (2014). The Behavioralist as Tax Collector: Using Natural Field Experiments to Enhance Tax Compliance. National Bureau of Economic Research (NBER) Working Paper No. 20007.
- Murray, G., & Matland, R. (2014). Mobilization Effects Using Mail: Social Pressure, Descriptive Norms, and Timing. Political Research Quarterly, 67(2), 304-319.

Further Reading: Behavioral Insights Framework

Social Concepts

Social Norms (Cont.)

- Bobek, D., Roberts, R., & Sweeney, J. (2007). The Social Norms of Tax Compliance: Evidence from Australia, Singapore, and the United States. Journal of Business Ethics, 74(1), 49-64.
- Noguera, J., Miguel Quesada, F., Tapia, E., & Llàcer, T. (2014). Tax Compliance, Rational Choice, and Social Influence: An Agent-Based Model. Revue Française De Sociologie (English Edition), 55(4), 765-804.
- Winter, S., & May, P. (2001). Motivation for Compliance with Environmental Regulations. Journal of Policy Analysis and Management, 20(4), 675-698.
- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. Current Directions In Psychological Science, 12(4), 105.
- Wenzel, M. (2004). An Analysis of Norm Processes in Tax Compliance. Journal of Economic Psychology, 25, 213-228.
- Torgler, B. (2004). Moral Suasion: An Alternative Tax Policy Strategy? Evidence from a Controlled Field Experiment in Switzerland. Working paper No. 2004-1, Center for Research in Economics, Management and the Arts.
- Organization for Economic Co-operation and Development (2010). Understanding and Influencing Taxpayers' Compliance Behavior. Information Note from the Forum on Tax Administration: Small/Medium Enterprise (SME) Compliance Subgroup.
- The Behavioural Insights Team. (2016). Update Report 2015-16. Retrieved from http://38r8om2xjhhl25mw24492dir.wpengine.netdna-cdn.com/wp-content/uploads/2016/09/BIT_Update_Report_2015-16-.pdf
- Davis, J., Hecht, G., & Perkins, J. (2003). Social Behaviors, Enforcement, and Tax Compliance Dynamics. The Accounting Review, 78(1), 39-69.
- Gino, F., Ayal, S., & Ariely, D. (2009). Contagion and Differentiation in Unethical Behavior: The Effect of One Bad Apple on the Barrel. Psychological Science, 20(3), 393-398.
- Nielsen, V., & Parker, C. (2008). To What Extent Do Third Parties Influence Business Compliance? Journal of Law and Society, 35(3), 309-340.

About the Organizations that Authored this Toolkit

The Internal Revenue Service (IRS) is a bureau of the Department of the Treasury and one of the world's most efficient tax administrators. In fiscal year 2015, the IRS collected almost $3.3 trillion in revenue and processed almost 240 million tax returns. The IRS mission is to provide America's taxpayers top quality service by helping them understand and meet their tax responsibilities and enforce the law with integrity and fairness to all.

Deloitte.

Federal agencies are evolving, and Deloitte leads the way in helping government leaders operate more effectively and modernize to meet the changing needs of our citizens. Simply put, our mission is to help our clients achieve their mission. Our teams work closely with our clients to develop strategies to achieve outcomes, improve performance, enhance efficiency, drive transformation, and advance constituent services. Deloitte applies a mix of private-sector insights and public-sector experience to help federal agencies rethink, reduce, and restructure.

ASR Analytics is a small business that specializes in the design, development, and delivery of analytic solutions for clients in the tax and revenue domain. Our staff of data scientists, statistical programmers, data visualization specialists, database analysts, and tax compliance experts work collaboratively with clients at the Federal and state level to create innovative and impactful solutions for fraud detection, case selection, and treatment stream optimization.