



# THE MECHANICAL TURK ECOSYSTEM

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## INTRODUCTION

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Mechanical Turk is a unique ecosystem in which interactions between workers and requesters take place within a specific culture. In this chapter, we describe that culture and discuss how data quality is maintained by Mechanical Turk's reputation mechanism, the approval and rejection process, and the options available to requesters for choosing specific workers. We also outline features the MTurk ecosystem has developed that protect requesters from fraud and help workers and requesters get the most out of their MTurk experience.

In the second part of the chapter, we describe Mechanical Turk from the perspective of workers, with the aim of helping requesters better understand what happens to a study once it is launched. We describe online worker communities and discuss how they contribute to the MTurk workers' culture. We also let MTurk workers lend their own voices to this chapter. As part of a Human Intelligence Task (HIT), workers read parts of this chapter and gave us their feedback. Their responses are provided later in the chapter. We gathered responses from workers to demonstrate the power of Mechanical Turk as a platform for quickly aggregating high-quality feedback. We hope that reading their responses in their own words will help readers better appreciate MTurk workers as people who are smart, thoughtful, insightful, and helpful.

Throughout this chapter we use workers' conversations on various popular forums as anecdotal evidence to supplement our own experience with MTurk workers. This chapter is not a how-to guide. Rather, we describe the ecosystem of Mechanical Turk at a conceptual level. Chapter 3 will provide a detailed guide for how to set up and launch MTurk studies and Chapter 4 will explain how

third-party platforms can enhance Mechanical Turk through the use of MTurk's API. Readers who are experienced with Mechanical Turk might be able to skip portions of this chapter, Chapter 3, and Chapter 4 as we describe some of the more basic and technical details of the platform. Although we believe there is useful information in each of these chapters for even experienced readers and provide a summary of best practices at the end of Chapters 3 and 4, the goal of the next several chapters is to lay the foundation for the information presented throughout the rest of the book.

## Workers and Requesters

Mechanical Turk allows one group of users, called requesters, to interact with another group of users, called workers. When requesters want to connect to workers, they *launch* a task, which Mechanical Turk refers to as a HIT (Human Intelligence Task). The task becomes visible on the workers' dashboard. Figure 2.1 shows an example of the workers' dashboard with a number of HITs that ask workers to link company names to stock market symbols, get contact details for pharmaceutical companies, look up fashion products, and classify whether a lesion is malignant.

When a worker submits a HIT, payment for that work is not automatically remitted to the worker. Instead, the requester has the ability to review the work and to decide whether or not to pay for it. If the requester decides the work meets their standards of quality, they can accept the HIT, which releases funds to the worker. If, by contrast, the requester decides the work does not meet their standards of quality, they can reject the work, in which case the worker does not get paid.

Requesters on Mechanical Turk have complete control over the approval process. When a requester rejects a HIT, there is little the worker can do about it. Even if a HIT is rejected for no reason, Mechanical Turk does not have an appeal process and often the only option for workers is to ask the requester about the rejection. Although this level of control can seem unfair, Mechanical Turk gives requesters complete control in order to protect them from fraud. In practice, requesters rarely reject submitted work (see Chapter 11). Additionally, workers have developed a few systems of their

**FIGURE 2.1** THE WORKERS' HIT DASHBOARD

Requester	Title	HITs	Reward	Created	Actions
Requester 1	Link company names to stock symbols or identifiers	3,307	\$0.05	3d ago	Preview Accept & Work
Requester 2	Getting Contact Details For Pharma companies	1,600	\$0.04	35m ago	Preview Accept & Work
Requester 3	Ref Doc Cleanup Project 7	532	\$0.01	18h ago	Preview Accept & Work
Requester 4	Fashion Product Lookup	445	\$0.10	17h ago	Preview Accept & Work
Requester 5	Classify if the lesion is malignant.	112	\$0.05	6d ago	Preview Accept & Work

own which help them avoid requesters who have mistreated them in the past, which we discuss later in this chapter.

At its core, Mechanical Turk is a system for transferring funds to people in exchange for work done over the internet. As such, it is a system that is vulnerable to fraud. Fraud can occur when workers do not take the work seriously, or when people game the system in hopes of collecting payment. An electronic system for transferring funds can also be susceptible to money laundering. For these reasons, Mechanical Turk spends significant resources on maintaining an infrastructure that prevents fraud. Many of Mechanical Turk's rules are intended to prevent such misuses of the system, and they need to be understood in that context.

Particularly because requesters have so much of the systemic power on Mechanical Turk, they have a heightened responsibility to act ethically and to have clearly defined reasons for rejecting work (this issue is discussed in more detail in Chapter 11, which deals with the ethics of conducting research on Mechanical Turk). Ethical behavior on the part of requesters is particularly important because rejecting a HIT not only prevents the worker from getting paid, but it also harms the worker's overall *reputation*.

## HOW QUALITY IS MAINTAINED

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Data quality on Mechanical Turk is maintained by a set of rules that govern the behavior of workers and requesters. These rules apply to actions that requesters and workers can take with respect to launched and completed tasks (see Box 2.1).

### BOX 2.1 ACTIONS AVAILABLE FOR A LAUNCHED HIT

#### REQUESTER ACTIONS

*launch* - Makes a HIT live.

*accept* - Approves the work and pays the worker. Positively affects the worker's approval rating.

*reject* - Does not approve the work. Does not pay the worker. Negatively affects the worker's approval rating.

*unreject* - Reverses a rejection.

