DTrike

Dry and safe in all weathers

Mikael Kjellman 2026

Summary

A three-wheeled recumbent bicycle with an electric motor and a full body intended for daily use in urban environments. A three-wheeled recumbent bicycle should lead to fewer accidents than two-wheeled bicycles, is more inclusive for people with various limitations and the body makes it much more pleasant to cycle in bad weather. In good weather you can ride with the sides completely open. The recumbent bicycle itself can be purchased separately and then customized with various bodywork and accessories to suit different users and climates. This results in a lower entry-level price and a broader customer base compared to dedicated velomobiles. The design is intended to be manufactured on a small scale and without expensive manufacturing tools, which makes it possible to test the concept and learn the market before investing big.

Demo video:
https://youtu.be/g5kxxq-KwtQ

I am now looking for people, companies and organizations who want to join in making this vision a reality. I work full time on this and strongly believe in the project but I will need more people, knowledge and money if this is to become a reality.
So get in touch if you think it sounds interesting or if you have something or someone to recommend.

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What is the problem?

Cycling is cheap, good for the environment, good for health, but still few people cycle. Cycling has increased a little, but not nearly as much as authorities and politicians want. The EU wants to double cycling by 2030 and is investing billions in cycling. That sounds good, but how are we going to make it happen?

How can we get more people to cycle?

In Sweden, 13% of the population cycles in the summer, but only 7% in the winter. My theory is that weather conditions and road conditions play a big role in whether people choose to cycle or drive. The bicycle has a hard time competing with the convenience and safety of the car.

Another problem with cycling is that it accounts for 50% of all serious traffic injuries but only 12% of trips and 2% of the distance. Many authorities want to double cycling and halve accidents.
Great! But how do we do that?

How can we reduce bicycle accidents?

What is the solution?

The starting point is to introduce safer and more comfortable bicycles. With a **stable trike with a roof and an electric bicycle motor**, you can cycle in all weathers all year round and you don't have to be afraid of crashing or falling when it's slippery. It retains many of the benefits of cycling, such as everyday physical activity, low environmental impact, and low costs. It serves as an intermediate option between a car and a bicycle, one that should appeal to users from both sides.

And what about safety! Surely three wheels won't help when I get hit by a car! No, unfortunately, but **80%** of all serious bicycle accidents and 20% of deaths are **single-vehicle accidents**.
People crash for various reasons without other road users being involved.
And then a stable trike can make a big difference.

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Background

I have built and ridden various recumbent bikes and velomobiles for more than 20 years and worked for 6 years with PodRide, a four-wheeled cycle car that a small team and I designed and tried to get into production. We received a lot of interest from people who want to buy it, the video content has over 250 million views, and the newsletter has more than 100,000 subscribers. Unfortunately, we have not managed to get enough investment to get it into production. The project is currently on hold pending new funding.

PodRide and Mikael Kjellman, Frösön 2016

Perhaps the biggest reason we didn't succeed with PodRide is that it is so complicated and expensive to manufacture in small series. With that design, you have to invest a lot right from the start. That's why I designed a new solution that could retain many of the advantages of a PodRide but that can be made simpler and cheaper. This design is adapted to be manufactured in small series without expensive tooling. The compromise will be a slightly angular appearance, fewer features and a little extra weight. All to keep the price down in this initial stage.

The Dtrike concept

The current design is intended as a small-scale experiment to test and learn about the market. It should be seen as a first step in the development towards a future mass product.

The base is a three-wheeled recumbent bike with one wheel in the front and two in the rear. The rider sits between the rear wheels, which makes the vehicle very stable and easy to get into and out of. The seat height is about the same as in a passenger car, so you can see and be seen well in traffic. In the standard configuration, the pedals drive one of the rear wheels, while an electric motor drives the other. Since the motor is a standard e-bike motor, no driver's license is required, and the vehicle is permitted on bicycle paths.
The pedals can be easily adjusted forward or backward to accommodate riders of different heights. The seat features thick, comfortable cushions designed to help absorb vibrations and bumps. Behind the seat, there is space for luggage and the motor's batteries. At the very rear, there is also a mount for a bicycle trailer, should you need to transport larger items.

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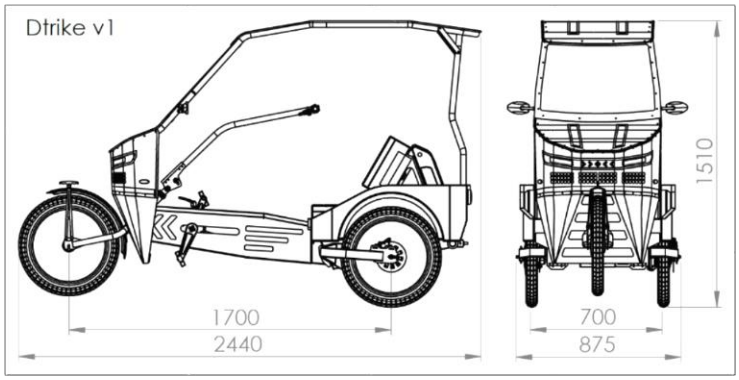
The bodywork is an optional extra, available either at the time of purchase or as a later addition. It is constructed from aluminum tubing, fabric, and plastic. The basic version consists only of a front section and a roof, providing protection against headwind and some protection from rain.
For complete weather protection, you can also add side panels with fabric and plastic doors, ensuring full shelter from wind and rain. The side doors are sliding doors that can be folded away, allowing you to ride with them completely open during warm, sunny weather.



