

POLIS

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KARLSRUHE (DE)



Baden-Württemberg
Ministry of Transport



Karlsruhe



Socio-economic evaluation to choose the most suitable cycling facilities

How to help local governance outside urban centers with safety,
environnemental, health point of vue

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Outline of the presentation

- **Background**
- **Proposed methodology**
- **Quantitative evaluation: socioeconomic assessment for cycling infrastructure investment outside built-up areas**
- **Presentation of the case study results**
- **Effects on health**
- **Limitations and future work**



Aim of the Study

Background

Recent French law on mobility which requires assessing the need for bicycle development on roads

Aim


Need to create some decision help for public authorities to choose the best option for cyclists infrastructures

Include **health** in the balance sheet of costs and benefices, and not only accidents and pollution and time



Proposed methodology

2 complementary approaches:

1. A multi-criteria analysis with facility typologies based on the context
2. A socioeconomic assessment: a comparative monetised analysis of different development solutions.
 - Design of a spreadsheet* to produce a quantitative balance sheet
 - This method is developed jointly with the local authority's teams.
 - Consultation with cyclists associations is also planned

*first version was designed by the Gustave Eiffel University (UGE) and the Inspection Générale de l'Environnement et du Développement durable (IGEDD)

Presentation of the socioeconomic assessment spreadsheet

compare socioeconomic effects of 2 types on cycling facilities

Use of spreadsheet with 3 scenarios :

➤ 1 with no cycle facilities : baseline

➤ 1 with a painted cycling lane



➤ 1 with a separated cycling path :





Socioeconomic assessment spreadsheet : main input data

Project Data

Current and forecast cycle and car **traffic** on the route and growth

Investment **costs**

Length and average **distance** travelled

Modal shift

A **quality** rating for the **lanes** (comfort, feeling of safety)

Current and forecast speeds for cars and bikes

Socio-economic parameters:

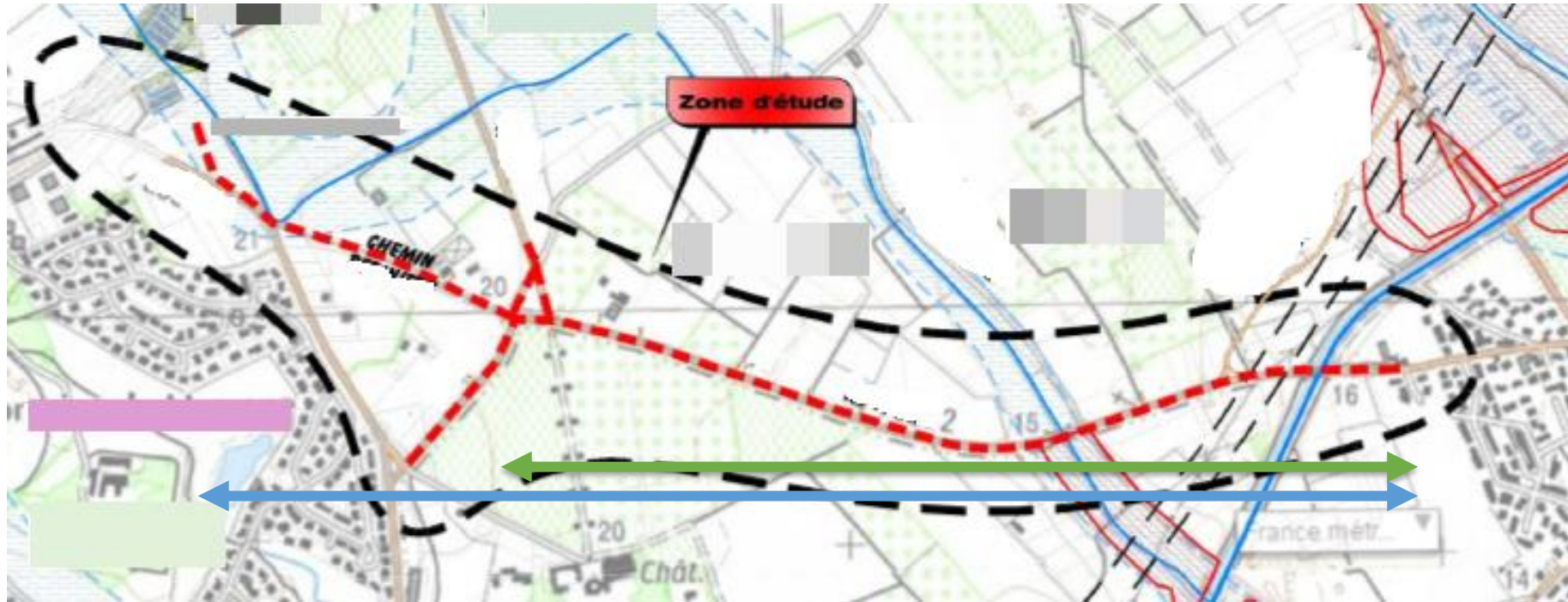
Data from the French transport evaluation framework

Data from the scientific literature

Monetized results :

- Users gains, including saved or lost time and comfort.
- Environmental externalities (greenhouse effect, local pollution, noise, ...)
- Effects on public finances, accidents and **health**.

