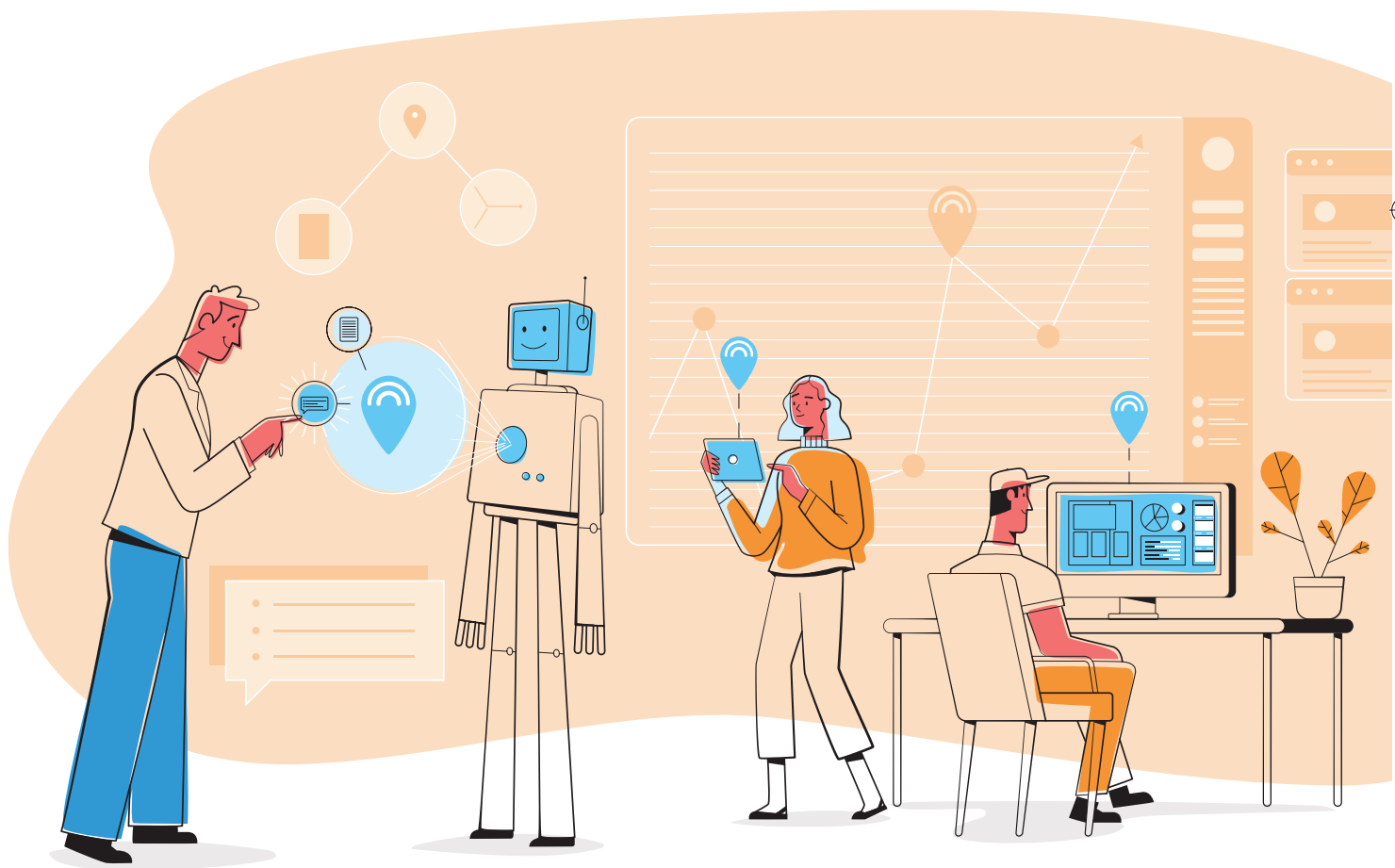# A Guide to Automated Analytics:

How to Stop Running Your Business on Accidental Data Discovery

**ellowfin**

# A Guide to Automated Analytics:
# How to Stop Running Your Business on
# Accidental Data Discovery

**Yellowfin**

"Yellowfin Signals automatically finds what dashboards miss, so users know what is going on in their business as it happens."

