

A mobility transition past the front door; the case for active travel

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Samenvatting

Om onze steden leefbaar te houden en toekomstige groei mogelijk te maken moet de manier waarop wij ons verplaatsen drastisch veranderen. De auto staat voor meer dan 90% van de tijd stil, neemt voor een lange tijd veel ruimte in beslag en doet ook niet veel goeds voor het fysieke gestel van de mens. Uit gesprekken met verschillende gebouweigenaren blijkt daarnaast dat meer dan de helft van de CO2 footprint van nieuwe, duurzame gebouwen wordt veroorzaakt door het reisgedrag van medewerkers. Om die redenen is het belangrijk dat er meer wordt gefocust op het stimuleren van actieve vormen van mobiliteit, denk hierbij aan lopen of fietsen.

De manier hoe wij ons verplaatsen wordt onder andere beïnvloed door gewoonten, gedrag en onze leefomgeving. De weg van A naar B wordt veelal gezien als de reis van deur tot deur. Maar wat gebeurt er eigenlijk voor of achter die deur? En in hoeverre kan hetgeen achter die deur invloed uitoefenen op de manier hoe wij ons verplaatsen?

In dit artikel bespreken we het effect dat een ActiveScore certificeringsmethodiek zou kunnen hebben als het een planningsvoorwaarde zou zijn die bij de ontwikkeling van gebouwen. De ActiveScore-certificering is een manier voor vastgoedontwikkelaars en gebouweigenaren om hun gebouwen in kaart te brengen en beter inzicht te krijgen in hoe hun gebouw scoort op het gebied van actieve mobiliteit. Door het gebouw een score van 0-100 te geven, wordt de waarschijnlijkheid dat het gebouw zijn bewoners/werknemers stimuleert om gebruik te maken van actieve mobiliteit getoond en visueel gemaakt. Het score-element creëert ook de drang voor deze vastgoedontwikkelaars of gebouweigenaars om zo hoog mogelijk te scoren, en dus verschillende aspecten en ideeën te creëren en te implementeren om deze hogere score te behalen. Met als resultaat dat meer mensen kiezen voor deze actieve mobiliteitsopties.

De ActiveScore certificeringsmethodiek kan op drie manieren worden toegepast (of een combinatie van):

1. Wijzigen van voorgestelde bouwplannen (nieuwbouw/(her)ontwerp)
2. Aanpassen van bestaande gebouwen om ze actiever te maken (toevoeging diensten)
3. Zorgen dat gebouwen voorbereid zijn op toekomstige groei (toekomstbestendigheid)

Al met al levert de overgang naar actiever reizen een aantal grote voordelen op voor de gebouweigenaren, werkgevers, werknemers en de stad. Daarnaast lost het dringende problemen op die onze toekomstige groei van de stad momenteel nog belemmeren.

Introduction

Think about it. We're in the midst of a mobility transition towards more green, clean and healthy modes of transport. Away from the large footprint of the car-centric ownership model, towards shared, healthy and more active ways of travel. But as we redesign and restructure our roads and public spaces all across Europe to prioritize pedestrians and bicycles, isn't it weird that we tend to stop at the front door and forget our buildings?

Generally more than half of the carbon impact of a building can be contributed to commuting there and back. So if we want people to make different choices in the way they are commuting, we have to make sure our buildings are fit for the job. But with changes in mobility going rapidly and policy requirements lagging behind these trends, how do we make sure our buildings are ready for the coming decades? This is where activescore comes in.

In this paper we discuss the effect an ActiveScore analysis could have if it would be a planning condition imposed on building developments. This way developers become more aware of the implementation of active mobility within the buildings, how this needs to be facilitated and how this affects the health and wellbeing of the end users of the building.

This paper is structured according to the following sections:

- In the first chapter we discuss what is active travel, the importance for the Netherlands, and the relationship between emerging trends and policy
- The second chapter is all about the ActiveScore approach, including goals methodology and the integration into policy
- The third and final chapter discusses the benefits for the users and the built environment as well as circular benefit
- The paper is finalized with a conclusion in chapter four.