*block* - Prevents the worker from ever taking a HIT with the requester.

#### WORKER ACTIONS

*preview* - Selects the HIT from a dashboard to view the HIT's details.

*accept* - Makes the worker obligated to complete the HIT in the time allotted.

*skip* - Worker decides not to work on a HIT after previewing it.

*submit* - Marks the HIT as complete and hands the HIT over to the requester for review.

*return* - Marks the HIT as not complete. Makes room available for another worker to work on the HIT. Does not affect the approval rating. Does become part of the worker's visible record.

When workers view their dashboard, there are a limited number of actions they can take with regard to any specific HIT. Workers can sort the HITs visible on their dashboard so that they see HITs posted most recently, or those that pay the largest sum. They can also see the requesters' overall *HIT approval rate* and *Average payment review time*, by hovering over the HIT with their mouse. One action workers can take is to *preview* a HIT. Previewing allows workers to find out more specific information such as how long the task might take and whether there are any task-specific instructions. After previewing a HIT, workers can either *accept* the HIT or *skip* the HIT, which returns the worker to the dashboard. After accepting a HIT, workers can either *submit* the HIT when they are finished or *return* the HIT if they choose not to finish it. If a worker abandons the HIT, the HIT will be returned automatically after the *maximum allowable time* is reached. Once a worker submits a HIT, a requester can take one of two actions: *accept* the HIT or *reject* it (see Box 2.1).

## REPUTATION MECHANISM

When a worker accepts a HIT, the outcome of that HIT becomes part of that worker's permanent record—referred to as that worker's *approval rating*. For example, if a worker submitted 100 HITs and 10 of them were rejected, that worker's approval rating would be 90%. Mechanical Turk also keeps track of the number of HITs successfully submitted by each worker, referred to as the *number of HITs approved*. Requesters can selectively open the HIT to workers based on the number of HITs they have completed and based on their overall approval rating (see Chapters 3 and 4).

### Blocking Workers

In addition to being able to reject a HIT and not pay the worker, requesters can also *block* a worker. Blocking workers prevents them from working for the requester in the

#### FIGURE 2.2 ● DISCUSSION ON REDDIT ABOUT THE CONSEQUENCES OF BLOCKING A WORKER

**Rejection/Block Discussion** Blocked a worker, a little surprised (self.mturk)  
submitted 2 years ago by [\[redacted\]](#)

One of the workers sent a pretty rude e-mail to my staff. We didn't respond and approved his HIT, but thought we'd block him so that they can do no further HITs for us.

From the requester's perspective all we had to do was click the "Block" button.

However, after having blocked him I read through some forums that apparently this notifies Amazon and gives him some kind of warning threatening to suspend him, which is certainly not as far as we wanted to take it (just wanted him to not do our HITs or contact us anymore).

Is this true? And if so, is it salvageable? I don't want him working on our HITs but I don't want to jeopardize what could be his primary source of income! Amazon does a terrible job at telling you this, by the way.

15 comments share report

future. Critically, when a worker is blocked by multiple separate requesters, the worker's account may become permanently disabled. This would prevent the worker from using Mechanical Turk to make money, unless the block is reversed. For this reason, workers should be blocked only when a requester is certain fraud has been committed.

Worker forums make it clear that many requesters are not aware of the difference between rejecting a HIT and blocking a worker (see Figure 2.2 for an example from a Reddit forum). Requesters sometimes block workers, not realizing the dramatic effect this can have on the status of the worker's account. Rather than blocking workers, requesters should use what are called *qualifications* to prevent specific workers from participating in their studies (see Chapter 3 and Chapter 5).

### Returned HITs

In addition to a worker's approval rating, MTurk tracks other aspects of a worker's history, including how many HITs the worker has *returned*. Workers can return a HIT if, after having accepted it, they decide not to work on the HIT for some reason. Mechanical Turk also marks a HIT as returned if a worker runs out of time. Each HIT needs to be submitted within the time frame indicated by the requester. If a worker does not complete a HIT on time, the status of the HIT will be set to *returned*.

### Tracking Dropout Rates With Returned HITs

Although the primary purpose of reputation indicators is to track workers' performance history, these indicators also have methodological uses. Because Mechanical Turk keeps track of returned HITs, requesters can examine how many workers returned a HIT to determine the rate of dropout from their study. The ratio of workers who skipped a HIT after previewing it can also be a useful indicator of dropout, referred to as the *bounce rate*. While Mechanical Turk does not offer information about the dropout and bounce rates on the point-and-click graphical user interface, these metrics can be accessed through the API and through third-party apps (see Chapter 4).

### Workers' Reputation Metrics

Together, the approval rating and the number of HITs completed make up each worker's *reputation*. The mechanism by which workers establish their reputations is key for understanding what motivates workers to take each HIT seriously. Requesters on Mechanical Turk commonly recruit only workers with a good reputation (i.e., high number of HITs completed and high approval rating) (Peer, Vosgerau, & Acquisti, 2014). In Chapter 7 we provide a critique of this practice and suggest that researchers should reduce their use of worker reputation

metrics to select participants. However, because using reputation qualifications is currently the norm, a worker's reputation affects his or her likelihood of qualifying for high-paying HIT opportunities. For this reason, workers are careful to protect their reputation. Workers are often even more concerned about their reputation than about payment for any one HIT.

