Wolt

ALGORITHMIC TRANSPARENCY REPORT

2022

Wolt's Algorithmic Transparency Report

I. About Wolt

Wolt is a Finnish technology company that operates a food, grocery, and retail intermediation and delivery marketplace. We currently operate in 23 countries and over 250 cities, serving millions of customers together with our merchants and courier partners. Wolt was founded in 2014 in Helsinki where our headquarter lies today, and we employ more than 6 000 people in our offices across our markets.

By operating a technology platform, Wolt brings convenience to customers, but also creates economic opportunities for local restaurants and retailers selling their goods through our platform, and for independent couriers providing services to Wolt. Simply put, when buying something on our platform, our customers can choose to have the products delivered to them. If they do, we then offer that delivery task to a courier partner who is logged onto our platform.

II. Why write this Report?

We are committed to making the cities we operate in better places to live. We are also committed to do the right thing towards our teammates, partners, customers, and the general public. This is the basis for everything we do, so we figured we might as well be transparent about what we do and how we do it. That way, others are able to evaluate if we are indeed doing the right thing.

We take the concerns around algorithmic transparency seriously. We have advocated for the explainability of the key operating principles behind technology. Recently, the European Commission put forward a draft declaration on digital rights and principles for everyone in the EU[1]. According to the declaration:

> Everyone should be empowered to benefit from the advantages of artificial intelligence by making their own, informed choices in the digital environment, while being protected against risks and harm to one's health, safety and fundamental rights.

This makes a lot of sense. The same goes for the commitments outlined in the declaration. They are in line with our thinking. For example:

> We commit to ensuring transparency about the use of algorithms and artificial intelligence, and that people are empowered and informed when interacting with them.

Finally, we wanted to write this Report so that we can learn. This is our first one, and we are sure there is a lot we can improve. We want to get feedback. We want to work with others.

Technology is not an end in itself. For us, it is a means to make the cities we operate in better places to live. We think technology can help in achieving this goal and hope that through transparency, the positive role of algorithms and platforms can be understood.

III. Our principles in building our products

Fairness
We are focusing on building a platform that ensures fair treatment of the people that interact with it. There shall be no direct or indirect discrimination based on personal attributes, such as racial or ethnic origin, sex, religion or belief, disability, age or sexual orientation.

Meaningful impact
We are building a product organisation that works at scale with autonomy, all the while optimising for meaningful impact. Impact is the biggest driver of motivation for the product team, be it from business metrics, societal, environmental influence or personal growth journeys. At the core of this approach is a focus on the value we create for our customers, partners and society at large.

Transparency
We acknowledge that this industry is new and intricate. By providing accessible information about how it works, like we do in this Report, we hope that it will build trust with our partners and customers, as well as the general public.

IV. Algorithms powering Wolt

As a digital platform, algorithms are a vital part of our work and facilitate millions of decisions everyday. Yet, today, in the digital age, many people associate algorithms with concern due to their non-transparency. In this section, we aim to dispel that concern by increasing the broader understanding of how algorithms are – or sometimes are not – used at Wolt. We hopefully provide enough context on what happens as part of a delivery order to give you a good understanding of the whole process.

We have drawn inspiration from the UK Government's Algorithmic transparency template published by the Central Digital and Data Office[2], and also the City of Amsterdam's Algorithm register for explaining the algorithms they have in use[3]. The following sections are based on the situation at Wolt in February 2022 and how we partner with self-employed couriers, i.e. courier partners, as they form the majority of couriers on our platform.

A: Courier Partners – Task algorithm

Task algorithm
One of the most basic functions of a delivery platform is to offer delivery tasks to couriers so that they can either accept or reject offered tasks, and in case of accepting, transport an order from point A to point B. The task algorithm aims to find a courier partner who can deliver the order without it being terribly late. Therefore, the algorithm in general tries to minimise the kilometers to be driven and time for all deliveries with the constraint of ensuring all orders are delivered within the estimated delivery time. The more efficient the algorithm is, especially with regards to grouping orders, the more courier partners can also earn.

