Cheaters, Bots and How to Beat Them

Cheaters and Bots are the unappealing face of research fraud. Unfortunately, it's a well-known problem. In this whitepaper, we discuss the following issues:

- The scale and nature of the problem, and how it affects diabetes patient research
- dQ&A's approach to ensuring >99% quality, and its methodology for detecting fraud in panels and surveys
- dQ&A reject rates for consumer panels and its own proprietary diabetes patient community
- "Panel Power" – how panel efficiency drives better insights
- Why research consumers should know their vendors, know their respondents and know what questions to ask

dQ&A

804 Haight Street, San Francisco, CA 94117 | www.d-qa.com

Introduction

The issue of data quality and fraud in market research has been a persistent concern for well over a decade, and most industry professionals are more than aware of its existence. Fake consumers - who use bots and now AI to increase their efficiency - take surveys for the money, causing havoc with the validity of results. The problem has been significantly exacerbated in recent years by cheaters' easier access to online panels, the proliferation of software enablers, and the advent of artificial intelligence.

For research involving people with diabetes, the scale of this problem is significant. dQ&A's screening of the major consumer panel providers suggests that between 70%-90% of commercially available diabetes sample is unreliable. We are also aware of real-life examples from our clients who purchased projects from their usual market research providers, only to find that their initial insights were invalid because of tainted responses.

dQ&A has a commitment to people with diabetes to ensure that their authentic voices are represented to the decision makers who create their therapies and devices. Many of our team members have diabetes themselves or have a loved one who lives with diabetes.

Our approach at dQ&A was born out of practical concerns with online consumer panels, which were neither able to deliver the sample sizes we needed, nor to guarantee authentic respondents. From the outset, we designed our approach to address these shortcomings. We took the view that only a carefully curated proprietary panel could ensure data quality, so our recruiting is invitation only, and we continuously validate all responses from our panel members, such that respondent quality gets better over time. As we will discuss in this whitepaper, this leads to a stark contrast in performance to that of typical consumer panels. And, although it's not the main focus of this paper, we've also found quality issues with healthcare professional sample as well.

If you are a consumer of diabetes research insights, then it is perfectly reasonable to worry about the validity of your conclusions. It should be your expectation that your research provider is working very hard to ensure quality. And it is quite legitimate to ask tough questions of them.

If you are concerned about this issue, or pressure of work means that you simply don't have the headspace - then please consider calling dQ&A. We would be delighted to partner with you to solve your diabetes business problems.

The Nature of the Problem

As a critical mass of consumers moved online in the early 2000s, researchers saw opportunities to innovate with new methods while cutting costs. But the anonymity of the medium soon encouraged fraudsters to claim unearned incentive fees and undermine representivity and truth.

Even legitimate respondents have a survey timeframe during which they will answer truthfully and fully. After that, they are tempted to 'straight line', miss questions or simply not read the rubric carefully. More motivated cheaters use bots and AI to simulate real survey takers. Initially, it was simple to screen out 'straight liners' and bots making random responses. But the behavior of the bots has become increasingly sophisticated and realistic, while AI delivers convincing-sounding write-in responses. Some research organizations use screener questionnaires designed to trap the bots, but often the fraudsters have a human being take the screener to get admitted to the panel, and then have a bot answer subsequent survey invitations. Professional market research companies have not rested on their laurels and employ a range of clever techniques to validate respondents. But it is fair to say that a technology 'arms race' has sprung up between the cheaters and the panel companies.

In the modern environment, consumer sample vendors are interlinked through a complex API chain, to ensure they have the best chance of fulfilling their client requirements. If a client hires a research partner who then obtains sample through a third party, it might in reality be sourced from a "fourth party". As sample becomes commoditized through the use of this technology, there are fewer opportunities to actually know the respondents themselves, and a decline in the belief that they are a key stakeholder in the process. This complexity and opacity is a gift to the cheaters.

Evidence for Fraud in Consumer Panels

In 2020 and 2021, EMI Research conducted a study into fraud and fraud detection in consumer panels. These are the same panels that people with diabetes are often sourced from. They asked nine commercial panel vendors to field a short survey to measure the awareness of the Coca-Cola brand in the USA, (which of course is extremely high – usually taken to be >95%). There was no screening of the respondents. In 2020, the nine vendors had different responses ranging from 79% to 94%. In 2021 the range was 69% to 94%, but importantly, there was poor consistency across the same consumer panels less than a year apart. These results strongly suggested a major presence of cheaters in the panels and the fact that panel members turned over very quickly.