More than any other aspect of the platform, Mechanical Turk's reputation mechanism is responsible for its culture. Each worker's desire to maintain a good reputation increases attentiveness and data quality to levels that often far surpass those of other platforms (Berinsky, Huber, & Lenz, 2012) and undergraduate subject pools (Hauser & Schwarz, 2016).

## SELECTIVELY RECRUITING SPECIFIC WORKERS

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One limitation of Mechanical Turk relative to market research platforms is the limited ability to selectively recruit and directly screen specific participants. On market research platforms, it is common practice to have participants fill out screening questionnaires as part of a survey. Respondents who do not meet the study's target criteria are prevented from participating. This screening process makes market research platforms much more effective than Mechanical Turk at finding rare populations and sampling specific demographic segments (see Chapter 10 for an in-depth comparison of MTurk and online panels).

Selectively screening participants on Mechanical Turk is more difficult than on market research platforms because, as a general rule, MTurk workers do not like to accept HITs unless they know in advance they will be able to complete them. Telling workers about a study's targeting criteria before they accept the HIT, such as in the HIT's title or description, can lead to unscrupulous behavior (Chandler & Paolacci, 2017). Instead, two-wave studies and *qualifications* should be used to selectively recruit participants on Mechanical Turk (see next section and Chapter 4).

### Qualifications Issued by Mechanical Turk

When Mechanical Turk first launched, there were few criteria that requesters could use to selectively recruit workers. Requesters had the option to recruit workers by their approval rating, number of completed HITs, and location such as country and state. By the end of 2016, however, Mechanical Turk started to expand the range of targeting criteria. Currently, requesters can choose from multiple demographic

**FIGURE 2.3** ● **STANDING INVITATION ON EACH WORKER'S DASHBOARD TO COMPLETE PROFILE HITS**

Complete Profile Tasks to qualify for more HITs  
[Click here](#) to add or update your profile information. By providing this information, you may qualify for HITs from Requesters looking for Workers like you.

characteristics including age, gender, house and car ownership, income, employment status, and many others.

To make workers with various demographic characteristics available for different HITs, MTurk uses a qualification system. Qualifications are values assigned to workers and used to qualify them for various HITs. To assign qualifications, Mechanical Turk profiles workers by allowing them to participate in optional screener HITs (Figure 2.3). These screener HITs are always available for workers to complete and are visible on their dashboard (Figure 2.4).

While some MTurk screener HITs ask workers for their background information, others profile workers' skills. For example, a profile HIT designed to establish language proficiency may include an audio file in Spanish. Workers may be asked to answer a number of in-depth questions about what they heard in order to establish their fluency. Requesters are then able to create HITs requiring translation services that are open only to workers with Spanish language proficiency qualifications.

Premium qualifications, such as those just described, incur additional costs. Typically, the harder it is to find a group of participants, the more expensive the sample is. For example, less common population segments, such as fluent German

**FIGURE 2.4** ● **SAMPLE PROFILING HITS USED BY MECHANICAL TURK TO CREATE BUILT-IN QUALIFICATIONS**

Requester	Title
Amazon Mechanical Turk Team	Profile Information - German Fluency Evaluation
Amazon Mechanical Turk Team	Profile Information - Brazilian Portuguese Fluency Evaluation
Amazon Mechanical Turk Team	Profile Information - French Fluency Evaluation
Amazon Mechanical Turk Team	Profile Information - Chinese Mandarin (Simplified) Fluency Evaluation
Amazon Mechanical Turk Team	Profile Information - Spanish Fluency Evaluation
Amazon Mechanical Turk Team	Profile Information - Skills and Specialization
Amazon Mechanical Turk Team	Profile Information - Lifestyle
Amazon Mechanical Turk Team	Profile Information - Personal Finance
Amazon Mechanical Turk Team	Profile Information - Employment and Home
Amazon Mechanical Turk Team	Profile Information - Marriage and Family
Amazon Mechanical Turk Team	Profile Information - Basic Demographics
Amazon Mechanical Turk Team	Profile Information - Online Activity and Social Profile HIT

speakers, cost more than broader categories of participants such as men or women. This is true both on Mechanical Turk and on market research platforms. On Mechanical Turk, however, researchers have the ability to selectively target participants with two-wave studies using their own qualifications. Two-wave studies are required when a specific qualification is not available on Mechanical Turk. At times, recruiting participants via two-wave studies can be more cost effective than using premium qualifications, although not always. Additionally, as discussed in Chapter 4, third-party apps provide access to some additional qualifications that Mechanical Turk does not have.

### Qualifications Issued by Requesters

Although the range of qualifications that Mechanical Turk makes available is increasing constantly, many characteristics that a requester may want to target are not likely to be available. Requesters who want to selectively recruit workers based on characteristics that are not available on Mechanical Turk, such as race or ethnicity, can create their own qualifications by conducting two-wave studies.

For example, a requester may be interested in conducting a study with 100 male college students. This can be accomplished by conducting a two-wave study. In the first wave, a requester can open a short demographic HIT for 1,000 workers. This HIT may include as few as 10 demographic questions. When running these studies, it is good practice to include some questions that are not relevant to the targeting criteria so that workers will not know in advance what the qualification criteria are. Based on workers' responses to the first wave of the study, the requester can grant qualifications (more details on this in Chapter 3) to those who meet the criteria. Then, the qualification can be used to target only eligible participants in a future HIT. Requester-issued qualifications make it possible to follow up with specific groups of workers based on the profiles the requester has collected.