Wolt's algorithm offers delivery requests, 'tasks', equally to courier partners based only on their proximity to the pick-up location (i.e. restaurant or merchant), the vehicle type, and their current activity status (available for deliveries, busy with ongoing deliveries or offline). The platform does not use any kind of ranking or rating to determine which courier partner is offered a delivery task, only the location and the type of vehicle of courier partners who have chosen to log online are used.

2 https://www.gov.uk/government/collections/algorithmic-transparency-standard
3 https://algoritmeregister.amsterdam.nl/en/ai-register/

We include vehicle type as a factor as it impacts both the delivery speed and delivery capacity. As Wolt has expanded into enabling the deliveries of all sorts of things beyond restaurant food – including groceries, convenience items, and for example, flowers – the physical size of an order can vary a lot.

Before a courier partner can be offered tasks, they need to go through the onboarding process, where Wolt checks e.g. the individual's right to work, and to download the Wolt Courier Partner app to their device (smartphone/tablet).

A delivery task offer includes information on the pick-up location (i.e. restaurant or store) and drop-off location (i.e. customer's home, office, or any other location) and is always offered to only one courier partner at a time, so there is no competition on who accepts a task first or fastest.

Once a task has been offered to a courier partner, they can decide either to accept or reject the task. If a task is rejected it will automatically be offered to the next potential courier partner based on proximity, vehicle type and availability. The same applies with the automatic rejection of a task which happens after 60 seconds of no response from the courier partner. If no one accepts a task, Wolt cancels the customer's order without any negative impact or consequence for the courier partner.
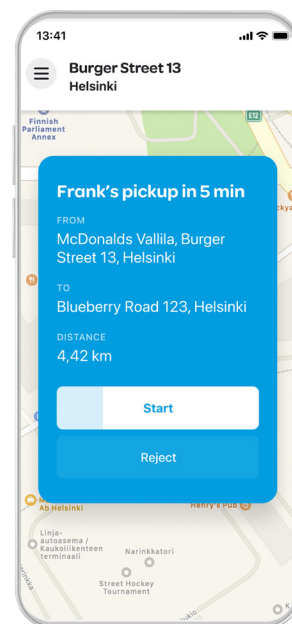
Courier partners are not obliged to accept offered delivery tasks and they can even change their mind after accepting a task, i.e. they can ask to be unassigned from a task they originally accepted. All

courier partners are anonymised in connection to the automated task offering and a courier partner's identity or e.g. possible task rejections, does not affect how the delivery tasks are offered. There will be no adverse consequences for the courier partners for rejecting tasks or for asking to be unassigned from a task.

Delivery modes

If a courier partner has marked themself available to be offered delivery tasks in the Courier Partner app, they will be offered tasks within their proximity and fit for their vehicle type. Courier partners can choose between two different modes to perform deliveries, they can either accept tasks in a so-called 'Single task mode', delivering one order at a time, or 'Bundled tasks mode', delivering combined or multiple tasks at the same time.

In Bundled tasks mode, the app may offer the courier partner additional tasks before an earlier task has been delivered to the customer, if there would be additional tasks available for pick-up and drop-off in the same general direction as the first task. The benefit of bundled tasks is that it is more efficient overall, and for courier partners they enable higher earnings as they are paid for each task as if they were individual tasks.

In both Single task mode and Bundled tasks mode courier partners can always choose to reject proposed tasks at any given time and request to be unassigned from a task after accepting it.

Delivery route

Once a courier partner has accepted a task, they are free to choose the delivery route. Wolt does not provide any driving instructions for how to travel neither to the pick-up location nor the drop-off location. Many partners use an external map service such as Google Maps, Waze or Apple Maps for this.

When the courier partner has picked up the order at the merchant they are asked to confirm in the app that the correct order has been collected. Wolt then provides the customer with a delivery time estimate automatically based on a number of factors. These include historical data on the duration of deliveries, the delivery distance, traffic, time of the day, and vehicle type within a specific area. The estimate is not binding and does not oblige the courier partner to deliver the order within that time frame either. There will also not be any punishment or any other adverse impact on the courier partner for not meeting the estimated delivery time.

The customer can follow the delivery in real-time on a map included in the Wolt app, so that the customer is ready at the drop-off destination when the delivery arrives. When the courier partner has delivered the order to the customer, the partner marks the delivery as completed in the app.