**Glen Rabie, CEO**
**YELLOWFIN**

# You don't know what you can't see

**As a senior manager, one of your big fears is not being kept in the loop on everything that is happening in your area of the business. You don't know what you don't know, and that could be your Achilles heel. For most, that's just a risk you embrace with the role. But does that risk need to apply to what lurks in your business data? What if there is a way to mitigate that unknown before it bites your bottom line when you don't manage to find an issue fast enough?**

Because of the sheer volume of data to search through and the accidental nature of data discovery, it usually takes a couple of business people to notice that something feels 'off' before issues are investigated. When someone voices a concern, it is still not a concern to most until critical KPIs are not quite what they should be. Then more people share the concern and, eventually, someone investigates. It takes several weeks, if not months, from the feeling that something is not quite right to identifying where change has occurred, to finally understanding the underlying issue.

This problem has been seen before. In one software business, approximately $40k disappeared before they managed to fix the problem. And you probably recognize a similar thing having happened to your business too. Numbers dipped, but they only noticed a week or so later when reports refreshed and a related data point alerted them that there was something wrong. The software company noticed that the sales lead count was down but struggled to uncover why figures had dropped or where the root of the issue lay. The inbound lead metrics were regularly monitored but the needed insight was buried because it was not a KPI. It then took a lot of manual digging around in the data to get a correlation that could eventually be identified as the cause.

Weeks vanished before they managed to find and plug the leak, which turned out to be a single, broken data capture form. It's a disaster for the business' bottom line.

How do you systematically unearth these hidden data insights and move away from running your business on accidental data discovery?

In the new wave of automation and artificial intelligence (AI), there's an answer: automated analytics. But you do not want more noise - you need signals of real data changes that you can act on, fast. You don't know what you don't know, so you need a systematic, thorough, and unbiased analysis of the data to unearth the things you really need to know - not just the things you already suspect you need to know.

# Three problems hamstringing your access to data insights

**There are three primary problems that get in the way of discovering insights in your data today even with the huge leaps in technological capabilities that we have seen in the past five years. These problems hamstring your abilities to optimize your business, get ahead of your competition, and identify issues so you can fix them instantly. Without overcoming these problems, you are running your current business operations with very delayed reactions.**

### Problem 1: Dashboards

Dashboards tell you only what you think you need to know. They are set up for monitoring your business KPIs and are excellent for that role. But dashboards are not good tools for data discovery. If the only data you have access to is on your dashboard, you are not really on top of your data. Dashboards are a high-level, and often aggregated, view of some the data that is most important to you. Too much information makes dashboards confusing and overwhelming, so they are kept simplistic using aggregated data to allow you to monitor operations at a glance. But this simplicity is the reason you cannot conduct a thorough search of your data.
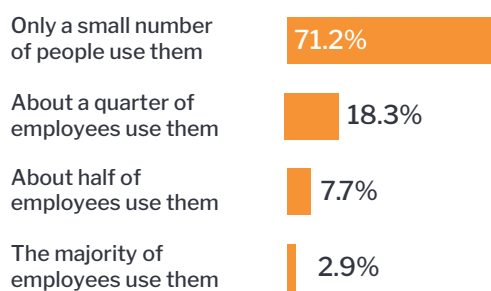
Nate Silver said in his book *The Signal and the Noise: Why So Many Predictions Fail – But Some Don't*, "Partisans who expect every idea to fit on a bumper sticker will proceed through the various stages of grief before accepting that they have oversimplified reality." Dashboards are your organizational bumper stickers; you cannot rely on them to find data insights.
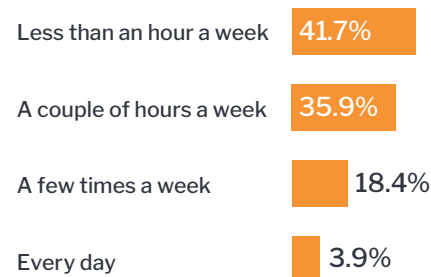
Because of the simplified nature of the reports on the dashboard, data discovery is a thoroughly manual process that uses features like drilling and filtering within the reports. So yes, you can slice and dice your data from your dashboard, but conducting the same sequences every time on each report is not easily repeatable. That means that discovering a change in your data will be a happy accident rather than a deliberate and systematic probe.

