CALGARY 2022 CANADA

FEBRUARY 7–11 | 7–11 FÉVRIER | 7–11 DE FEBRERO

Urban Space Race

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Outline

- Objective and Approach
- Methodology
- Streets that fit project
- Urban Freight Space Race project
- Main takeaways

Objective and Approach

- **Rethink urban space equilibrium**
  - Inclusive, Sustainable and Resilient Urban Transport
- Develop under a series of studies within ITF Corporate Partnership Board
  - Streets that fit report: Looks at the street space performance and **balance between passenger modes**
  - Urban Freight Space Race: Adds to the discussion the freight dimension and analysis the **different strategies to decarbonise freight in the future**

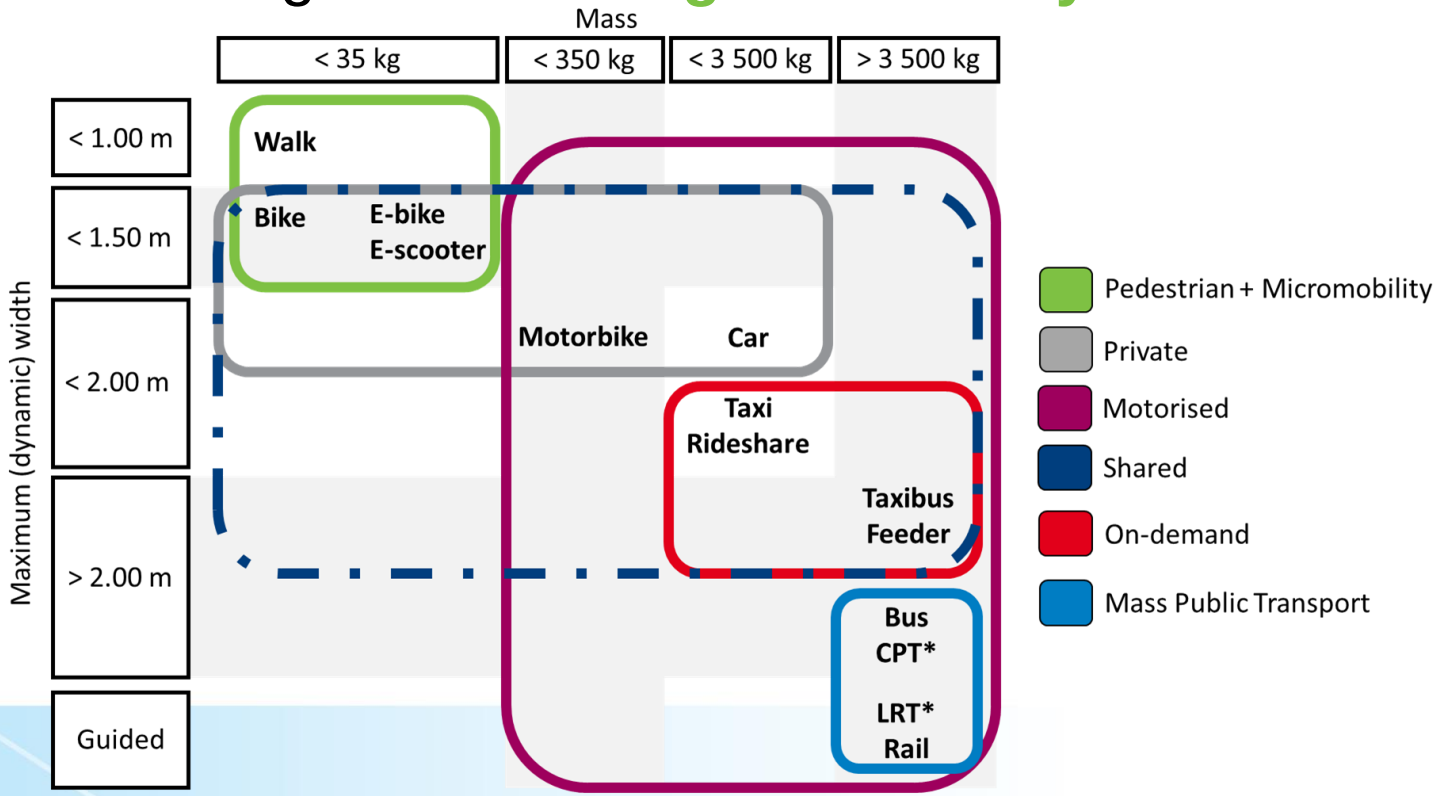
Methodology

- Investigates the **rationale for street space allocation**
  1. The **trip purposes / commodities that can be effectively served** by different modes /vehicles
  2. The **space consumption needed** to provide this mobility
  3. The **environmental concerns**
  4. **KEY**: **The need for reallocation of space will be different** at different **urban levels** and the impacts and needs in the centers and **peripheries of urban agglomerations** will be different