For over five years, dQ&A has screened sample from commercial vendors using an intensive methodology (described later). The results are disturbing – we would reject around 90% because we believe they are suspicious or probably fraudulent respondents. Figure 1. shows that across seven vendors in the USA and Europe, our reject rate is between 77% and 94%.

None of this means that it is impossible to obtain high quality results in diabetes market research if third-party sample is used. It just requires significant focus, hard work, and all too often, re-work. It also takes an understanding of diabetes to screen answers for common sense, and to have had the experience of how both valid and invalid respondents typically answer.

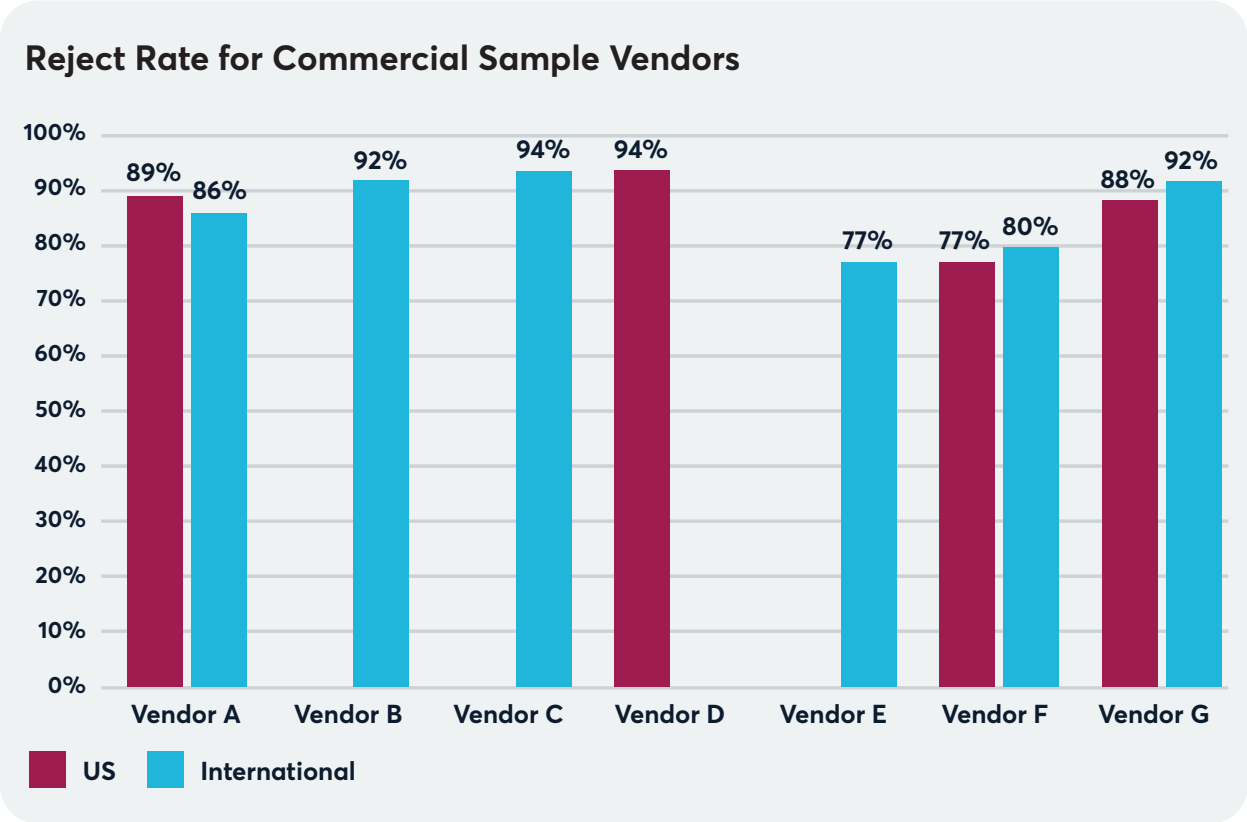

Figure 1

Given that there is always a concern that insights can be unreliable, research consumers should **be prepared to ask their researchers questions** such as:

1. Was third party sample used?
2. How can we trust it?
3. What respondent screening was performed? How does it work?
4. How much fraud was detected in the original sample?
5. How were survey results Quality Controlled?
6. Can I read all the write-ins?