Earnings

Courier partners are paid per each completed delivery task. The fee per task consists of two components, the fixed 'Task Fee' and the flexible 'Distance Fee'. The Task Fee includes the distance from the courier partner's location to the pick-up point of the order and the minimum drop-off distance towards the customer. The Distance Fee is paid out in addition to the Task Fee for long drop-off distances. The longer the additional drop-off distance, the higher will the Distance Fee be that the courier partner receives.

Courier partners with a car or van can receive large orders, i.e. orders that contain many items and are ordered by groups. As large orders may take longer to deliver, courier partners earn extra from those orders.

In case of bundled tasks orders, the courier partner earns a fee per each task delivered, even if they deliver multiple tasks from the same merchant to customers in the same building.

Courier partners can at all times view their accumulated earnings in the Courier Partner app.

Non-discrimination

As already described above, all courier partners are anonymised in connection to the automated task offering and a courier partner's identity does not affect how the deliveries are offered. A delivery task is always offered to only one courier partner at a time, so there is no competition on who accepts a task first or fastest.

We also review the balancing on vehicle types regularly to ensure the courier's choice of vehicle only matters when it makes a crucial difference for the delivery based on the delivery distance or the size of the ordered product.

Human oversight

The algorithm is being continuously maintained and updated to ensure it works as desired, whilst also making the algorithm faster in offering tasks to couriers. We also look to maximise courier earnings by developing the algorithm to offer more bundled tasks when possible. This work is fueled by aggregated data from actual deliveries and operational considerations.

Operationally, the Wolt Support can help courier partners, merchants, and customers if anything

TASK FEE

Courier partners earn a **Task Fee** for every order they decide to deliver with Wolt. The **Task Fee** includes: The distance from **the courier partner location to the pick-up of the order** & **the minimum drop-off distance towards the customer**

Courier partner initial location → The merchant → The customer
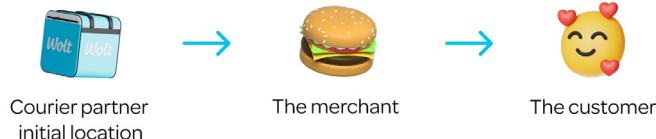
DISTANCE FEE

A **Distance Fee** is paid out **in addition** to the Task Fee **for long drop-off distances.** The **longer the additional drop-off distance, the higher the Distance Fee.**

Courier partner initial location → The merchant →→→ The customer
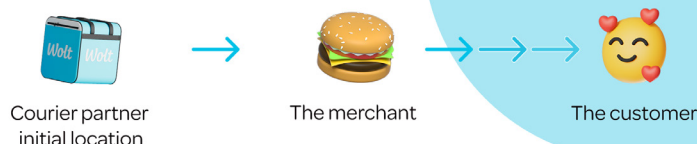
comes up during the delivery. Common questions that the Wolt Support gets include the accuracy of the delivery estimate and missing or faulty items of the order. Drop-off is another part of the delivery experience where human intervention is sometimes necessary – be it due to missing address details or other difficulties in navigating the last 50 meters.
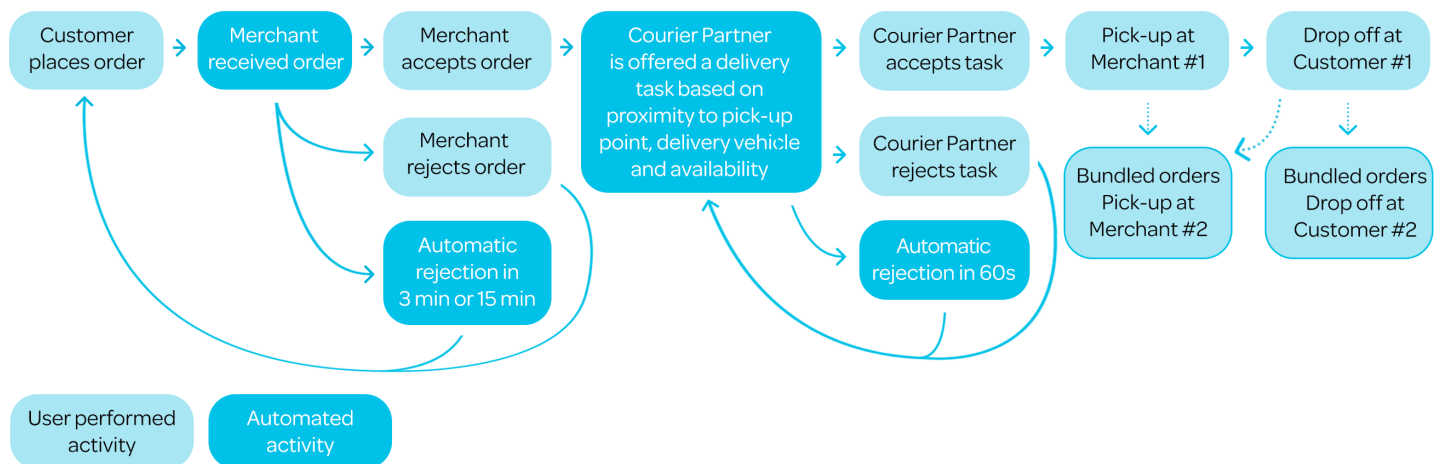
Risk management