Worst of all, most people do not use the self-service dashboards that they have. A survey conducted by Computing Research uncovered that of the 130 businesses they surveyed, 71% of businesses had much less than a quarter of employees using dashboards. Of those who did use dashboards, 42% used them for less than one hour per week and a further 36% used them for only a couple of hours per week. There is a huge dashboard adoption problem. Business users do not have the time, inclination, and often do not have the data literacy to use dashboards properly. Nobody will uncover insights in their department's data with such low usage.

## Are BI dashboards widely used within your organisation?

| | |
|---|---|
| Only a small number of people use them | 71.2% |
| About a quarter of employees use them | 18.3% |
| About half of employees use them | 7.7% |
| The majority of employees use them | 2.9% |

## How often do you spend time using dashboards?

| | |
|---|---|
| Less than an hour a week | 41.7% |
| A couple of hours a week | 35.9% |
| A few times a week | 18.4% |
| Every day | 3.9% |

However, the role of discovery should not be the burden of the business user, it should be the task of data analysts. That leads us to the second problem hindering your access to data insights.

## Problem 2: The analytics team's constraints

You rely on your analysts to uncover data insights for you but we all know the workload is huge and the analytics team's capacity cannot match the influx of data or the demand for their skills. Data analysts are already backlogged with requests for dashboards, reports, and the analysis of KPIs that indicate underperformance. They rarely have time to simply dig into the business data just to see if they can find something interesting. If they ever did get time to do that, there is so much data to trawl through that the chances of looking at the particular time series slice that reveals a statistically significant change in the data decreases as the data volume and velocity increase. The quest would be for a needle in a haystack, but they would not even be sure the needle exists.

If the analysts do get to spend time analyzing data and find a change of significance, they make the judgement call about whether that insight would be of interest to you – this is where human bias creeps in. And if the insight reveals bad performance in an area of the business, they also weigh up whether they, yet again, want to be the bearer of bad news or whether they would be better to wait until they found something positive to add. This means you may never hear about an issue even if it was uncovered.

If there is a prompt for exploration before the analysts embark on data discovery, the prompt is often vague. If the sales leads KPI is down, for instance, how does the analyst know which of the vast number of factors that affect the leads they should investigate first? There are multiple marketing campaigns and each of the forms that support lead data capture and there is the correct functioning of the CRM system, plus more. It can take weeks, even months, for analysts to uncover the root of the issue. A business can lose tens of thousands, if not millions of dollars because exactly where the data change occurred could not be uncovered fast enough.

### Is your BI and Analytics Team being asked to do more for the business?

| | |
|---|---|
| Much Less | 0% |
| Less | 0% |
| About the same | 4% |
| More | 26% |
| Much more | 70% |
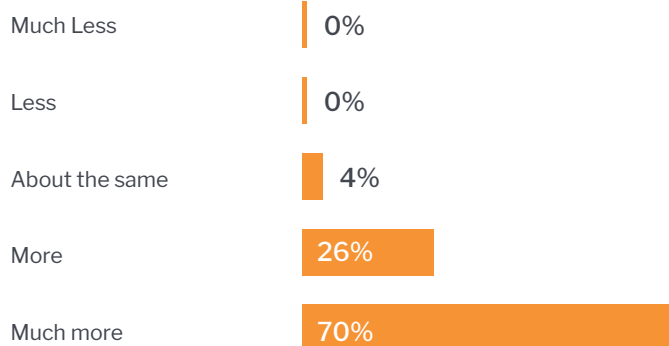
## Problem 3: The Christopher Columbus approach to data discovery

Analysts unearth new insights by trial and error. Yes, analysts rely on their years of business understanding and data discovery techniques to uncover data insights, but it takes days and weeks of work, mostly educated guessing, to find statistically significant deviations in your data that matter to the business. Analysts cannot know what to look for unless there has already been an indicator of data change uncovered. This means that data discovery is accidental, much like Christopher Columbus' discovery of America. You cannot run your business on accidental discovery.