The dQ&A Approach to Quality Assurance

From the outset, dQ&A took the view that the best way to win the cheaters and bots arms race was not to participate in the battle, by curating our own "walled garden" – a proprietary panel of a manageable size that has excellent quality and validity. Our concept was that by retaining panel members for as long as possible, surveying them often, learning as much as we can about them, and vetting their behavior continuously, then our patient community will end up including only trustworthy people. By reducing the turnover of the panel we can also ensure consistency, track data over time, and curate the panel to deliver representative responses.

Another key difference with dQ&A is that we principally conduct diabetes research and have extensive experience in that area, rather than being a generalist. This ensures that we can recognize the answers that don't make sense and spot the typical answer patterns of illegitimate respondents.

Of course, every panel has to be initially recruited and then needs a certain amount of ongoing recruitment. At dQ&A we have always avoided 'open recruitment' (e.g. a signup box on a public website that says 'earn money by taking surveys'). In contrast, we find legitimate diabetes communities and partner with them. Over the years, we've invested in building a strong partner network that consistently delivers better quality community members.

Because we operate a smaller, higher quality panel, our respondents are retained for a long time (we've had hundreds of people stay with us for over ten years). They also take more surveys per year. We have developed a screening methodology that we apply not only to new participants but to every survey taken by every community member. We also start by asking them for dozens of pieces of information about themselves, which we track over time. This extensive profile makes it easier for us to validate real people with diabetes.

An important part of our work is to study specific sub-groups of the diabetes population (e.g. type 1 kids, type 2 CGM users not taking insulin etc.). For this reason, we make sure that the community is large enough to have good statistics on these sub-groups, and because we know the various characteristics and demographics of our members really well, we can also ensure that it is representative at the sub-group or even the entire population level.

Our panel is trustable because of the care we've put into curating it:

- **Proprietary** panel – nobody else can use it
- No open enrollment - recruited **by invitation only** from legitimate diabetes communities
- **Continuous screening** – every person, every survey
- Our **diabetes expertise** makes it possible to identify cheaters based on the nature and patterns of their responses
- **Dozens of data points** about each person – that all need to make sense and remain logical over time
- **Every panel member** checked by hand
- Low turnover
- **Representative** at the sub-group and population level
- Over time, our **panel quality and validity increases**

Quality Assurance

As mentioned above, we've developed an approach to screening people with diabetes that we use to ensure quality. We not only use it the first time we meet a potential new community member, we use it every time. We also use it to screen third party sample.

Some elements of our approach are industry standard, such as "Turing Tests" – tests designed to catch bots who answer questions randomly or don't understand the nature of the topic. For example, a test would require a respondent to answer an obvious question (what color is the sky?), or it would include items that make no common sense in a pick list. There are many other standard techniques in our arsenal (such as detection of suspicious timing, straight-lining etc).

Simple Turing Tests used to have a significant reject rate with commercial sample, but with the advent of AI have become less effective. We've also discovered that some healthcare practitioners (or bots pretending to be doctors) use AI to generate write-in responses. For this reason, our screening tests incorporate AI - to catch AI!

But what delivers extra discriminatory power is our knowledge of diabetes and our many years of conducting diabetes surveys. Since the respondents have predictable healthographics and typically answer with certain patterns, we are able to use a sophisticated approach to score deviations from what would be expected in a particular situation. In some cases, it is clear that a person doesn't have diabetes (based on a contradiction or set of inappropriate behaviors) and in other cases, there are clear suspicions raised. We include flags for a multitude of circumstances. For example, we've caught cheaters because of unrealistic height and weight, inappropriate timing of insulin administration, claimed use of unavailable medical devices, unusual BGM use, unrealistic A1c goals – and many other more subtle 'tells'.

When enough suspicion occurs, we ask a human being (often someone who has diabetes) to look at all the relevant information holistically (including previous behavior) and make a risk-based assessment. Naturally, we tend to take a risk-averse approach, since we are not willing to compromise on the value of our insights.