- Leverages an **agent-based model** for a mid-sized city
  - Incorporates optimisation algorithm for street space management including:
    - Efficiency (modal estimated demand), Safety (conflicts between vehicles and their speeds)
- Metrics:
  - Assess space use, accessibility/resilient, environmental performance, travel activity (modal share and vehicle split)

Streets that fit project

- Explores:
  - Interaction among a **broad range** of **mobility services** and modes



* LRT: Light rail transit; CPT: Car + transit (i.e., park and ride)

Streets that fit project

- Explores:

  +

  - Limited, dynamic and **demand-responsive re-allocation** of space
- Scenarios

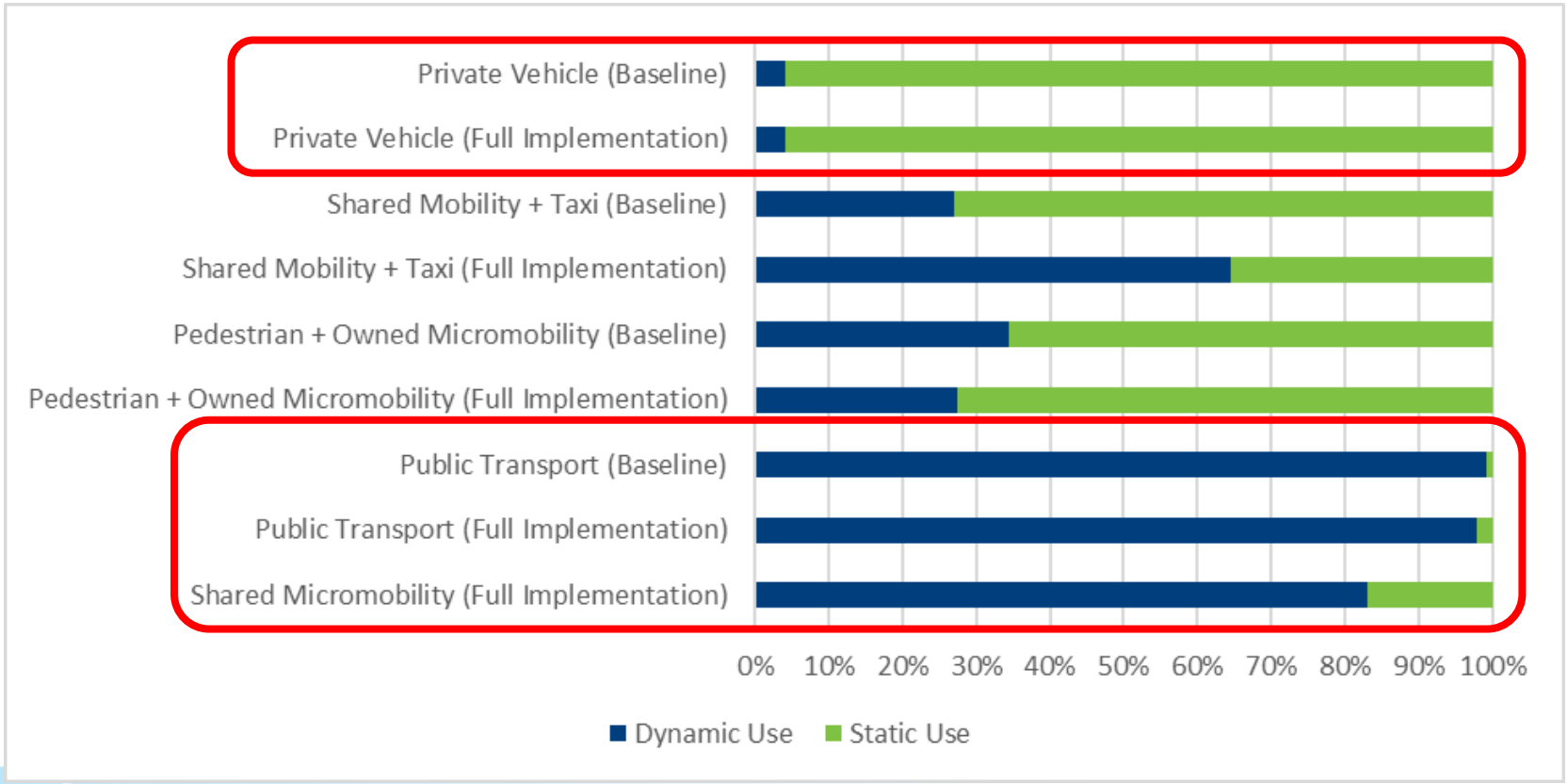
Baseline Scenario	•Static Network + No new modes
New Mobility Paradigm	•New modes (Shared and Floating micromobility) •Dynamic Demand
Dynamic Network	•Dynamic Network •Supply and Mobility Alternatives unchanged
Full Implementation	•Dynamic Network •Dynamic Demand + New Modes