Because there is so much ambiguity in the initial stages of manual data discovery, it is easy for analysts to quickly succumb to analysis fatigue. They have been slicing and dicing the same data for hours on end, repeating the process week after week, without finding anything interesting. Boredom creeps in, which is quickly followed by bias as they decide to exclude some data from the exploration due to previous experience of there being little change in that area or the complexity and difficulty of the data set, while they keep searching other data. There is also human bias in the way that they filter, slice, and dice the data sets. Humans are rarely one hundred percent consistent in their methodologies. When certain methods do not produce results, they switch before having tried that method on everything. They can also never search all of your data – the volume is simply too great. This means that you may never find what you really need to know about your data.

So could automated analytics be the answer to unearthing the unknown?

# The dawn of automated analytics and data discovery

**The artificial intelligence (AI) and machine learning (ML) trends, which are so hyped in the start-up world, are driving new technologies, new capabilities, and new solutions to business problems. These capabilities include the solution to your need to uncover data insights instantly. Automated analytics and data discovery have arrived.**

### Instant insights without human bias

With the automation of data discovery, you remove the accidental element of uncovering insights. Machines can crunch your data thousands of time faster than a human brain and take a fraction of the time to conduct data discovery on large data sets. Machines do not get bored and they do not tire. This means that automation brings systematic and thorough analysis of every data set - something a human would struggle to complete on the vast quantities of data held by most business today.

Some data discovery automation tools require you to ask a question of the discovery machine to prompt it to search for your request. However, true automated analytics should not need to be manually initiated.

### No more dashboard 'data discovery'

Automated analytics should not be limited by the dashboard interface or their inbuilt interactions; it should trawl your live, dimensional data at its source. If it finds a statistically significant anomaly, trend change, spike, dip etc., it should notify you so you can act instantly. This means you are not glued to your dashboard trying to slice and dice for more information. Automation will tell you about a change the moment it happens.

### Correlations uncovered

Because automated data discovery can analyze vast amounts of data in a fraction of the time that a human can, if it discovers a statistically significant data event, it should automatically search for correlations within your data too. This allows you or a data analyst to compare and contrast correlations between metrics to help determine a cause.

Mico Yuk, founder and CEO of BI Brainz, said, "Dashboards are not enough…while human beings are limited to displaying single data points, AI can apply reasoning and provide insight on millions of data points at once, providing true insight."

### Personalized data insights

Best of all, automated analytics opens up the offer of personalization. Nobody wants to be inundated with every statistically significant change that has occurred across the entire business. You would drown in data and be unable to find anything of relevance.

# Signals uncovers what you don't know, but should

**Your automated analytics should be delivering signals of change, not more data noise. And that is exactly what you will find in Yellowfin Signals, an automated data discovery solution built by Yellowfin - a business intelligence (BI) and analytics suite ranked top five in the world by Gartner. Signals is the first standalone automated data discovery solution of its kind in the BI market.**

Signals is platform agnostic and automatically and continuously discovers and surfaces the most important changes in your live data as they happen. There's no need to manually upload data into workbooks. Signals ensures that discovery is instant and predictable instead of accidental. It gives you your insights the moment you need them. No more waiting for weeks to unearth the cause of the metrics that 'just don't quite seem right' while watching revenue slip through your fingers.

Signals are also personalized. They are tailored to you and your role. If you are the sales manager for the sports equipment category in EMEA, you will not want insights into changes in the sports clothing category, nor in the sports equipment category for the United States of America. And the more you interact with insights, the more tailored the data insights become.

Machines have the incredible powers of never getting fatigued or bored, of having no innate bias, and of processing data accurately at phenomenal speeds. Their workload capacity is unrivalled by humans. These powers mitigate all the problems that got in the way of you receiving instant data insights, which is where the most value lies in analytics.