We screen our respondents into specific groups:

Not to Specification	Admits to not having diabetes, the appropriate geography or any major requirement. Typically sample providers supply respondents to a particular specification. This test simply checks that the person meets the requested description.
Duplicate	We sometimes see a small number of duplicates – we have excluded them from our statistics below.
Not a Human	If a respondent fails one of our Turing Tests, or behaves completely inconsistently with human responses, then we have caught a script or a bot.
Proven Dishonest	If their answers to diabetes questions don't make sense, then we can be sure that they don't have diabetes. (There can be false positives, but we double check carefully).
Highly Suspicious	Their pattern of disease, types of therapies, device usage, and answers to other questions, would be highly atypical for a person with diabetes. (Again, we double check carefully for false positives).
Unsure	We have some degree of suspicion, but doesn't meet the threshold of 'highly suspicious'
Acceptable	We believe them to be legitimate respondents.

Commercial Sample Statistics

We prefer to use our proprietary communities in the USA and Europe to conduct our research when we can. However, we occasionally choose to purchase external sample. It's fair to say that purchased sample is only a tiny minority of the data we collect. Nonetheless, it represents a lot of extra work in ensuring quality. We've worked with all the well-known sample providers in healthcare market research to understand the nature of their panels and to determine the dQ&A reject rate.