Data:

Length: 244cm, Width: 88cm,
Height: 151cm, Motor: 250w,
Speed with motor: 25km/h
Wheels: 20”, Gears: 8-speed hub
Brakes: 2x 160mm brake discs
Weight: approx. 75kg,
Seat height: approx. 50cm.

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Environmental impact

It is difficult to assess the environmental impact of a new product at such an early stage, but its weight can likely provide a good rough estimate. A smaller and lighter vehicle requires fewer resources to manufacture, consumes less energy per kilometer, and generates fewer particulate emissions from tires, brakes, and road wear. I estimate that the DTrike will be three times as heavy as a standard e-bike, yet twenty times lighter than a passenger car. While it may not be quite as environmentally friendly as a bicycle, it should still make a significant difference compared to a car.

Cycle all year round

In Sweden, cycling drops from 13% to just 7% during the winter, meaning that 6% of the population, or around 600,000 people, put their bikes away for the winter. This clearly illustrates the significant impact that weather and road conditions have, even on individuals who normally enjoy cycling. The stability and weather protection offered by the DTrike make it well-suited for cycling, even in wet, cold, and slippery conditions. Thanks to the wind protection and the body heat generated by pedaling, you stay comfortably warm, even on cold winter days.

DTrike, Test drive in -20°C, Vallsundet 2026

Inclusion and convenience

The DTrike is designed for side entry, much like getting into a car. While originally intended to ensure convenience and comfort, this design also makes it easy to get in and out of, even for those with limited mobility or balance. Combined with electric assist and inherent stability, it can serve as a viable option for many people who are currently unable, or do not feel confident enough to ride a conventional bicycle.

Cycling facts:

- In the summer, 13% of Swedes cycle but only 7% in the winter.
- In 2021, 700 million bicycle trips were made and 2.2 billion km were covered, which corresponds to 2% of the distance and 12% of all trips in Sweden.
- 88% of the population in Sweden lived in an urban area in 2020.
- 70% of the population in Stockholm has less than 30 minutes to work by bicycle.
- If you walk or cycle, you have a 35-40 times higher damage rate per km than if you drive a car.

Traffic accidents in Sweden

<u>The total number of seriously injured people in traffic in 2019 was 3,850 people.</u>

- **Cycling** accounted for **2,000** serious injuries and **17** deaths.
- **Car traffic**: about **1,000** seriously injured and **150** dead.
- **Motorcycles** about **220** seriously injured and **25** dead.
- **Walking** approx. **200** seriously injured and **20** dead.
- Cycling accounts for 12% of all trips but 50% of the seriously injured.
- **80%** of serious bicycle accidents were **single-vehicle accidents**.
  (8% bicycle-bicycle collisions and 10% collisions with other road users.)

(Despite the accidents, cycling is very good for public health; both the exercise and reduced emissions are good for the individual and the population at large.)

Possible accident prevention

Of the approximately 2,000 serious bicycle accidents that occur each year, approximately 1,600 are single-vehicle accidents. My assessment is that stable three- and four-wheeled bicycles could halve single-vehicle accidents. Which would mean approximately **800 serious bicycle accidents avoided**. According to the Swedish Transport Administration, the cost to society per serious bicycle accident is €340,000/accident, calculated on 800 accidents, the **savings for society** would be about **€270 million**.
Older people account for only 10% of bicycle trips but 40% of serious injuries, so this group should benefit greatly from stable bicycles.

Safer and more comfortable cycling

Cycling is good for the environment, inexpensive, and provides great exercise; however, it also accounts for half of all serious traffic injuries, and factors like weather and slippery conditions deter many people from choosing it. I believe that safer and more comfortable bicycles such as velomobiles could encourage more people to cycle while simultaneously reducing the number of accidents. Velomobiles can bridge the gap between bicycles and cars, offering a lower environmental impact, better health outcomes, and a smaller spatial footprint than a car.

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Market

Worldwide, **100 million bicycles** are sold per year, with a turnover of about **€64 billion**.
In the **EU**, **15 million bicycles** are sold per year, with a turnover of about **€18 billion**.
In **Sweden**, **280,000 bicycles** are sold per year, with a turnover of about **€450 million**.

In the last 15 years, electric bicycles have gone from rare and hard to find to an established product selling about 90,000 a year in Sweden with a turnover of about €180 million.

Cargo and box bikes, which enjoy the same great advantage of electric assistance as the velomobile, have seen a massive boom and are used today by everyone from families with children to logistics companies. Sales in Sweden appear to be around 3,000 units, with a turnover of about €14 million.

Three- and four-wheeled bikes fall into two categories today. The first is upright adult trikes, aimed at older people and people with balance problems. You don't have to balance, but the high center of gravity can make them prone to tipping, which is a poor match for the riders they are aimed at. They are a small niche product, but have grown in recent years.