PRESENTATION OF EXPERIMENTAL CASE



Reference situation :
Road without cycling facilities

Project : 2 variants

- **Variant 1** : partial completion of project
- **Variant 2** : all the project



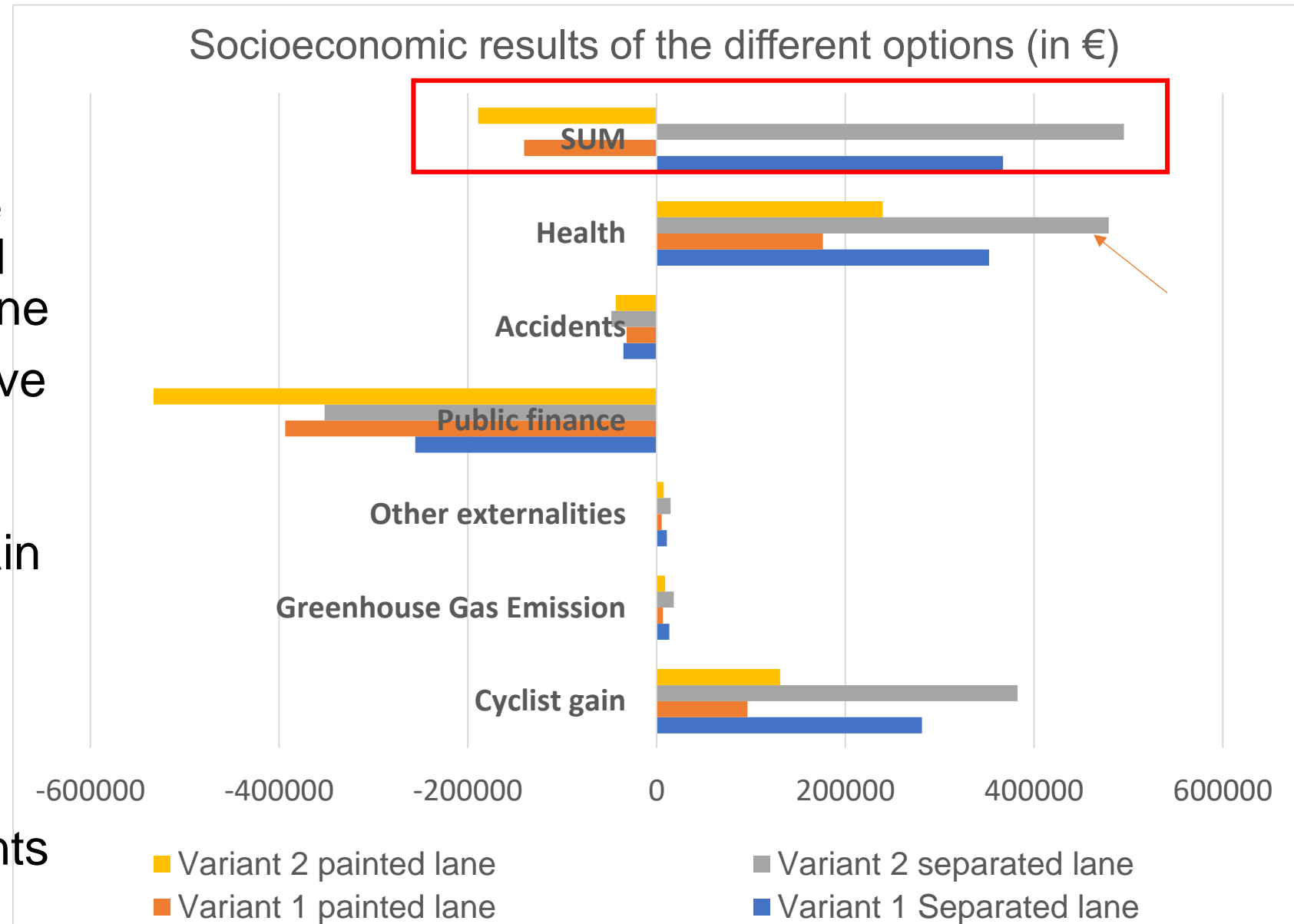
PRESENTATION OF EXPERIMENTAL CASE

	Reference situation	Variant 1	Variant 2
Length		1.5 km	2.55 km
painted cycle lane		906 k€	669 k€
Separated cycle path		556 k€	411 k€
Average annuel daily traffic cycle	0	90	140
Average annuel daily traffic car	2900	<i>Calculated datas deducted from modal shift</i>	

RESULTS

Analysis :

- Balance sheet positive for separated path and negative for painted lane
- Variant 2 more attractive than variant 1
- Important benefit from Cyclist's health and gain
- Low benefits from Externalities including greenhouse gas emissions
- Little loss from accidents





Health effects Zoom

Effects on health **thanks to physical effort** :

- represents a reduction in the risk of dying, excluding accidents and air pollution, whatever the cause.

Very important impact in the balance sheet:

- Enable to justify cycling projects from a socioeconomic point of view, as opposed to GHGs.

The effect of cycling on health is studied more in health economics than in transport economics. For example:

- WHO, *Health Effects Assessment Tools (HEAT) for cycling and walking* (2017).
- Rabl A and De Nazelle A, ***Benefits of shift from car to active transport*** (2011)

Health benefit values used in €2010/km:

- Inactive mode: 0
- Walking: 1.037
- Cycling: 0.565



Limits and future work on the spreadsheet

Limit

- Input data often unavailable => need for assumptions
- Several calculation parameters not based on a benchmark and which have been the subject of few studies
- A bit of a 'black box' for non-experts

Future work

- Test on other use cases
- Improve ergonomics
- Adapt the tool to a wider audience
- Better consideration of safety and the effects on car and cycle speeds
- Including non-monetary outputs



**Thank you for
your attention!**



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