## The business problems Signals is trying to find are

**Spikes and drops**
Sudden increases or decreases in the metric. For example a lot of extra visits occurred on the product page of your website yesterday.

**Changes in volatility**
Volatility describes how much the value changes from one period to another. For example, the share price becomes very volatile after news that the trade deal was canceled.

**Change in trend direction**
A trend line changes from up to down or vice versa. For example, PC sales were growing but then started to decline last month.

**Changes in total (one period to another)**
Compares the total this week, month, quarter, with another similar period - last week, month, this quarter last year.

**Step changes**
The trend direction says the same but there has been a jump up or down in value. For example, although the trend line direction is the same, sales jumped 25% last week.

**New lost attributes**
Valuable attributes that entered or left the data this period. For example, a customer that bought every month stopped buying this month.

**Collaborate around important signals**

When you receive a relevant and important signal of a change in your data, complete with correlating patterns and Assisted Insights explanations, which include data visualizations and natural language explanations, what do you do? The next step is to involve others to leverage their insights and expertise. But emails with screenshots and multiple recipients are very inefficient. That is why Signals enables collaboration around each signal.

You can start a discussion, attach content, tag others, decide on your next action, and get notifications on updates for each signal. It all happens where the signal lives so the discussion isn't detached from the data.

**Tell the full data narrative with Stories**

Getting a signal is just the first step. Once you have then unearthed the cause of the data change, you want to document that for others to see. That is where Stories, a blog-like feature, comes in to help you add context to your data insights. Attach a story to your signal, complete with narrative text, embedded live reports, images, and videos. Add collaborators and editors to help you compose your data narrative, see who has read your story, get people discussing your story in the comments, and receive claps when people like it. Go from signal to discovery to story all in one place.

Signals gives you the best of both the human mind and machine by using automation to unearth data changes instantly and allowing you to collaborate with experts to glean their insights. Signals means you don't have to search your high-level, summary dashboard for data insights again.

# Automated analytics helps prevent huge losses and repeat big wins

**Do you recall the issue mentioned at the start of this paper where one software company identified that inbound lead numbers were down, but they could not identify why? This was just one of many cases across business functions that would have benefited from Signals.**

### $40k in four weeks - gone

If Signals had existed at the time, instead of slowly noticing that the overall inbound lead numbers were down then hunting for which aspect of the multiple inbound lead generation channels was broken, Signals would have notified the software company's Marketing Operations Manager that the conversion rate of a specific form had deviated from the norm. Its conversion rate had dropped to zero. The fix would have happened the same day and their revenue losses would be barely noticeable. Without automated analytics, they did not notice the dip in overall inbound lead traffic for two weeks as the form had low traffic and it took a further two weeks to uncover the foundational issue. They lost approximately $40k in potential revenue through lost lead conversion.

### Quality control on production lines unearths specific outlier machines

A manufacturer of blades for airplane engines requires all machines to produce blades to within a 1/1,000 of a millimeter margin of quality acceptance. Precision is critical. With 40 individual manufacturing processes and a 26 point quality check for every blade, there is an enormous amount of data constantly being pushed to the dashboards.

But the dashboards cannot display the workings of every machine in the 40 processes. They are high-level views with heat maps showing which areas are performing better and worse in terms of error margin. It takes some data digging to unearth exactly which machine is causing the quality issues.

With Signals, they are now alerted when a specific machine has deviated from the norm in terms of output quality. The prompt is immediate and specific, unlike the changes previously monitored in dashboards which became visible over time and were more high-level. This allows corrections to be made within minutes rather than needing to drill into and analyze the data for each line of production for where the fault might be.

### 3 months to uncover the issue that cost them hundreds of thousands

There was also the time a well-known security software company suffered enormous losses from not being able to identify the root of a significant data change. When sign-ups for their free product took a huge dive in the USA, they did not even notice for two weeks. For three months following, the sales and marketing departments went back and forth with the analyst dedicated to the US sales figures before anything was uncovered.

While manual data discovery was taking place, the company was losing thousands of people who would eventually convert into paying customers. In addition, when people signed up for the free product, they were targeted with an advert to sign up to use a particular browser as their main search engine. For every person who chose to add the browser, the security software company would receive commission from the search engine. This significant source of income was therefore also lost.