Results

Space Consumption: Baseline

Results

Relative Space Consumption



Results

Space Consumption: Full Implementation

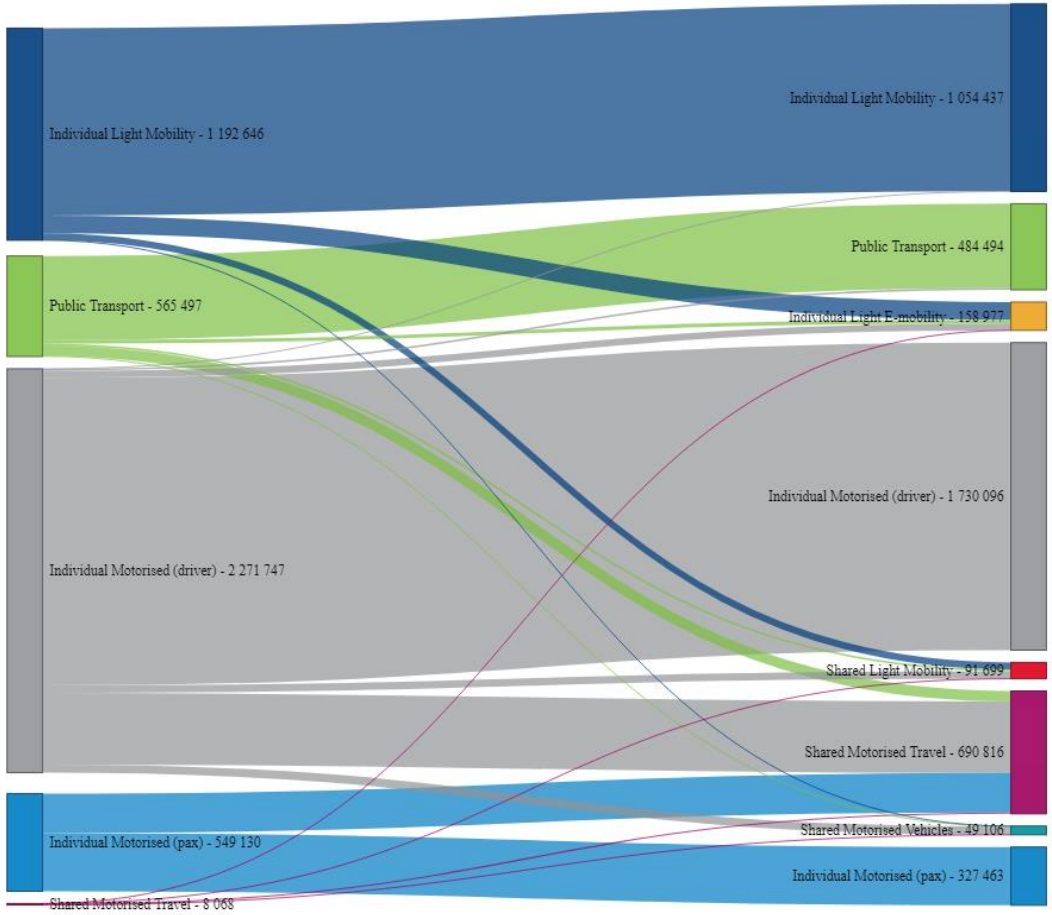
Results

Can we do better?