As location data is the most important criteria to the algorithm that offers tasks to courier partners, this can lead to variance between couriers using different devices with different geolocation accuracy. It is in every party's interest that the system is as accurate as possible as this influences the accuracy of the offered tasks. We also have technical and organisational measures in place to ensure proper level of privacy and security compliance with regard to geolocation data, including regular review of the necessity, granularity and retention of such data.

Courier partners move in traffic and use smartphones. This includes inherent risks, such as looking at your device for navigation information while being on the move. Thus, new tasks are

DELIVERY TASK FLOWCHART

Flowchart: Customer places order → Merchant received order → Merchant accepts order → Courier Partner is offered a delivery task based on proximity to pick-up point, delivery vehicle and availability → Courier Partner accepts task → Pick-up at Merchant #1 → Drop off at Customer #1

Merchant received order → Merchant rejects order; Automatic rejection in 3 min or 15 min

Courier Partner is offered a delivery task → Courier Partner rejects task; Automatic rejection in 60s

Pick-up at Merchant #1 → Bundled orders Pick-up at Merchant #2
Drop off at Customer #1 → Bundled orders Drop off at Customer #2

Legend: User performed activity | Automated activity

only offered when a courier is not already on a task. This way, they can accept the next task, for example, only after they have dropped off a delivery to a customer. This limits the situations where the app sends a notification that the courier partner might want to react to. If the courier partner is in a situation where it is riskier for them to interact with their device, they do not have to do anything; the task is declined after the 60 second timer and courier partners are not penalised in any way for not accepting or declining tasks.

Performance
Wolt does not use data such as rejection rates, amount of performed deliveries, speed of deliveries etc. on courier partners. Rejecting a delivery request does not have any impact whatsoever on courier partners' possibility to get future delivery requests offered through Wolt's platform, or their contractual partnership with us, nor does it result in any disciplinary measures.

There are no ratings on courier partners. After a completed delivery, customers rate the delivery experience as a whole. Thus, when giving this rating, the customer signals their opinion of the various aspects that form the delivery, for example, the delivery time estimates generated by Wolt, the packaging of the goods and so on. The rating customers give on the delivery experience is only a tool for our Support Team to know whether there might be an issue with an order and if they should reach out to the customer.

Online hours
Self-employed courier partners can connect themselves to Wolt's Courier Partner app and offer their services whenever they want, without any obligation to work. This allows them to have maximum flexibility and log online or offline on the Wolt Courier Partner app as they like. They can even choose to be online without any intention to perform any deliveries, and can work for and with other companies, including our competitors at the same time as for us.

Courier partners do not need to inform Wolt in advance if or when they intend to not perform deliveries for any period of time. In practice, as opposed to an employee, courier partners choose at their discretion when to take a break or whether to remain offline for a longer period without needing to inform Wolt or receive Wolt's approval.

Wolt does not apply any algorithms to monitor online hours of the individual courier partners and let that impact the contractual partnership or task offering. When we analyse online hours it is on an aggregated and anonymised basis to better understand our operations.

A recent pan-European study by Copenhagen Economics found that a majority of couriers (72%) say platform work is a complementary activity, with 34% delivering while studying and another third (34%) saying they access platform work to top income from other full or part-time work[4]. At Wolt, around 40% of courier partners delivering via our platform work less than 7,5 hours per week on average.