At the end of three months, the conundrum of the lost sign-ups was becoming well-known and a German sales person mentioned that they had requested a change on the landing page of a particular US banner advert. They asked for the free product sign-up option to be removed so that more would convert to the paid product. The conversions for the paid product did increase, but they did not match the losses in revenue that could have been gained long term through the free product. If the analyst for the US had spoken to the analyst for Germany, who worked in the same office, they may have seen the correlating fall in the free product sign-ups and the rise in the paid product sign-ups from the same advertising campaign. But data often lives in silos and the correlations would not have been easy to see.

Had Signals automated analytics been in place, the dramatic change in revenue attributed to the landing page of the long-running banner advert would have been surfaced immediately and the specific advert would have been the target for investigation.

### Spikes in retail sales turn into repeatable success

A great example of business success through Signals would be the identification of a spike in sales in the UK for an international clothing brand. Signals instantly identifies the particular stock keeping unit (SKU), not just the category of clothing. It's a red jacket that has been a staple in the collection for the past two winters and it is selling fast. And the region where sales spiked is the UK.

Correlating data patterns show that the views of a particular video seem to have spiked at the same time. A closer look reveals that the twenty-second video is an advert that features the red jacket as the hero piece. It has been shared across social media specifically targeting the UK and garnered hundreds of views. It's the first time the clothing brand has done an advertising video like this for the UK market.

Now that Signals shows a correlation between the video traffic and the sales of the red jacket, they can test the theory of causation by creating similar videos for other hero pieces in the collections. When they see that the correlation does seem to show causation after the sales of another garment spiked following a video that featured it, they have a repeatable model for success in the UK. Without Signals, this hunt for correlations could have taken weeks and an opportunity for repeatable success lost.

**Fake luxury goods on Amazon can crash brand profits fast**

Luxury goods companies have data analysts dedicated to scraping Amazon web pages for the average price of each of their products being sold on Amazon. The web scraping is automated, but the data analysis is not. The analyst's job is to monitor the average price and notice any significant drop of that average. When the price drops, they know that there has been an influx of counterfeit goods into the market and they need to shut down those sellers immediately.

Any delay in detecting the price drop increases the losses that brand experiences. With Signals in place, the moment the average price deviates from the standard the analysts are notified and the search for the fraudulent sellers begins. Analysts are saved from days of trawling the data for deviations and are able to focus instead on interpreting data insights for the business.

**Saving businesses from losses and increasing the wins**

Automated analytics running continuously in the background can save you hundreds of thousands, if not millions, in losses every year as well as allowing you to identify and repeat successes.