- **69%** of trips could be realized by **shared modes**
- **41%** by **micromobility and non motorised transport**
- In Full implementation:
  - Vkm and Pkm increase
  - Tank-to-wheel **CO_2 emissions** are **reduced by 6%**
  - **PM** emissions **drop by 4%**
- **With electrification** of the shared vehicle stocks:
  - up to **-23%** each for all measured pollutants

Results

Modal diversion



Results

Emissions

- **In Full implementation scenario:**
  - Replacement of private vehicle emission by shared modes (less CO_2 intensive)
  - Slight increase of vehicle-km but from smaller vehicles and more efficient
  - Reduction of emissions around 6%
  - Electric shared fleet would lead to a reduction of 23% of tank-to-wheel emissions

Urban Freight Space Race project

- Explores:
  - Interaction among a **passenger modes** and **freight vehicle**

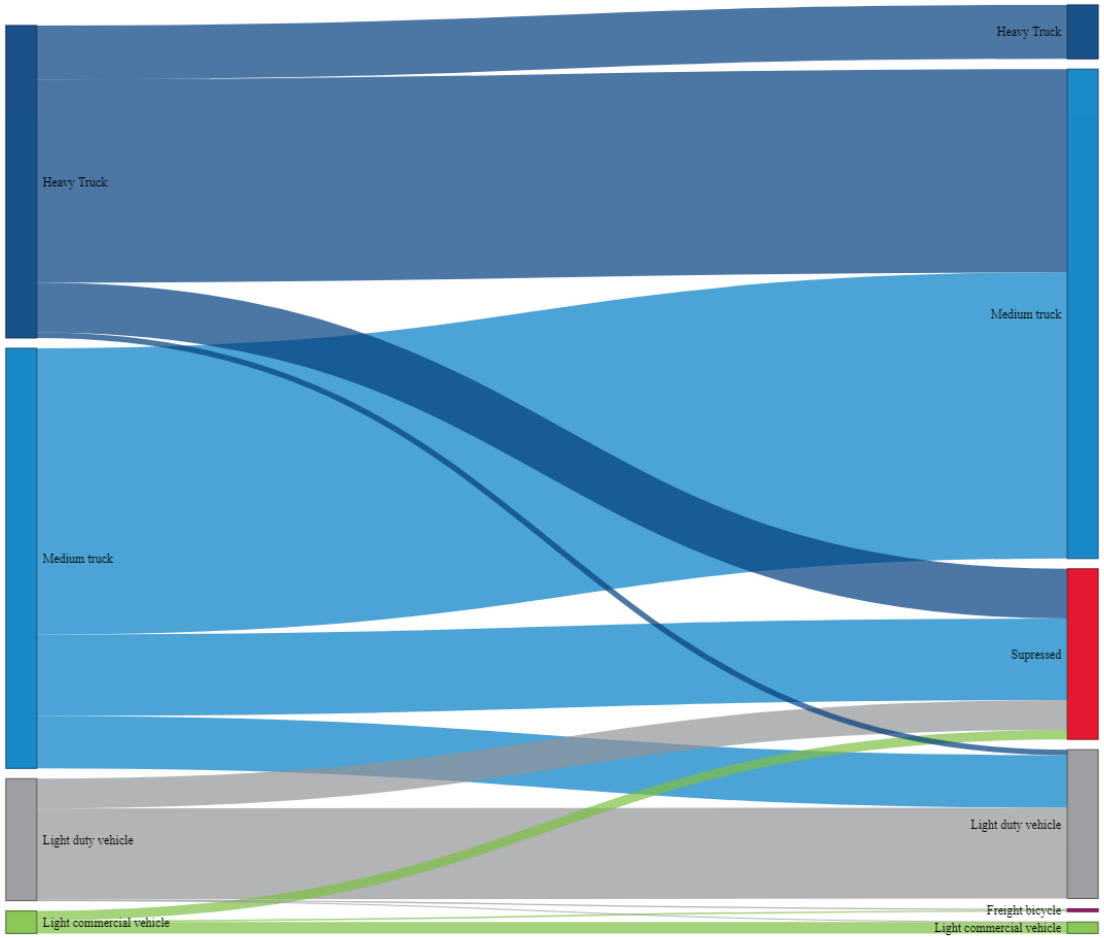
Urban Freight Space Race project

- Scenarios:
  - Interaction among a **passenger modes** and **freight vehicle**

Do nothing	• Static Network + No new passenger modes or freight vehicles
Private action	• Implementation of freight decarbonisation measures relying in private initiative
Public management	• Implementation of freight decarbonisation measures relying in public action and regulation
Full Implementation	• Implementation of freight decarbonisation measures relying in responsible demand, private improvements and public intervention