4 https://copenhageneconomics.com/publication/study-of-the-value-of-flexible-work-for-local-delivery-couriers/

B: Customers – Ranking & Personalisation algorithms

The purpose of providing personalisation is to let customers discover different restaurants and stores and help them find what they need, be it chocolate chip cookies to feed a sudden crave, new fuses to get the lights back on, a surprise flower bouquet, or their weekly groceries. Ranking and personalisation on the Wolt platform happens in four main sections on the app and website:

1. Discovery page
2. Restaurants page
3. Stores page
4. Search page

1. Discovery page

The Discovery page is the front page of Wolt and the first thing users see when they open the app or website. The ranking of content on the Discovery page uses a mix of manual and automated sorting. For example, ad hoc promotions and campaigns are manually added to the page by our marketing teams.

We divide venues on the Discovery page into categories and carousels using automatic tools.

Category Carousels: We tag venues into different types of categories, such as 'pizza', 'burgers', 'salad' etc. The order of these categories is automatically determined by assessing the popularity of each category by aggregating previous orders.
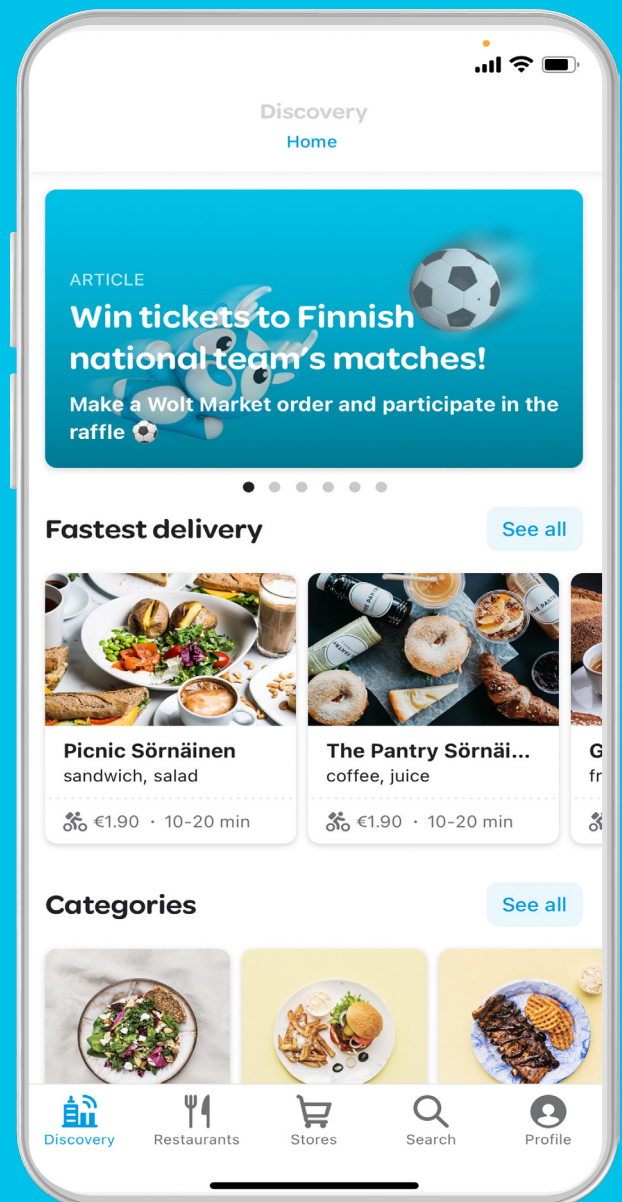
Venue Carousels: Since we have a lot of different categories, some venues may show up in multiple carousels. We want to show the customer venues that are relevant, therefore the venues on the Discovery page are ranked using the First-Time User or Returning User Model explained below. A venue that has been ranked high will be given a more prominent spot.

First-Time User Model

If the customer is an unregistered user or a registered user with no purchases, the sorting is done through a simple static model. The model factors in three criteria. The first is the delivery estimate, i.e. the time it would take for the customer to receive the order after completing their purchase. The second criteria look at the venue relevancy and popularity based on how many purchases other customers have made with the venue. This criteria also factors in venues that are new on the platform to make sure they are also promoted initially. The third factor is the venue price range that looks at the price of menu items in the restaurants and tries to promote a wide range of venues with different prices to customers.