Signals has numerous use cases, from incident detection, to identifying bad data, to tracking competitive positions, to reducing churn, and much more. Any statistically significant deviation from the norm that is relevant to your role is highlighted so you can act immediately and uncover the cause.
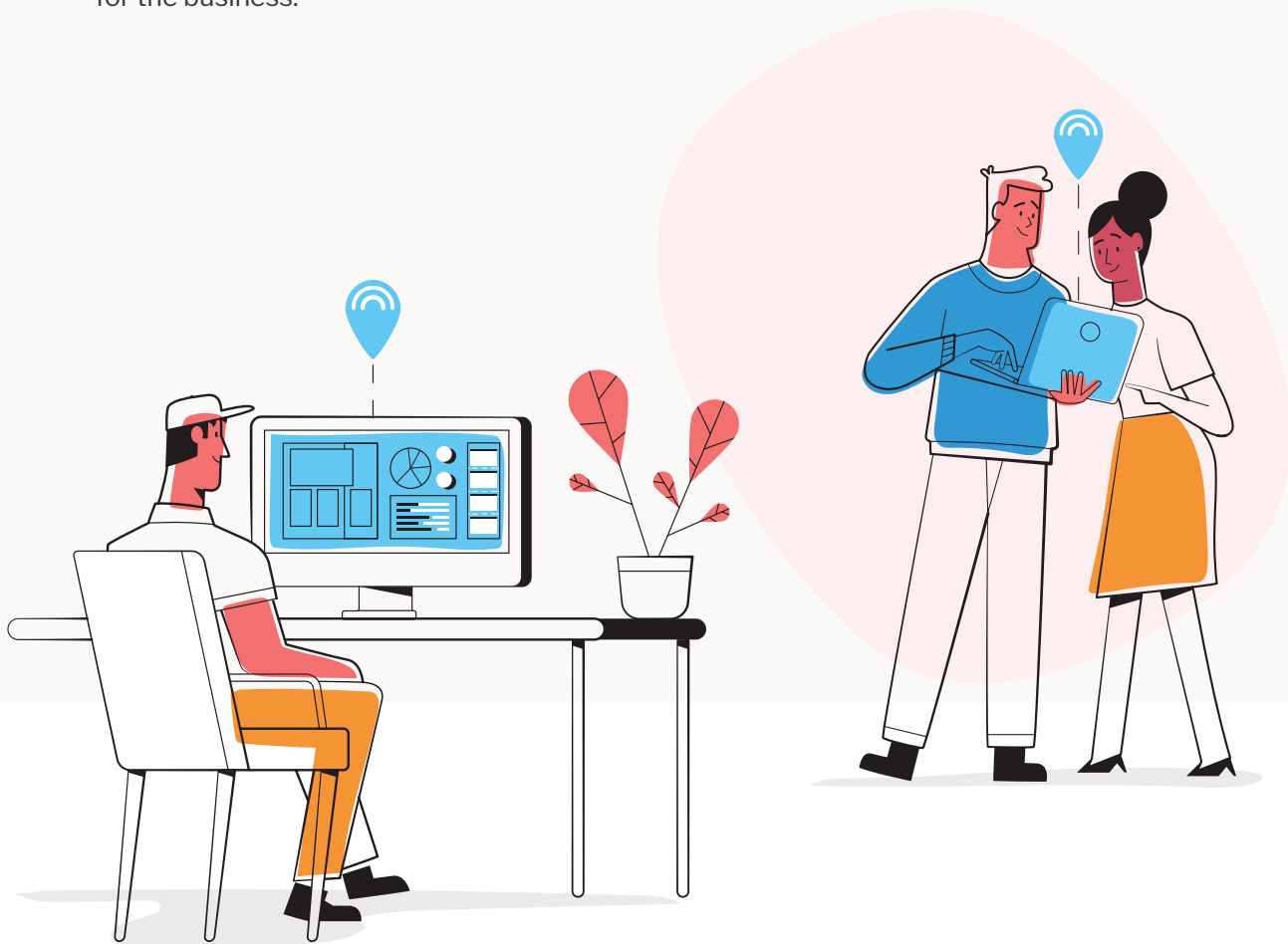
# Signals of change

**Automated analytics could be the answer to the chronic lack of data insights in businesses today.**

Dashboards - high-level, simplified overviews of the most important metrics - never tell you enough about what is happening in your business, so you are leading your business or department while blind to issues until they are inflated to the point that they are causing large losses. Even then, it can take weeks or months to uncover the root cause. Deviations from the norm in your data are signals of change - for better or worse. But the deviations are hard to spot and, if they are unearthed, are usually discovered by analysts quite by accident. This also means you are missing out on insights into how you can win more.

Analytics teams do not have the time and resources to dedicate to trying to discover deviations from the norm in the vast and voluminous data. Even if they did find deviations, the manual workload is enormous. Fatigue quickly sets in and methods are not used consistently across the entire business data.

Platform-agnostic Signals is designed to surface significant changes in your data so you can act immediately to either fix an issue to save the business from losses or repeat events that brought you success. It brings together the power of the machine in automation with the expertise of the human mind in collaboration. It is the new wave of automation in data analytics.