1. Why we need (more) active travel

In The Netherlands the government has set a goal to build 1 million new homes by the end of 2030. This goal has been set due to the high demand for new homes in The Netherlands, and the lack of affordable housing. This goal has a large impact on the public space that already suffers under huge constraints from aerial impacts like car parking. Therefore the way we navigate has to transition to a new more sustainable and green form factor that exerts a lower pressure on the public space and at the same time has beneficial effects on the environment and climate by producing less carbon dioxide. So in short, this is a pressing issue that if not addressed on time will have a negative impact on the public spaces and could result in bad living conditions for inhabitants of city like areas.

In this paper we propose a way to combat this problem by making real estate developers and building owners more aware of how their building could stimulate the end users of the building to opt for active travel instead of the car.

1.1 What is active travel?

Active travel simply means making journeys in physically active ways - like walking, running, cycling, e-biking, or scooting. It is not only a reliable, cheap and quick way to travel, but also sustainable and healthy for the urban quality of life. The built environment and planning policy is largely cycling and bicycle focused (consider the CROW 'Design Manual for Bicycle Traffic'), forgetting the need to provide for all modes of active travel - e-bikes, oversized cycles (cargo or recumbents), folding bikes and scooters. Designing for active travel means putting as great of an emphasis on quantity as variety, offering infrastructure for all users and modes of transport. By providing the necessary amenities for these different modes of active travel allows for the end user to select the mode of transport that works best for them, resulting in a greater number of end users that actually stick to the active travel transport.

1.2 The importance for the Netherlands

The Netherlands is world-leading when it comes to on-street cycling infrastructure. Since the publication of 'Tekenen voor de fiets' in 1993 and the 'Dutch Bicycle Master Plan' the objective has been to incentivise the use of the bicycle over the car. The existing quality and investment in public cycle networks has proven a great facilitator to active travel. This success is visible as cycling forms a key part of the Dutch culture, evidenced by 34% of all journeys up to 7.5 kilometers are by bicycle (Fietsgebruik, 2000–2016 | Compendium voor de Leefomgeving, 2018) - this figure further increases over shorter distance journeys. However, the approach to incentivising the use of the bicycle has been focused on good infrastructure on the route, not at the destination itself. As such, residential and office developments lack the quantity and, more importantly, the variety of infrastructure for all active modes of transport. This creates an opportunity for policy makers to encourage developers to increase their end-of-trip facilities, reducing the strain on already fully utilized on-street cycle parking.

The benefits of improved end-of-trip facilities at developments are threefold - for the urban planning policymakers, for the developers and the end-user.

Urban planning policymaker	shifts spending to the private sector, reduced pressure on already overused public bicycle parking
Developers	tenant retention, scope 3 sustainability benefits
End-user	greater quality and quantity of parking, safe and secure facilities, provisions for users that travel further.

How this cycle works is explained in the following illustration.