The First-Time User Model works with aggregated data. For example, two first-time users opening the Wolt app in the same location will see the same venues ranked in the same way and no personalisation is applied.

Returning User Model

The second tool we use in ranking content is the Returning User Model. This model is applied to registered users who have made at least one purchase with Wolt. It can be explained as a way of recommending the user something based on the purchase history of other similar customers. The ranking looks at past purchases of an anonymised user without identifying the user personally and recommends venues based on purchase history. For example, if an anonymised Customer A purchases something from Venue 1 and Venue 2, we look at other anonymised customers who have ordered from the same venues. If the other customers have purchased something from Venue 3 we may recommend that venue to Customer A.

Personalisation algorithms are trained every night. If you make a purchase during the day the personalisation will be applied the following day. If you are a first-time user and make your first purchase, the next day the user experience may change since it is now based on the Returning User Model.
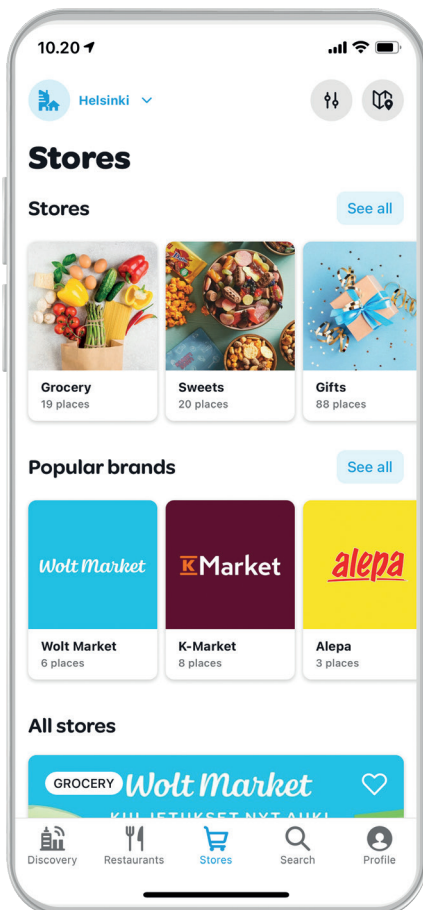
RETURNING USER MODEL
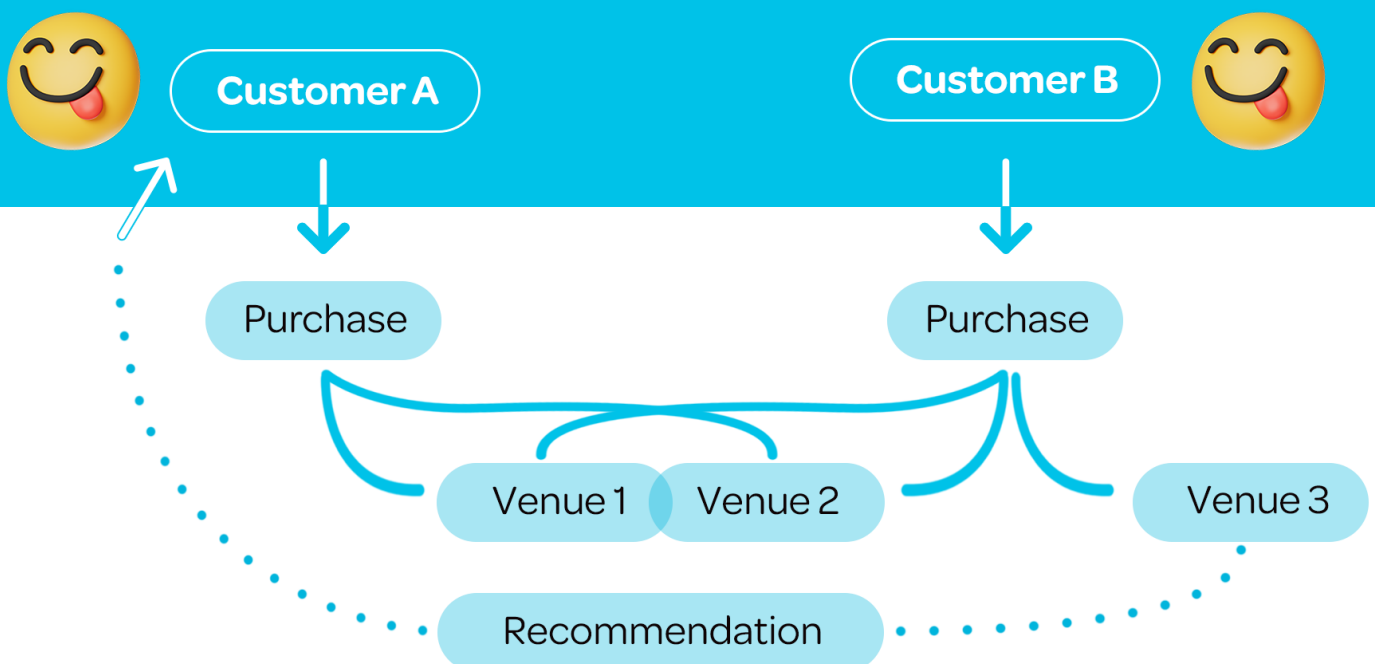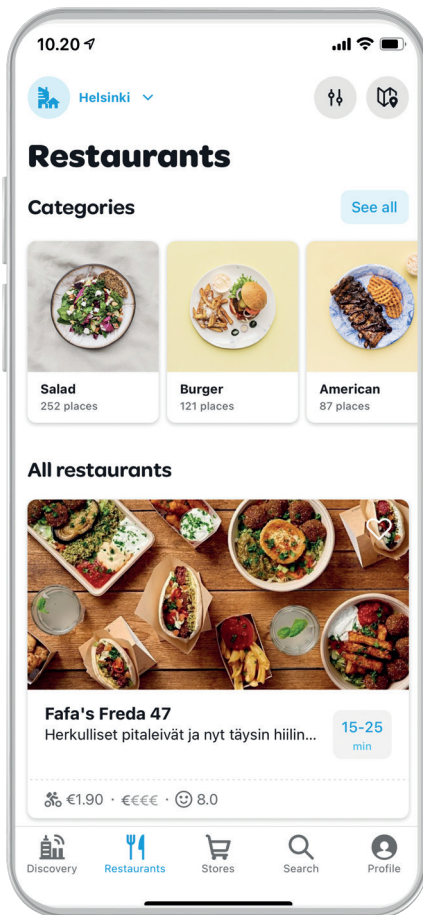
2. Restaurants page