Sample Statistics for Third Party Panels 2023/24

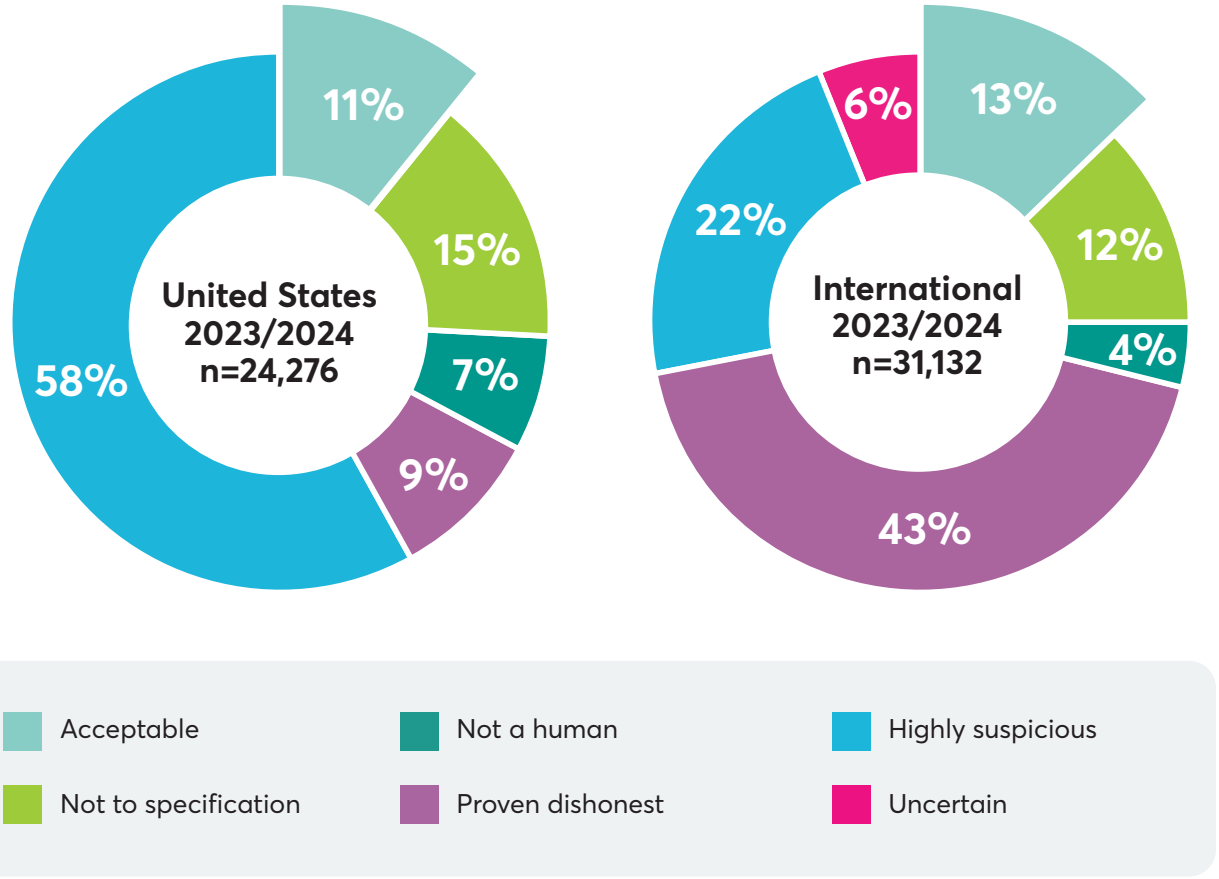

Figure 2

Figure 2 above shows quality statistics for 2023-24, aggregated from a range of providers for both US and European people with diabetes. Our reject rate is 87%-89% - or about seven respondents for every eight we screen.

Consumer Panel Reject Rate Over Time

n=60,766

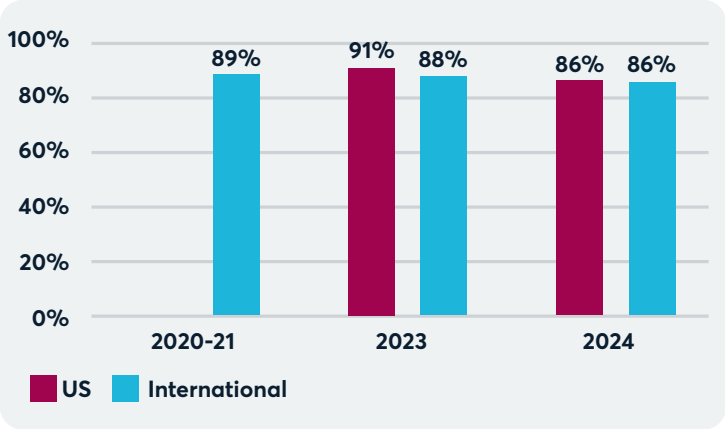

Figure 3

Comparison of dQ&A and Third Party Panel Reject Rates

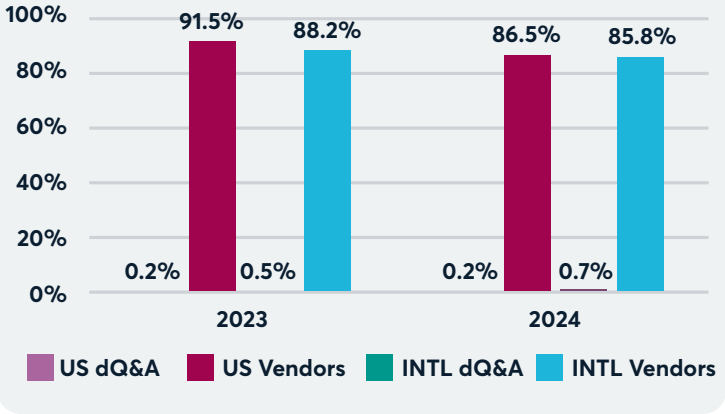

Figure 4

dQ&A Respondent Reject Rate

dQ&A Only

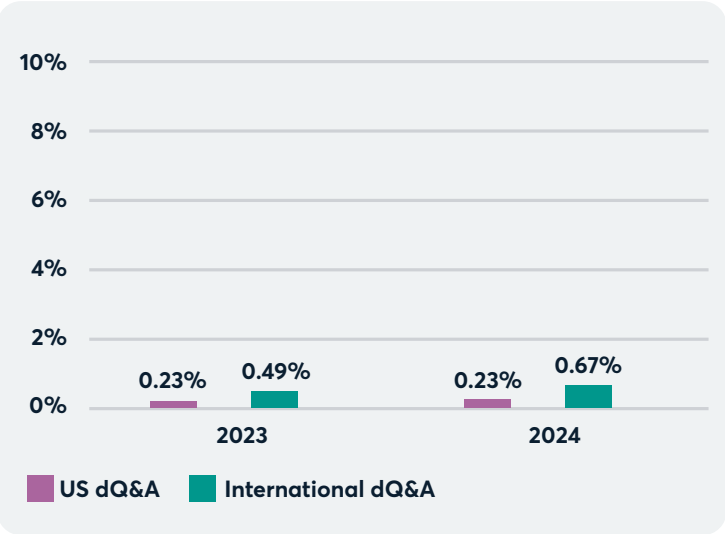

Figure 5

Figure 3 shows the progression of reject rates over the last five years from commercial consumer sample. Although the challenge has evolved over that time, the reject rates have remained in the same ball park. Given the large sample, the data does suggest a slight improvement in quality – but not particularly meaningful in our context.