The second category is the low, sportier recumbent trikes, aimed at cycling enthusiasts, older people and people with disabilities. Unfortunately they are almost unknown to the general public, and are relatively expensive and hard to buy today. The popular models seem to be produced at a few thousand units per year.

The velomobile has not yet had a real breakthrough in the market, even though it too gets a big boost from now being able to be fitted with an electric bike motor. There are a few fine velomobiles produced in small series today, but unfortunately they are expensive and relatively hard to buy.

Potential Market for Velomobiles in Sweden

Today the market is very small, and velomobiles are largely an unknown vehicle. To get an idea of the potential, a few calculations of the annual market in Sweden can be made.

Assume that half of the 600,000 cyclists who put their bikes away for the winter would buy a velomobile for €5,500 over the next twenty years.
The market then becomes 300,000 / 20 × €5,500 ≈ **€82 million per year**.
Assume that one third of the 1.5 million adults without a driving licence would buy a velomobile for €5,500 over the next twenty years.
The market then becomes 500,000 / 20 × €5,500 ≈ **€138 million per year**.
Assume that half of the 1.1 million households that live in houses and own two cars today would replace one of the cars with a velomobile, for €5,500 over the next twenty years.
The market then becomes 550,000 / 20 × €5,500 ≈ **€151 million per year**.

These groups partly overlap, but they show that the market potential for velomobiles in Sweden is significant, even if adoption happens gradually over twenty years.

Examples of other velomobiles

Classic velomobiles
No engine, low air resistance, fast on the road, low seat height, impractical in city traffic, mostly for sport cycling.
Manufactured: estimated 10,000 in the last 30 years
€7-15,000: a few hundred are produced per year by small companies.
https://www.velomobilforum.de/wiki/doku.php?id=velomobil:allgemein:modelle

Veemo, Canada
Practical velomobile, well-built three-wheeler with open sides, the relatively high seating position and much of the weight over a single rear wheel, likely makes it prone to tipping over.
Units produced: estimated at 150–250.
€7,500–9,000 incl. Vat:
available from Poland, delivery time of 1–2 weeks.
https://veemo.ca

Quadvelo, Belgium
Practical velomobile, stable four-wheeler with a fiberglass body, relatively high seating position, 250W motor, 25 km/h, small-scale production
Units produced: estimated 100–300
€14,000–15,000 incl. Vat: 1–2 weeks delivery time, if in stock
https://www.quadvelo.com

Pedilio, Germany
Practical velomobile, stable four-wheeled vehicle with open sides.
Available as a 250W, 25 km/h e-bike and as an EU-moped (45 km/h).
Manufactured: approximately 10-30pcs
€12,500-13,500 incl. Vat, only on order.
https://www.pedilio.de

Karbike, France
Practical velomobile, two-seater, stable four-wheeler with optional fabric side panels; available as either a 250W, 25 km/h electric bicycle or an EU-moped (45 km/h).
Units produced: estimated 30–50.
€13,500-15,000 incl. Vat: 6 months delivery time (as of Oct 2026).
https://karbikes.com

More competitors

You can likely find around fifty different models of velomobiles when searching online, but very few are actually available for purchase or even to order today. As of 2026, there is still no manufacturer with large-scale production and distribution.

The real competition today comes from other modes of transport, bicycles, cars, buses, walking, and so on.

Price and profitability for DTrike

The price calculation is based on the component list, supplier quotes, and experience gained during the construction of the prototype, and should be viewed only as a rough indication.

Series Size	Note	The Trike	DTrike with Body
100	Test series, direct sales	€7,500	€11,000
1,000	Small-scale manufacturing	€6,000	€8,500
10,000	Large-scale manufacturing	€3,500	**€5,500**
100,000	Mass production	€2,000	€3,500
1,000,000	Megafactory	€1,000	€2,000
Price to customer including VAT, base version			

The price for a small pilot production run is in line with other velomobiles on the market, so the estimate appears reasonable. The purpose of these initial small-scale runs is to gain an understanding of the market, the customers, and the design, allowing for product improvements and cost reductions before a larger-scale initiative is undertaken. Consequently, these early production runs are expected to yield little to no profit. Profitability will come with volume. A rough estimate of the advantages of larger production suggests that a DTrike with a body, produced in a series of 10,000 units could cost about **€5,500 incl. VAT**. And at that point, it should both be a sellable product and generate a profit.

Current situation

I believe wholeheartedly in this project and am fully committed to bringing it to market. As an engineer, I have strong expertise in design and product development. I have created CAD models, technical drawings, and a bill of materials (BOM), and the majority of the prototype has been manufactured based on these specifications. I have tested it across all seasons and in a wide range of conditions, logging over 2,500 km without encountering any major issues. Now the project is at a stage where it needs a bigger team than just me and bigger investments than I can make. I am now seeking people, companies and organizations who would like to join me in realizing this vision.

Please get in touch if you find this interesting.

DTrike, hauling boards home with a bike trailer, Frösön 2025

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