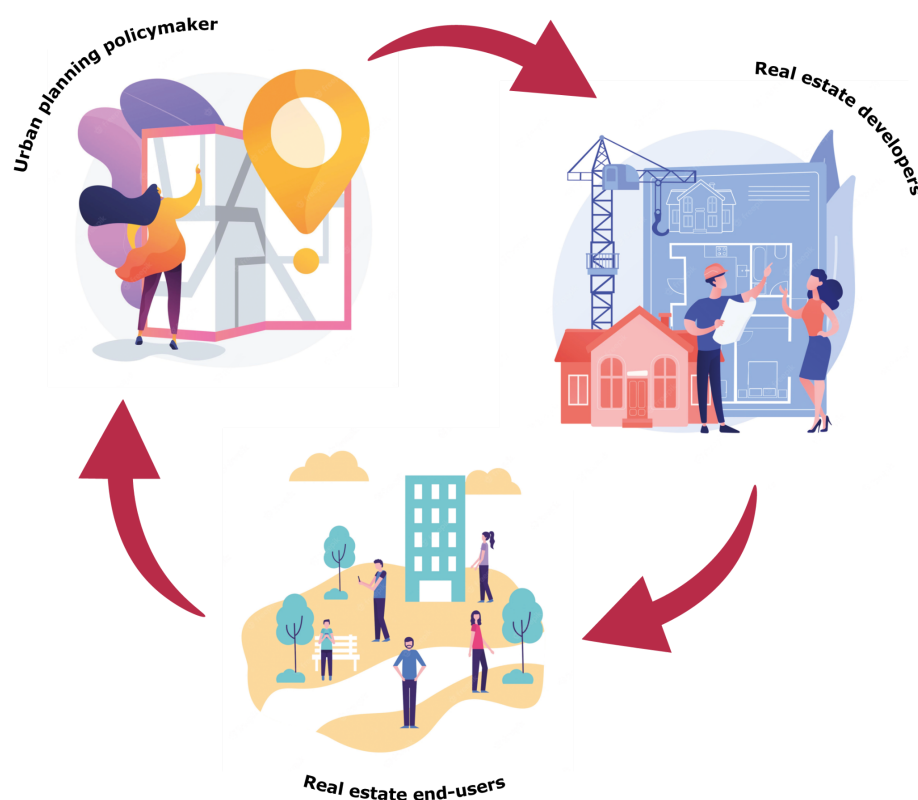


Image 1: Benefits cycle urban planning policymaker, real estate developers and real estate end-users.

The Netherlands is facing a city center bicycle parking challenge, leading to a movement of new office locations that integrate mobility within the core of design (A15, A27). By focusing policy on the developments it will lead to more innovative, future-looking and attractive solutions that exceed the current urban planning standards and result in less public spending to deal with the existing supply challenges.

1.3 Bridging the gap between emerging trends and policy

As trends in active travel are forever changing, amplified by the impact of Covid-19, the built environment needs to keep up. Updating planning policy and guidance documents often takes years to publish, and public costs, therefore by the point of adoption they can already be outdated. Real estate certifications can offer an opportunity to set new standards that keep up with global trends and exceed planning requirements - easing the pressure on policy.

A) Facilitating active travel, barriers to active commuting

The British Council for Offices (BCO) report focusing on the state of cycling facilities within commercial buildings 2016/17. From their research (BCO - The Market Cycles, 2017) the following statements are presented.

- Only 1% had no complaints at all regarding their facilities.
- Engagement initiatives surrounding active commuting were very low.
- Lack of showers, parking and lockers is preventing existing cyclists from cycling more often and non-cyclists to start cycling to work.
- Quality of showers was the biggest barrier to cycling to work.

B) Sustainability

For most companies, Scope 3 emissions represent a much greater proportion of their carbon footprint than operational emissions (Scope 1 and 2). But importantly, they're also something they have much less control over.

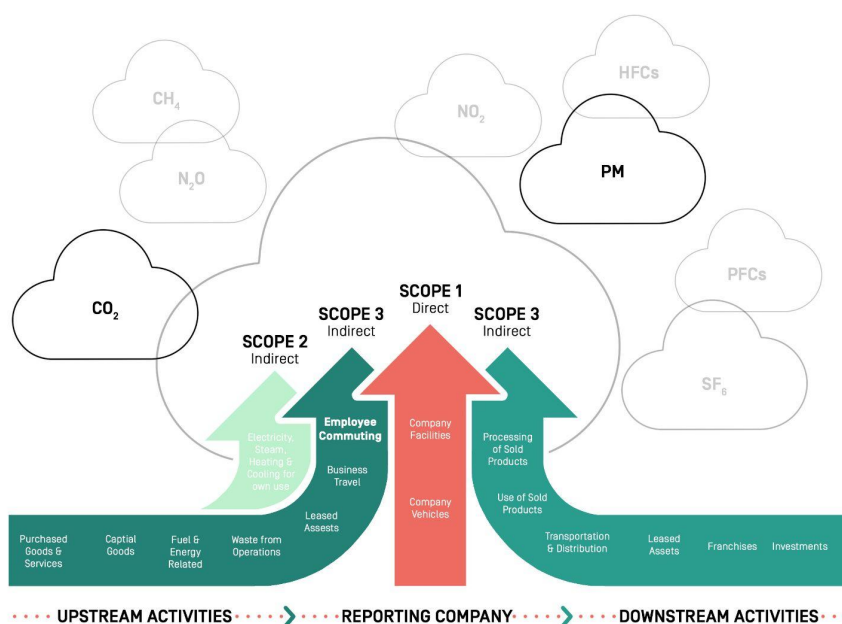


Image 2: Different sustainable scopes and their corresponding indicators.

In the UK, transport alone makes up 27% of all CO2 emissions (Department of Transport, 2021) and 16% of all PM2.5 emissions. (Public Health England, 2018). Incentives to use public transport, car sharing, management's attitude to home working, and most importantly encouraging active travel - can all help reduce staff commuting emissions.