By contrast, when we apply **exactly the same screening methodology** to surveys taken by people previously invited to the dQ&A panel, we get the inverse result. Instead of rejecting around 85%, we reject only about 0.5% (Figure 4).

We typically have higher reject rates in our European patient panel (UK, Germany, France, Italy, Spain, Netherlands, Sweden), see Figure 5, but we can still confidently use over 99% of the responses by our measure.

The conclusion of our research on consumer sample is that it's the Wild West out there.

This is not really a surprise – when we founded dQ&A in 2009 we knew that we would have to create our own high-quality panel. Simply by making the people who take our surveys our primary focus, we have been able to create a consistent group of legitimate respondents who accurately represent the populations we seek to understand.

Panel Power

In this paper, we've discussed the implications of having invalid respondents take a survey. The damage caused or the time and money wasted if they accidentally slip into the results set can be considerable. Our clients pay us for trustworthy results that they can use confidently to make important business decisions. So it's our job to ensure quality.

But another implication of owning a high-quality panel is efficiency, which is passed on to our clients in terms of time saved and a focus on what's important. In our projects, we spend very little time finding the respondents or conducting quality control, so we can focus on optimizing the research methodology and delivering actionable answers.

We define the term "Panel Power" to mean the number of minutes of valid research which can be collected per panel member invited. It's a measure of the efficiency of a panel. What is interesting is the disparity between the dQ&A panel and commercial consumer panels.

Table 1 sets out some of the differences between the dQ&A approach and commercially available panels. Only about 5% of the participants chosen at random from a sample vendor might respond to an invitation. If they do respond, they have perhaps a 12% chance of being a valid respondent. They then seem to prefer to complete shorter questionnaires, with quality responses trailing off after about ten minutes.

	dQ&A	Commodity Panels
Authentic Respondents	>99%	7-30%
Up-to-Date Profiles	90 Days	Not typically specified
Screeners	Not typically needed	Long and burdensome
Response Rate	50%	1-5%
Response Quality "Cliff"	20+ minutes	10 minutes
Panel Lifetime	Years	Weeks to months
Representative	To CDC benchmarks	Typically not attempted

Table 1

By contrast, dQ&A community members have 50% or higher response rates, 99% validity and will take longer questionnaires. Response rates are ten times better, validity is eight times better, and survey stamina is 2.5 times better. Multiplying these factors, the dQ&A has 200 times the Panel Power of commercial sample.

Therefore, a dQ&A panel of 20,000 people can conduct the equivalent amount of quality research as a third party panel of four million people (all of whom are supposed to have diabetes).

It's no wonder that sometimes it's hard for consumer panels to find the specific diabetes sub-groups that clients require – it's like looking for a needle in a haystack. In diabetes research, panel quality is more important than size.

Conclusions

The purchasers of diabetes patient research pay for reliable insights, that can be used to move their business forward, in all kinds of ways.

They are most likely aware that third party sample is the "Wild West", and want to be assured that their research vendor has an appropriate methodology for delivering quality.

In the case of dQ&A, we assure quality by using our own diabetes patient panel that has to date answered over ten million questions. We screen every response and address anything suspicious. Over time, we have built a great community that is efficient to use and gives trustworthy answers.

If you consume diabetes research then it's important to know your vendor, know your survey respondents, and ask the right questions about quality. At dQ&A, we would be delighted to answer those questions – just drop us a line.

To partner with dQ&A, please contact us at www.d-qa.com/contact-us, or email us at info@d-qa.com

dQ&A

To partner with dQ&A,
please contact us at
www.d-qa.com/contact-us,
or email us at **info@d-qa.com**