The Restaurants page features restaurant venues that are delivering to the customer and are sorted by their availability, meaning if they are open and accepting orders they will be displayed before closed venues. The available venues are then re-sorted using the First-Time User Model and Returning User Model.

3. Stores page

In our Stores page we display the selection of retail and grocery stores available to the customer. We apply a different kind of sorting algorithm for our Stores page as it works better for the customer experience.

Stores Page Model
This model looks at three different features for ranking content on the Stores page.

- Popularity. This criteria also factors in venues that are new to the platform to make sure they are also surfaced to the customers.
- Customer rating
- Likelihood of customer placing an order

The algorithm assigns each venue a rank according to all three criteria separately. Then it combines all rankings and re-sorts the venues based on the result. Thus we ensure that the venues that are displayed on the top of the page receive the highest ratings of all three criteria.

4. Search page

If users look for a particular type of restaurant, store or item, they can use the search feature to find that. At Wolt, we have two main types of search functions, the Global search and the In-venue search. For both search functions we use the customer's typed query which includes any characters regardless of the language and factoring in synonyms. In the case of Global search, we also use the user's delivery address, if the user has provided it to us. If the address is not specified, we use their current location if they have granted us their permission for this.

Global search
The Global search helps users search the platform for venues that match the users' criteria and is within the delivery area of the customer.

When users type their search in the search bar, the search request is sent to a back-end service, which factors in both the typed search text and the user's location to build a search query. That search query is then matched against an existing index of metadata containing information from the merchants and their menu or product items. This produces a first list of results of venues that are corresponding to the search query.