Although creating two-wave studies can be effective for recruiting some workers, it is not an efficient way to find rare populations. For example, because the base rate of multiraciality is around 3% in the United States, a researcher interested in recruiting multiracial workers may have to screen more than 10,000 workers in a first-wave study to find roughly 300 qualified workers. Due to the limits of the size of the MTurk population (discussed further in Chapters 6 and 7), it is rarely possible to recruit that many workers in a short span of time. Further, even at \$0.10 per screener, it would cost \$1,000 just to identify 300 participants,

#### Technical note

In order for a requester to issue qualifications to a worker, the worker must have already completed at least one HIT for that requester. When a worker completes a HIT for a requester it establishes a relationship between them. Prior to this, a requester cannot assign a qualification to a worker, communicate with them, or issue bonuses. Importantly, a returned HIT does not establish a requester/worker relationship.



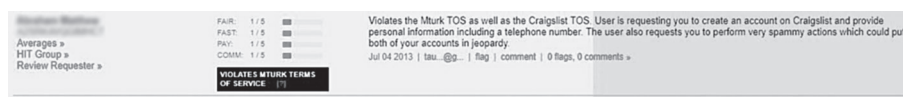
assuming that all 300 would participate in the second wave. In practice the second wave is likely to have substantial dropout, increasing the number of people who need to be screened.

Overall, the qualification mechanism is an effective tool that allows requesters to selectively recruit specific groups of workers, but with significant limitations. Third-party apps have been created to improve the ability to selectively recruit rare groups on Mechanical Turk (see Chapter 4). However, due to their ability to freely screen participants before a study begins, market research platforms remain a more versatile choice for studies that focus on recruiting specific, hard-to-sample groups (see Chapter 10).

## PROTECTIONS FOR WORKERS

The preceding section described the mechanisms Mechanical Turk put in place to protect requesters from fraudulent workers. Similarly, Mechanical Turk put other mechanisms in place to protect workers from unscrupulous requesters. Specific rules govern the behavior of requesters and dictate what requesters are allowed to ask workers to do as part of a HIT. For example, requesters are not allowed to use HITs for advertising purposes. And, generally speaking, requesters are not allowed to ask workers to download apps for fear that they may include viruses or malicious software. Requesters are also not allowed to ask workers for any type of personally identifying information. This includes names, phone numbers, or email addresses. Similarly, requesters are not allowed to require workers to provide email addresses of their friends. This puts limitations on the ability of researchers to conduct group studies. Researchers interested in conducting studies with groups of workers such as coworkers or multiple family members need to be mindful that asking workers to provide email addresses of others violates Mechanical Turk's terms of service. Many workers take these rules seriously, as can be seen in the feedback that workers leave on Turkopticon (Figure 2.5), a forum for workers to leave feedback about requesters and HITs. Requesters who require workers to provide information that is against Mechanical Turk's terms of service are often reported to other workers and to Mechanical Turk. The potential consequences of violating MTurk's rules are that the requester's account may be suspended.

**FIGURE 2.5** ● A WORKER'S NEGATIVE FEEDBACK ON TURKOPTICON REGARDING TERMS OF SERVICE (TOS) VIOLATIONS



Practically speaking, there are many exceptions to the rules that govern requesters. Starting in 2015, Mechanical Turk began allowing requesters to run studies that required workers to download certain apps, especially those commonly used for research in the social and behavioral sciences. For example, Inquisit software is commonly used to collect millisecond-precision reaction-time data over the internet, and requesters can feel safe asking workers to download the Inquisit app. It is important, however, for requesters to let workers know about requirements to download software as part of the instructions that are visible in the HIT preview window rather than after workers accept the HIT.

Mechanical Turk does not provide a clear definition of what it considers to be personally identifiable information (PII). Names, addresses, and emails are clear examples of PII, but determining what qualifies as PII is less clear in many other cases. For example, a person's voice can be used to uniquely identify the individual and may thus be considered PII for some purposes. It is also unclear whether video interviews on Mechanical Turk are considered PII. It is likewise not uncommon for requesters to ask workers to give them access to their personal databases such as their Twitter accounts or Fitbit databases (Braithwaite, Giraud-Carrier, West, Barnes, & Hanson, 2016; Brinton, Keating, Ortiz, Evenson, & Furberg, 2017), which may provide identifying information.

On a practical level, the most important consideration for a requester should be the workers' comfort level in providing such information. Requesters need to be careful not to create HITs where workers will be surprised by what they are required to do after accepting the HIT. When workers find out they have to download an app or provide personal information after they have accepted a HIT, their only options are to do something they are uncomfortable with or return the HIT. However, if workers are able to understand a HIT's requirements in the HIT preview window, they can skip the HIT without any consequences for their reputation. For this reason, requesters should strive to carefully and clearly describe their HIT's requirements in the HIT preview window.

### **Anonymity and Worker IDs**

Because Mechanical Turk does not allow requesters to collect personally identifiable information such as email addresses, it includes a mechanism that allows requesters to interact with workers through what are referred to as *worker IDs*. Worker IDs preserve workers' anonymity while allowing requesters to contact and interact with specific workers.

Mechanical Turk provides each worker with a unique worker ID. This ID is linked to the worker's personal Amazon worker profile. The full profile, which includes PII provided by the worker when signing up for an account and is managed by

Amazon, is not available to the requester. When workers initially join Mechanical Turk, they have to provide Amazon with personal information including their name, address, email, banking information, and Social Security number, for fraud prevention and to facilitate monetary payments. All this information is hidden from requesters. This allows requesters to keep track of which workers submit their HITs without collecting personal information about those workers. (Worker IDs are not perfectly anonymous and are considered PII by some institutional review boards. This problem and potential solutions are discussed further in Chapter 11.)