Within all ActiveScore assessments there is a building specific integrated Clean Air Calculator. The Clean Air Calculator highlights the average quantity of CO2 and PM2.5 emitted whilst commuting for each type of modal transport in the region. This provides a baseline from which total savings of CO2 and PM2.5 emissions can be projected after an increase in active modes of transport are used.

C) Health and Wellbeing

Research has shown that not only the environmental impact is a substantial benefit of active mobility, but it also has a positive impact on health and the wellbeing of people. Which results in less people calling in sick for work, on average 1.3 working days per worker (Hendriksen et al., 2010). It also shows that 82% of the people cycling to work report being less stressed in the office after cycling to work (Cycling and the mental health benefits, 2019) and a 30% lower risk of depression for adults that participate in daily physical activities (Department of Health & Social Care, 2019).

Regular physical activity provides a range of physical and mental health benefits. These include reducing the risk of disease, managing existing conditions, and developing and maintaining physical and mental function.

D) Covid-19 impact

It is very likely that Covid-19 may have had a very positive impact on people's tendency to choose more active ways of travel. According to the National Travel Attitudes Study (NTAS) 2021, Department for Transport (Department for Transport, 2021): *How likely, if at all, will you continue walking or cycling more after travel restrictions and social distancing are removed?*

- Cycling = 95% Likely - 5% Not likely
- Walking = 94% Likely - 6% Not likely

2. Active travel with ActiveScore

Activescores' approach is based around the following four goals:

1. Improve the active travel friendliness of commercial and residential buildings.
2. Highlight the need to consider micro-mobility facilities as early as possible in the planning and design process, as they often form an integral part of the planning process.
3. Enable landlords and developers to market their active travel facilities if they make the investment to existing and potential occupiers.
4. Encourage users to live a more active, sustainable and healthy life.

2.1 ActiveScore's approach

The way we envision and approach the changes that need to be made in buildings to promote active travel includes both plans for new buildings and existing buildings. For us it's also important to provide a future growth aspect to both types of buildings. This way our work is not only beneficial for the current users but also for possible future users of the buildings.

I. Changing proposed building plans (infrastructure)

When analyzing proposed building plans we look for possible changes that would result in a higher active score of the building. By striving to achieve the highest active score possible, the building provides better amenities that make active travel possible which results in more people opting for these active mobility options. Because these buildings are not yet finalized and built, the room for possible changes is bigger. Therefore the buildings can be maximally optimized for active travel.

II. Adapting existing buildings to be more active travel friendly (services)

When analyzing existing buildings we look for possible changes that would result in a higher active score within the possibilities that the existing structure allows for. This transformation allows for less room for changes, but by repurposing different rooms and redesigning the layout of the building to house the needed amenities for active travel the building can still be drastically improved for facilitating active mobility.

III. Ensuring buildings are prepared for future growth (future-proofing)

In our approach for changing the way we design buildings and how they facilitate and stimulate active travel, it is important to not only look to today's standards, but design with the future in mind. Due to the rapidly changing nature of our transport forms, it is important to design the active travel amenities with room to grow and adapt to possible changed wishes at a later point in time. By adapting this it allows for the longevity of the active travel of users of the building.

2.2 Integration into policy

In the current building environment the focus on active mobility mostly lies on the infrastructural connections within regens/ cities or the infrastructural network of a neighborhood, but that is usually where it stops. But this is actually quite weird, because people make trips from one place to another, thus resulting in the arrival to most of the times different buildings. So to stimulate more usage of active travel the endstation of the trip should house all the facilitations needed to enable people to make this trip using active mobility. But regulation and plans regarding facilities to enable this active mobility only imply the cities and infrastructural networks. By focussing on implementing the needed facilities to allow for this active mobility and connecting this to regulations in the development of buildings, the awareness of active mobility and the likelihood people will utilize this different transportation option is drastically increased.

The way we propose to implement this is by adding an ActiveScore analysis as a planning condition imposed on building developments. The ActiveScore certification is a way for real estate developers and building owners to map their buildings and get a better understanding on how their assets score on the active travel department. By rating the building on a 0-100 score range, the likelihood of the building stimulating its inhabitants/ workers to use active mobility is shown and made visual. The score element also creates the urge for these real estate developers or building owners to score as high as possible, thus creating and implementing different aspects and ideas to achieve this higher rating. Which results in more people opting for these active mobility options.