The search results are sorted by an algorithm determining the relevancy of the venue as well as if the venue is open or not. For example, venues that match the search query, but are not open, will be displayed at the bottom of the list.
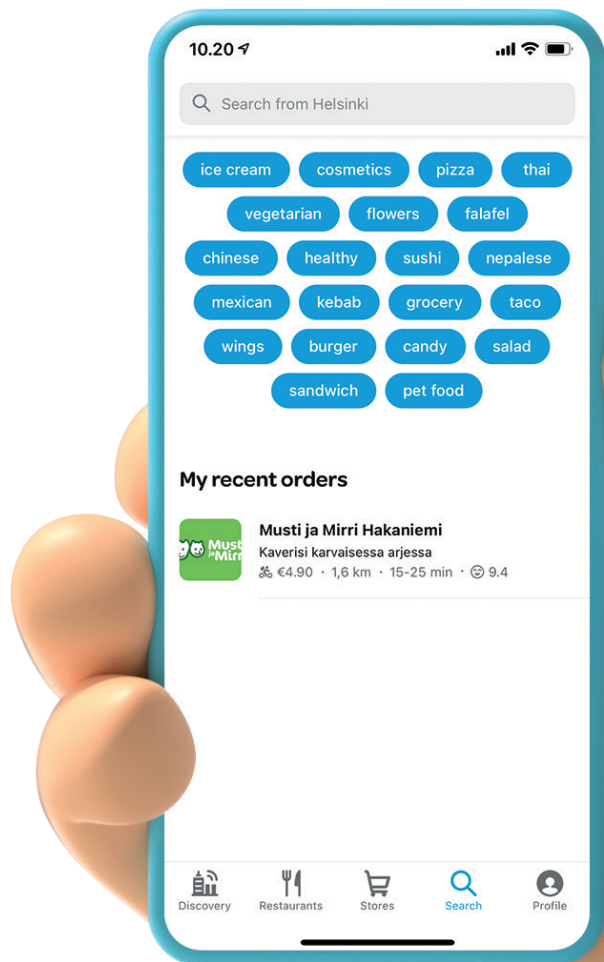
In-venue search
The second type of search feature is the In-venue search. When a user is looking at a particular restaurant or store they can search that venue for specific items. This search function works differently on the web and in the app in order to improve the user experience as some stores might include hundreds of items.

Web
When a user types a search query within a specific venue's page on the website, a filtering is applied to hide the items that do not match the search query. The filtering is based on the menu item title, description and category.

Mobile
When a user types in a search query within a specific venue's page on the mobile app, a search request is sent to a back-end service. The back-end tool matches the search query against an index based on the venue's metadata, sorts it and returns the products as search results to the users.

Non-discrimination

Wolt's ranking and personalisation algorithms do not process or use personal information that would have been identified as potential sources of discrimination against people impacted by the automated process. In fact, we do not collect any data on gender, sexual orientation, racial or ethnic origin, national origin, religious affiliation or disability.

When training the algorithmic tools, we only use aggregated and anonymised data.

Human oversight

The ranking and personalisation algorithms are in continuous development. As described, specific sections in the app and website, such as promotions, are manually created.

Risk management

Similarly to the task algorithm, location unsurprisingly plays a role also on the customer side. Customers see venue options that are nearby based on their approximate or city-level location. Customers also may choose to add a delivery address to the Wolt app in order to receive their order to the location of their choice. Inaccuracies in location data could impact the selection of venues the customer sees, although this is more theoretical given we use less granular approximate data, and there are clear ways the customer can ensure that their desired delivery location is used.

We mitigate and balance the algorithms to also surface new restaurants and stores to customers. This balancing is phased out after a while.

V. Help us learn!

Thank you for reading our first Report on Algorithmic Transparency. We made this Report partly in order to learn. We want to understand what was interesting, where we should have explained our algorithms better, and any other perspectives you think we should have covered. On our side, we continue to improve our platform and the algorithms that make it tick. If you have ideas that could help along the way, let's chat!

You can get in touch with us via a new, dedicated point of contact for all things algorithms and transparency: **transparency@wolt.com**. The alias is managed by Wolt's Public Policy team, who will liaise internally to gather the right people for questions, feedback and other input you might be interested in sharing with us.

Wolt

https://explore.wolt.com/transparency