## COMMUNICATING WITH WORKERS

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Through the MTurk interface, requesters can use MTurk worker ID's to invite workers to future studies by setting up qualifications based on previously completed studies. This mechanism allows requesters to conduct studies anonymously. Requesters can send a message when they bonus a worker for a completed study. Without third-party applications such as CloudResearch, requesters have no other way of messaging workers unless workers contact them first. Workers can email requesters about any particular HIT by clicking on "Contact This Requester" under HIT details. If a worker decides to email a requester via MTurk's communication system, the worker's email account and associated name will automatically be visible to the researcher in the email that the researcher receives. Researchers are then able to reply.

## A WORKER'S PERSPECTIVE

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### Creating a Worker Account

At this point, we recommend that you create a Mechanical Turk worker account if you do not already have one (<https://www.mturk.com/mturk/welcome>). Completing a few HITs as a worker can help requesters understand the user experience from the workers' perspective. Posting a HIT on Mechanical Turk can be thought of as putting an advertisement on the Mechanical Turk workers' dashboard. To do so effectively, requesters should become familiar with the dashboard, including factors that affect the visibility of HITs.

### The Dashboard

When workers log in, they are immediately brought to the dashboard, where they can view the HITs that requesters post (see Figure 2.1). The dashboard contains a worker-specific list of all HITs that are available to a specific worker on Mechanical Turk. Other

HITs that exist but that the worker is not eligible to take will not appear on that worker's dashboard. Workers are ineligible for a particular HIT if they do not have the required approval rating or if it requires specific qualifications the worker does not have. For example, in Figure 2.1, the dashboard indicates that there are 448 available HITs. These are the only HITs that this specific worker can view. The actual number of HITs being conducted on Mechanical Turk at that time is likely significantly higher.

### How Workers View and Choose Their HITs

The dashboard has six columns: the name of the requester, the title of the HIT, the number of assignments available for that HIT, how much the HIT pays, the date on which the HIT was created, and an *actions* column. In the actions column, the worker can preview the HIT and/or choose to accept it. The requester inputs the title, description, time allotted, expiration date, payment, and number of assignments of the HIT when creating the HIT (see Chapter 3 for more details).

### Sorting and Finding HITs

The list of HITs on the dashboard can be sorted based on the reward and date created columns. Studies show that workers commonly sort HITs based on these columns, increasing the likelihood of certain HITs being more visible (Chilton, Horton, Miller, & Azenkot, 2010). Workers tend to sort HITs based on whatever options are available. For example, in the past it was possible to sort HITs based on the title. This made HITs whose title started with the letters *a* and *z* more likely to be previewed and accepted by workers (Chilton et al., 2010). Workers look to the title of a HIT for other information that they use to decide whether to accept a particular HIT (see Chapter 3 for best practices).

The most common way that workers sort HITs is based on reward. This allows workers to quickly identify the highest paying opportunities. As such, high-paying HITs are likely to be seen first and fill up the fastest. In addition, highly experienced workers have other tools with which to find high-paying HITs, including extensions developed for workers and forums where good HITs are shared (see "Worker Communities," later in this chapter). For example, a Reddit group called "HITs Worth Turking For" ([www.reddit.com/r/HITsWorthTurkingFor](http://www.reddit.com/r/HITsWorthTurkingFor)) posts many of the available high-paying HITs. Experienced workers who keep track of HITs on Reddit are likely to find high-paying HITs first, before they reach the targeted number of workers. As a result, HITs that pay more are more likely to be taken by fairly experienced workers, thus potentially biasing the sample toward those workers (see Chapter 7 for a full discussion).

Workers also sort HITs based on the launch date. The dashboard contains a list of all HITs that are available on Mechanical Turk. Workers can choose to filter the HITs visible

on their dashboard so that HITs they are not eligible to take do not appear. Requesters who need many participants to take their HITs should stop the HIT after one or two days, copy it, and resubmit it to bring it to the top of the queue. This will make the HIT more visible to workers (see Chapter 4 for more on this).

### Previewing a HIT

The last column on the dashboard is the *actions* column. In this column a worker can *preview* or *accept and work* on the HIT. Clicking on the preview button will take the worker to a HIT preview window. Accessing the preview window does not mean that the worker has accepted the HIT. Here, the worker will see a more detailed description of the HIT. In order for the worker to officially start working on the HIT, he or she will have to accept it by clicking on the accept button.

Mechanical Turk contains two kinds of HITs: internal HITs and external HITs. Internal HITs are HITs that are hosted entirely on Mechanical Turk itself. Such HITs are designed with one of several Mechanical Turk templates that are available to requesters (see Figure 3.9). These HITs will be visible in their entirety in the preview window and can be worked on directly on Mechanical Turk. External HITs are housed on third-party software platforms such as Qualtrics or SurveyMonkey. For external HITs, the preview window will contain a link that will take the worker out of Mechanical Turk to the platform hosting the survey.

The information reviewed above is all the information that workers can get about HITs on Mechanical Turk. However, over the past several years, worker communities have developed where workers share information about HITs, requesters, and how to optimize the worker experience on Mechanical Turk. Extensions have also been created that give workers more flexibility in navigating the process of finding and accepting HITs. These extensions are highly popular among workers, and the way they are used impacts the composition of samples (see Chapter 7).