2.3 Methodology

The methodology used for the analysis of the building is split according to the following divisions. 70% Infrastructure, 20% Occupier engagement services, 10% Future proofing (preparing for future demand). The ActiveScore certification rating is generated as a total out of 100. As such, no assessment topic is more important than any other. This is designed so that a building with excellent soft measures, but less good infrastructure, has the opportunity to achieve as well as one with good infrastructure and poor soft measures.

A) Region specific criteria

The assessment criteria is region specific in order to adjust to local active travel trends. This is achieved by relating to local planning guidance for infrastructure quantity topics. Throughout the assessment other certifications are referenced such as WELL, BREEAM, LEED and GRESB - depending on the region. ActiveScore criteria is generated to always exceed the local planning guidance and other certifications that touch on end-of- trip facilities - to ensure the concept of a world-leading best-in-class facilities is always strived for.

B) Best-in-class provisions

Access for all Access, Routes, and Wayfinding Security and Lighting Location	Providing Active Travel Infrastructure Quantity Visitors Future-proofing Variety Repair Station	End-of-Trip Amenities Showers Lockers Changing Drying
Look and Feel Information & Promotion Highlights & Signage Wall and floor textures	Creating a Community Services Communication Bicycle User Group Pool bikes or scooters	

The only criteria that adjusts depending on the scale of the development are the raw quantities of infrastructure (such as cycle parking spaces, showers and lockers). All other topics are required regardless of the scale of the development. Why should a small development not be aesthetically welcoming or provide a social run/cycle group?

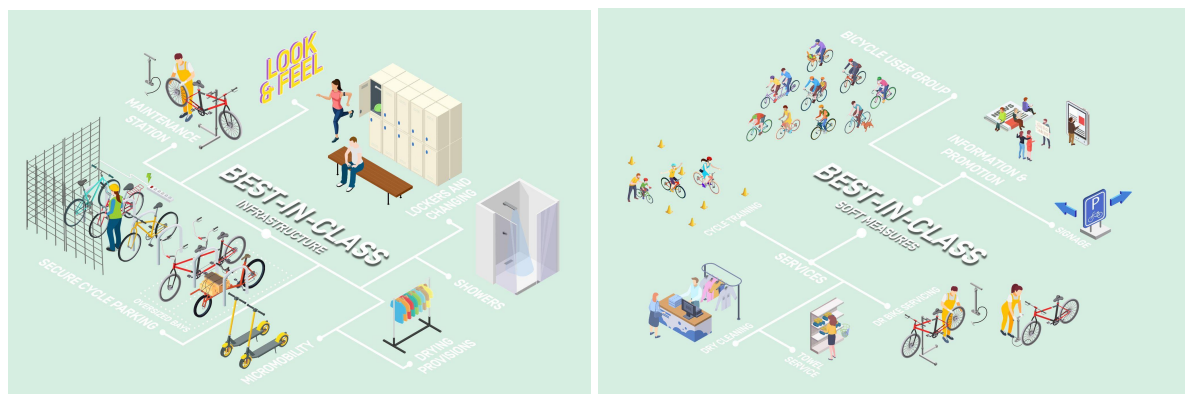


Image 3: Visualization of best-in-class provisions and how the different aspects are linked together.

2.4 Education

ActiveScore's goal is not simply a badge collecting initiative for real estate investors, the aim is to grow awareness of the benefit and need for good active travel facilities. The assessment report integrates everything from suggestions for improvement for individual topics, to highlighting the sustainability benefits of increased active travel. This way we want to educate the different parties involved starting from the realization of the building till the end users of the building and all parties in between. All the different parties involved have their own goals and wishes but by understanding these differences and educating them on how the implementation of active mobility benefits them in a way results in an integral project that benefits all parties involved.