Automated analytics allows you to stop running your business on accidental data discovery. Automation could be your business' new super power.
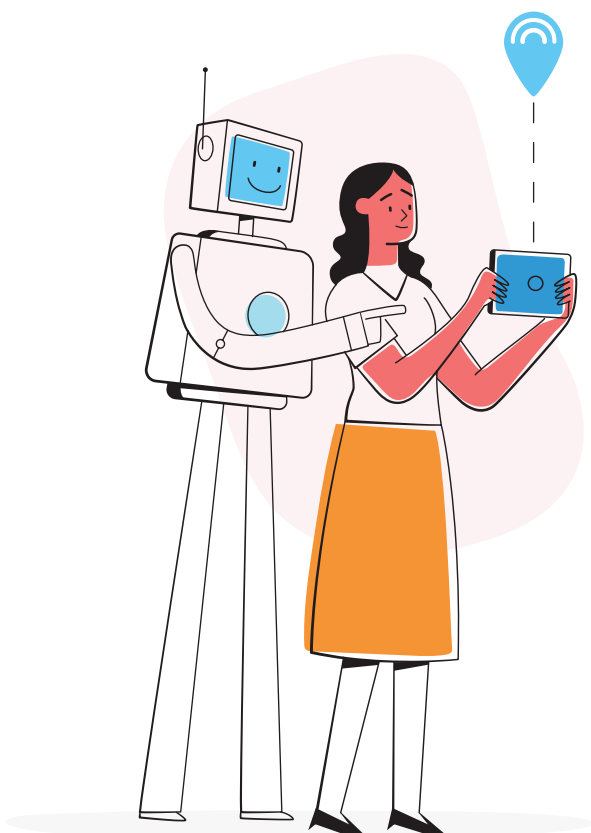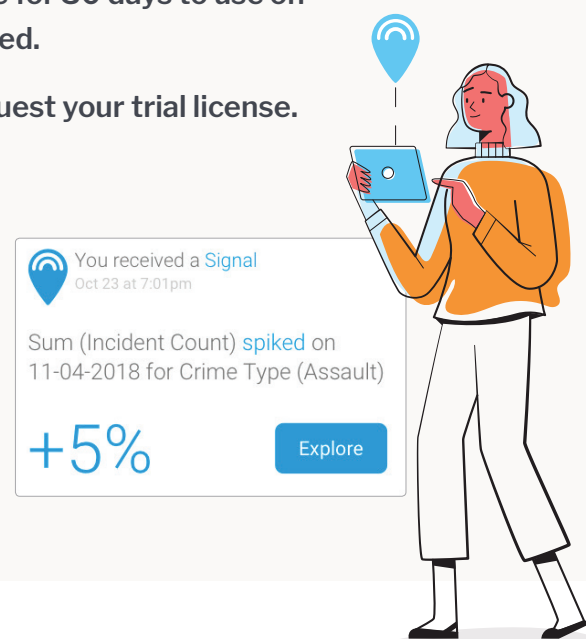
# Try Yellowfin Signals for 30 days

**If you want to trial Signals, you can get a license for 30 days to use on your own business data. No subscription required.**

**Go to www.yellowfinbi.com/try-signals and request your trial license.**

You received a Signal
Oct 23 at 7:01pm

Sum (Incident Count) spiked on 11-04-2018 for Crime Type (Assault)

+5%   Explore

Yellowfin is a global Business Intelligence and analytics software vendor with a suite of world class products powered by automation. Continually recognized as an innovator, Yellowfin is ranked among the Top 5 analytics platforms across all 15 Gartner Critical Capabilities for Analytics and Business Intelligence Platforms, 2018 and No 1 in Embedded BI by BARC. More than 27,000 organizations and more than three million end-users across 75 countries use Yellowfin every day. For more information, visit www.yellowfinbi.com

"Yellowfin Signals represents the future of BI: continuous time-series detection of trends and anomalies with instant correlations to help users identify critical issues in real-time and what's driving them. Signals will dramatically speed time to relevant insights, allowing business users to focus on what really matters instead of hunting for data."

**Wayne Eckerson, President**
**ECKERSON GROUP**

"EMA considers Yellowfin to be a leader in the use of AI, machine learning, contextual storytelling, and social communication for business intelligence."

**John Santaferraro, Research Director,**
**EMA**



"Simply put, Signals brings forth the context needed to make analytics relevant."

**Frank Ohlhorst, Analyst and Journalist**
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