## WORKER COMMUNITIES

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The MTurk community consists of a diverse group of people (see Chapter 6) who work on HITs for a variety of reasons. These reasons range from earning a primary income, to making some extra money on the side after a long day at work, to the enjoyment some people receive from completing surveys that help them learn more about themselves (Paolacci, Chandler, & Ipeirotis, 2010; Ross, Irani, Silberman, Zaldivar, & Tomlinson, 2010; Staffebach et al., 2014). Some workers gravitate to forums where they post about many topics relating to work on Mechanical Turk. These worker forums act as a community center of sorts, allowing workers to talk about issues they find important. Common

topics include worker rights, advice about which HITs to take and which to avoid, and guidance on how to interact with requesters. There is no single website with which all workers affiliate. Rather, a variety of websites host messaging forums, and workers choose which of these they visit and are active on. Each of these forums has a unique flavor, and they have different balances of what workers post about. The review that follows here focuses on the different worker communities that gather and a few main purposes these communities serve. The discussions on these forums provide insight into several important topics, such as the way workers find and accept new HITs and the importance of requesters' reputations in this selection process.

## Forums

Multiple websites host forums that are used by MTurk workers. Most of these websites are created specifically for MTurk users (e.g., <http://www.mturkcrowd.com/>, <https://turkerhub.com/>, <http://www.mturkforum.com/>, <http://turkernation.com/>, and <https://turkopticon.ucsd.edu/>), while others are popular websites, such as Reddit, that have developed forums for the “turking community” (<https://www.reddit.com/r/mturk/>). Some of these forums are also used by requesters, but here we focus primarily on the ways that workers use these spaces.

Like most forums, worker forums contain many *threads*, or pages for people to post on and read information about specific topics. Most of these forums have threads dedicated to topics such as worker help, how-to's, daily available HITs, and worker scripts/extensions. Additionally, users can be found commenting on current events, sharing inspirational memes with each other, or wishing other forum members “good hunting” on Mechanical Turk. Workers usually *do not* post information revealing details of the content of a HIT, but they may do so for various reasons if they feel they want to share something. It is difficult to estimate the number of workers who read or post on forums, and some forums are much more active than others. One of the most popular forums is hosted on <http://www.mturkcrowd.com/>, which often has more than 30,000 views and 1,000 posts on a given day, on a single thread. These forums are used by a wide range of workers, some of whom are new to the world of Mechanical Turk and are looking for advice, and others of whom have taken thousands of HITs and give lots of advice. Users on these forums have profiles, with avatars (an icon or figure representing them as part of their profile) and some information about their turking activities (number of HITs taken, total earnings on Mechanical Turk) and contributions to the forum (number of posts, popularity of posts, etc.). As in other online forums and communities, individuals are unique, creative, and often quite expressive.



## Workers' Opinions About Forums: A Demonstration of Data Collection on Mechanical Turk

As our first demonstration of data collection on Mechanical Turk, we created a HIT in which we asked workers to read this chapter's section about worker forums and to provide feedback, as mentioned earlier in the chapter. Box 2.2 shows several of the open-ended responses. As can be seen, worker responses were intelligent, thoughtful, and helpful. In many cases they disagreed with us or qualified our descriptions. In other cases they agreed. As always, open-ended responses will lead to a range of diverse opinions, and interpretation requires a sound data-analytic approach. At a high level, however, these results demonstrate how easy it is to get fast and high-quality open-ended opinions on Mechanical Turk. Such open-ended responses can be harnessed for questionnaire development, as in, for example, one of our recent studies about the experiences of sexual abuse survivors (Schnur et al., 2017). We encourage researchers to post their own questions to workers as a way to get answers to questions they may have about workers' experiences and, more broadly, to explore the power of Mechanical Turk for open-ended research.

### Worker Help/How-To's

Among both workers and requesters, there is a wide range of expertise in how to use Mechanical Turk. Most of the time, creating an MTurk account is easy, but understanding the platform and using all its available resources is much more challenging. Workers use forums to learn how to use Mechanical Turk more efficiently and to discuss topics of concern. Here is a sample of the kinds of issues that are addressed on multiple forums:

- New user questions
- Guidelines for your first 1,000 HITs
- What are the best scripts/extensions I can use to find good HITs faster?
- Scripts/extensions help
- Masters qualification information—all you need to know
- Who are some requesters that post great HITs?
- How do I contact a requester?
- What can I do if a requester rejected me for no reason?
- How do I report my income for tax purposes?
- What other websites can I earn good money on?

**BOX 2.2 WORKERS' COMMENTS AFTER HAVING READ PARTS OF THIS CHAPTER****Reviews of our descriptions of online worker communities:**

- “This is a pretty accurate description of the forums. I visit mturkcrowd.com and view the daily thread constantly throughout the day while I’m working. It helps me find hits that I might have missed and it’s nice to read what others are chatting about.”
- “The paragraph defines PII to include e-mail addresses, but I do not view an e-mail address as necessarily personally identifiable. For example, I created a random e-mail address for MTurk purposes that is in no way connected to me. I also disagree with some of the editing of the paragraph, like cut-off words or other small grammar issues, as it detracts from the statements being made. As to creating HITs that clearly indicate what might be required of a worker, I agree with that point. If a worker fully previews a HIT before accepting it, chances are the HIT will no longer be available by the time the person tries to accept it. Accepting a lot of HITs with acceptable pay often involves an ‘accept first, return later’ policy.”
- “I do think requesters should detail things clearly so workers can see before they accept hits. I’ve run into several hits that I didn’t realize required microphone or webcam and I just return them. It’s a minor annoyance since it wastes a couple seconds but nothing too bad. Returning a hit doesn’t really affect me since I never cap out at 3800 hits per day (returns count as one of those 3800 I believe), and return rate is an unused metric by requesters.”
- “Although these websites have thousands of views a day, it is still important to remember that the number of unique views would be a lot lower. Workers on these websites tend to visit many times a day

throughout the day, looking for hits and chatting with other workers.”