3. The impact of active travel

3.1 Active travel and the built environment

What is the impact of stimulating more active mobility? As explained in the introduction the public space is under a lot of pressure to facilitate the way we live. On the one hand we have to facilitate buildings and houses that provide good living conditions so people can enjoy the outside, and on the other hand we have to facilitate the way we travel and create facilities like parking spots and infrastructural systems like roads to be able to use these mobility amenities. But his travel aspect continues to exert a bigger and bigger aerial claim on the available public space, thus allowing for example for less and less greenery in the public spaces to provide good living conditions. But not only that, the way we travel, mostly by car, has a huge impact on the environment because of carbon emissions. So, by shifting this mobility approach to more active mobility alternatives we not only relieve the stress on the public space by allowing for less parking spots to be needed, therefore allowing for more green space in the public space. But also combat the carbon emissions produced by the transportation sector, because active mobility does not produce any carbon emissions.

This positive impact of active mobility is shown in the analysis of a building we have done. From the analysis of the building a calculation of the transport carbon footprint of their employees' commute to work was made. The result of this calculation shows a reduction of 226.54 tonnes of carbon dioxide emissions annually.

To make this number speak more to the imagination, one ton of CO₂ is represented by the emissions of one gasoline car in The Netherlands over the period of half a year, 72 single trips from Amsterdam to Paris with the high speed railway or 2,6 economy class flights from Amsterdam to Rome. These examples only represent 1 ton of CO₂ emissions and to absorb 1 ton of CO₂ out of the atmosphere 50 trees need to grow for one year.

So doing the calculations the saved 226.54 tonnes of CO₂ emissions due to the Active Score adaptations is equal to:

- 113,27 years of emissions of one gasoline car in The Netherlands.
- 16.310 single trips from Amsterdam to Paris with the high speed railway.
- 589 economy class flights from Amsterdam to Rome.

3.2 Active travel for the user

How do these implementations of active travel amenities translate to the day to day use of the user? The users are the heart of the building, the building facilitates the needed amenities to allow for the desired living and working conditions. Therefore these active travel amenities drastically impact the first and last experience of a building, allowing the users to opt for this more active way of traveling without losing comfort at the office. The retaining of comfort is the most important aspect for users to switch to different modes of transportation.

By implementing these active travel amenities also connects the users to the wider active travel infrastructure, resulting in further changes of mobility choices outside of work-home related travel. This is due to realization of positive effects the users experience due to this active form of mobility.

3.2 Circular benefits

Landlords / Developers <ul style="list-style-type: none">- Achieve higher rents / longer leases- Attract millennial audiences- Build communities in workplaces and residential environments- Added value to ESG reporting	Employers <ul style="list-style-type: none">- Attract and retain talent- Fewer sick days- Positive promotion of health & wellbeing in the workplace
Community/city <ul style="list-style-type: none">- Address mental & physical health issue- Reduce CO2 and PM2.5 emissions- Improve air quality	End user <ul style="list-style-type: none">- Live more active lifestyles- Improve health & wellness- Save money by avoiding public transport and costs linked to car usage

4. Conclusion

To conclude, when looking at the current state of the public space and the pressure that is exerted on it by parking constraints it becomes evident that this way of growing is not sustainable for future growth. In this paper we suggested a possible solution to combat this growing pressure on the public space by solving and reducing the spatial claim of car related parking spots. The approach we suggest to resolve this problem is by focusing on the transition to active travel, rendering the car obsolete. But to be able to transition to more active travel successfully changes are needed. When looking at the active travel facilities and related policies it is mainly focussed on the infrastructure in cities and neighborhoods, but this is actually quite weird since people travel from destination to destination. So the end destination (most of the times a building) should house all of the needed facilities to make this active travel trip possible, but this is where the regulation and policies end. So by integrating policies that prescribe needed facilities like showers, lockers and bike storage options it enables the people going there to transition from the car to active travel.

By linking the Active Score building analysis to real estate building policies, buildings are certified, like BREAM for example, but focused on the ability of the building to promote the use of active travel. By linking these real estate developments to this certification, the building can be optimized and partially redesigned if needed to promote the use of active travel before they are built. This way the real estate developers become more aware of active travel, the benefits it provides and the facilities that are needed to promote active travel. By transitioning to more active travel we not only resolve the growing pressure on the public space, but also reduce carbon emissions produced by cars which has a positive impact on the climate. Next to these environmental benefits studies show that active travel also has a positive impact on health and the wellbeing of people. Which results in less people calling in sick for work, being less stressed in the office after cycling to work and a lower risk of depression for adults that participate in daily physical activities.

All in all the transition to more active travel has several great benefits and resolves pressing issues that hinder our future growth.

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