**We asked workers to write their own paragraph on the topic:**

- “Any personal identifying information pertaining to the worker should be guaranteed private unless if the worker has beforehand agreed and clearly understood what information they’re giving away in the task. The requester needs to clearly explain in the task title and description what information they’ll be asking for.”
- “It is important to know that the mTurk community is very divided on this. Some want a nanny workplace, where everything is followed to the tee. Where there are tons of things considered as PII and those things are not posted ever! If they are, then ALL workers must report them as soon as they see it. On the other hand, there are many workers who feel that it is not Amazon’s right to tell a worker what they can do and not do in this area. It seems to be more reasonable, though, to allow workers to decide. That way there is choice in the matter. If you don’t like it, don’t do it.”
- “While these [forums] are useful and at times fun resources of information about MTurk it is important to not just believe everything that you read. Many people will suggest the wrong thing to do in any given situation or bad-mouth a requester who’s good leaving out the things that they did wrong and are at fault for. You should always make sure to form your own conclusions.”
- “It is important to respect workers’ rights while creating these HITs. One of the most important ways to respect workers is to take their time into consideration. If a worker is ten minutes into a twenty-minute survey and find out that they

*(Continued)*



**BOX 2.2 (CONTINUED)**

have to download software that they are uncomfortable downloading, they would be forced to return the HIT and thus lose the compensation that they would have acquired up until that point. Not only is that unfair to the worker, but they are likely to complain about the HIT and the requester on one of the numerous Mechanical Turk forums and review sites, which could have detrimental results for the requester.”

- “Workers rarely have interaction with others, with the rare exception of ‘group HITs’ where they will occasionally work with another worker to complete a task. Most of the time, they are completely on their own. These forums can help amend the isolation that comes with working from home.”
- “A worker is much more likely to complete a HIT with accurate and good data if they are both compensated fairly and feel they haven’t been taken advantage of. There are far too many requesters on Mechanical Turk that want to get information for absolutely no money.”
- “Forums are also great learning tools for new workers as most people there are willing to give some guidance. It’s also a nice relaxing place to chat or just read things when work is slow.”
- “These websites can help new workers feel more comfortable with using Mechanical Turk. Here they can get advice about what requesters they should avoid and the best kind of surveys they can do. Additionally, it is a place for some workers to let off steam after being ‘burned’ by a bad HIT or requester. Although these workers talk about the general experience of a HIT, it’s important to note that they never release confidential information about the HIT itself in these forums.”

**We asked workers to tell us more about scripts and apps they use:**

- “Scripts are absolutely essential for working on mTurk as they speed up your overall rate of work considerably. I did not see scripts for specific (often recurring) hits that do things like pre-select radio buttons or assign hotkeys to select things. These will allow you to do HITs faster, boosting your income rate. Often times they reduce strain on your hands as well by reducing the amount of clicks or keystrokes you need to make.”
- “It is very important to assure that workers are not taken advantage of by requesters. If a requester gives an unfair rejection or unfair pay level, it’s important that other workers know that information.”
- “These extensions are very important. If you do not utilize at the very least an extension to filter HITs more efficiently and to use the PANDA feature you will be at a large disadvantage since there is so much competition for the work and you will miss out on most of the good work in my opinion.”
- “There are certain scripts or extensions that aid workers to find HITs with more ease and convenience compared to looking manually for HITs. There are different kinds of scripts to choose from that generally do the same thing, but they still have their nuances that sets them apart from one another.”
- “There are also add-ons for established scripts. For example there’s Panda Crazy Helper that allows you to create a panda with one click on a separate page. Also, there’s scripts that store every HIT you’ve ever done and give the worker projected earnings for the hour, day, week, or even month.”

*(Continued)*

## BOX 2.2 (CONTINUED)

- “These scripts can help create a competitive environment for workers to obtain work, although it does make it hard for newcomers to come in. Because requesters are able to set qualifications for workers, it can be difficult for newcomers to be able to achieve a strong starting wage, especially when they are capped at a certain limit of HITs that they can do per day.”

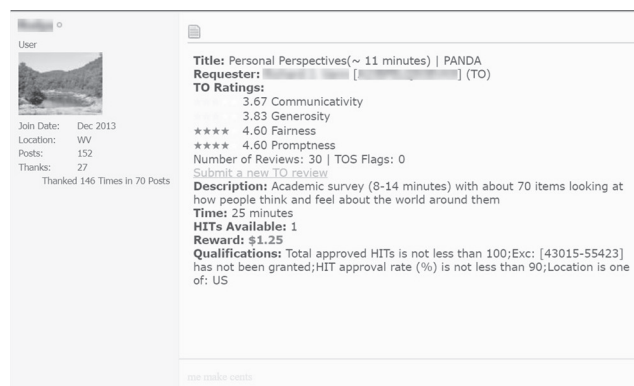
Workers seek advice on these forums from current workers about their practices and behaviors, and these threads also shape the behaviors of workers to come who will refer to guidelines laid out in these how-to sections.

### Daily Available HITs

Figure 2.6 shows a post made by a worker who wanted to share a HIT that other workers might want to take. This post shares information about the HIT, including the worker’s previous experience with this requester, the description of the HIT on MTurk, as well as the time the requester reported the HIT will take, the number of HITs available, payment, and qualifications required to take the HIT. Posts also commonly have live links to the actual HIT, the requester’s MTurk profile including a list of HITs currently available to a worker, and the requester’s Turkopticon (TO) profile, which has more detailed information on the requester provided by workers who had taken their HITs in the past.

A worker will typically share HITs with others if the HIT has one of several characteristics: the HIT was enjoyable or interesting, relatively easy, paid well for the time it took, had great opportunity for bonuses, or was posted by a requester who has a

**FIGURE 2.6** A TYPICAL HIT SHARED BY A WORKER ON THE DAILY AVAILABLE HITS THREAD



good reputation for treating workers well and posting good HITs. Importantly, when workers share HITs in this fashion, they do not need to manually enter all of this information into their post. The information is generated for them by the same apps they are using to find and accept HITs. Often, workers add their own descriptions of the HIT, letting users know how long the HIT actually took them or how much writing the HIT involved. These descriptions give other workers even more information to decide whether or not they would like to take the HIT themselves.

## Worker Scripts/Extensions

Although the worker dashboard provides the basic features necessary to find and accept HITs, a number of additional features are made available to workers through scripts or extensions that take advantage of Mechanical Turk's powerful API. Using these scripts is similar to the way that requesters use the API and third-party platforms to increase Mechanical Turk's effectiveness (see Chapter 4). Scripts and extensions provide many features for workers that broadly fall into the following categories: (a) information about a requester's HIT history, (b) automatic HIT finding and accepting, and (c) a more detailed worker interface for tracking HITs and daily progress.

Information about requesters is collected through the reviews workers leave using the Turkopticon extension. This information includes ratings of each requester's *communicativity*, *generosity*, *fairness*, and *promptness*, as well as more detailed, written reviews posted by workers in the past. Turkopticon is one of the most widely used extensions and is connected to many other extensions that automatically import requester ratings into HIT previews workers see while looking for HITs to accept. This detailed HIT description can be seen in Figure 2.6 and is also available for export from workers' advanced HIT preview screens, allowing workers to share great HITs with others on forums.

Scripts and popular extensions such as MTurk Suite, HIT Catcher, and PandaCrazy help automate elements of previewing and accepting HITs, making this process easier for workers (see Kaplan, Saito, Hara, & Bigham, 2018). The most popular use of these scripts appears to be for grabbing HITs that are returned by workers who did not complete them. If a user sees a HIT that she wants that is no longer available, she can create a preview and accept (PANDA) script for this HIT, or rely on an extension to do this for her. This is particularly useful for grabbing HITs the instant they are returned by someone who accepted but did not complete it, and for HITs that requesters update to gather more responses to. Some PANDA scripts report the capability to grab HITs before they ever appear on the search page. Extensions also can automatically refresh HITs, allowing a worker to grab a HIT the instant it becomes available. Additionally, extensions can automatically search for HITs that have certain characteristics a worker

can select for, including based on reward, number of HITs available, Turkopticon scores, and qualifications, making HIT finding fast and precise. For \$10 a month, there is even a desktop application called Turkernator, which some workers use to grab the HITs they want quickly and simplify their workflow.

These scripts and extensions likely play an important role in some of the effects researchers are finding relating to differences in what kinds of workers accept their HITs. For example, some research has found that the kinds of workers who take HITs right after they are published are different in some ways from workers who find HITs later (Casey, Chandler, Levine, Proctor, & Strolovitch, 2017). This is likely related to the fact that “superworkers” use these scripts to find high-paying HITs shortly after they are published (see Chapter 7).

## CONCLUSION

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The need to maintain standards of high data quality and to prevent fraud has led Mechanical Turk to create a system in which requesters have disproportionately more control over approving submitted HITs. This power imbalance may be expected to lead to abuse. However, requesters who engage in such practices will find themselves blacklisted on worker forums, which means their HITs will be less likely to attract high-quality workers. Researchers in the social and behavioral sciences are motivated to engage in practices that maximize the likelihood of collecting high-quality data. Requesters recognize that fair payment practices are likely to motivate more workers to participate in their studies, likely leading to increased external validity. These factors exert market pressure on requesters to treat workers fairly, leading to a more balanced requester-worker power relationship.

Empirical data support the view that most requesters act responsibly toward MTurk workers. For example, the rate at which academic requesters reject HITs is just under 0.03% (see Chapter 11). There is thus no evidence that requesters are taking advantage of their ability to reject work. Indeed, evidence suggests that the wages on Mechanical Turk have been increasing steadily over the past two years, as discussed in more detail in Chapter 11. Thus, although an unregulated marketplace that favors the employer has the potential to result in unfair practices, it appears that some of the aforementioned forces have largely buffered Mechanical Turk from this kind of abuse.

Overall, Mechanical Turk is a unique economic ecosystem with characteristics that are of considerable scientific interest in and of themselves. The dynamics of the requester-worker relationship should be monitored closely in the future, both for its scientific value and for the practical insights that requesters can glean about conducting their research on Mechanical Turk.

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