Results

Demand



Results

Space Consumption

Do nothing - scenario

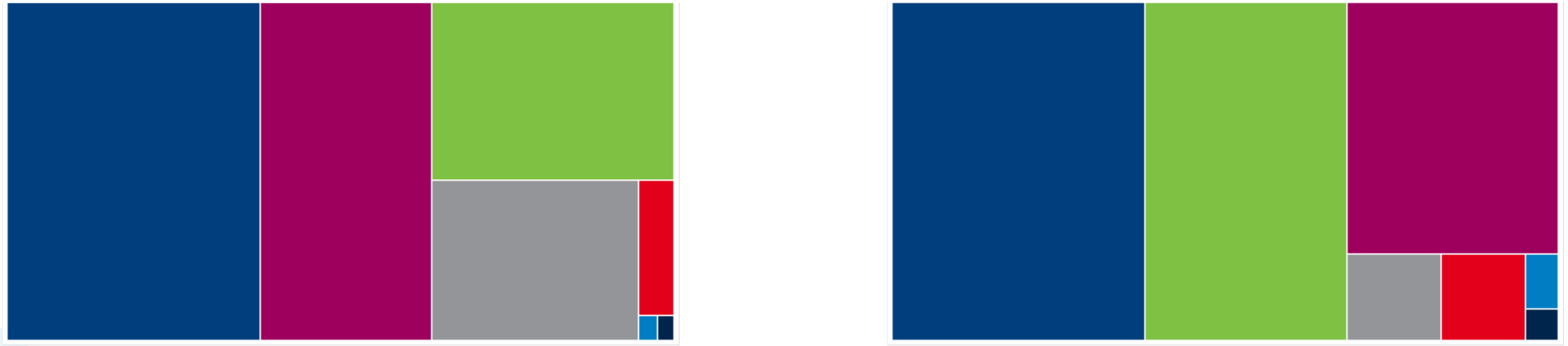
17.3

Conscious demand*+scenario

7.5

-57% from Do nothing

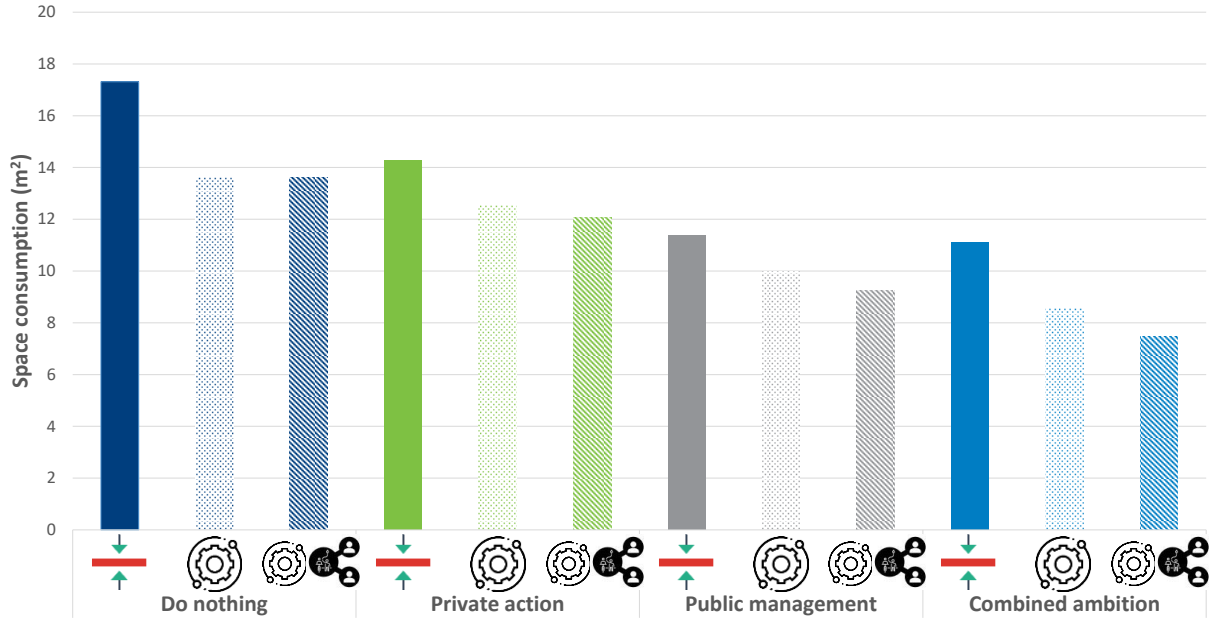
Relative space consumed by mode



Total space consumed for all freight activity per day (km^2)

Results

Space Consumption



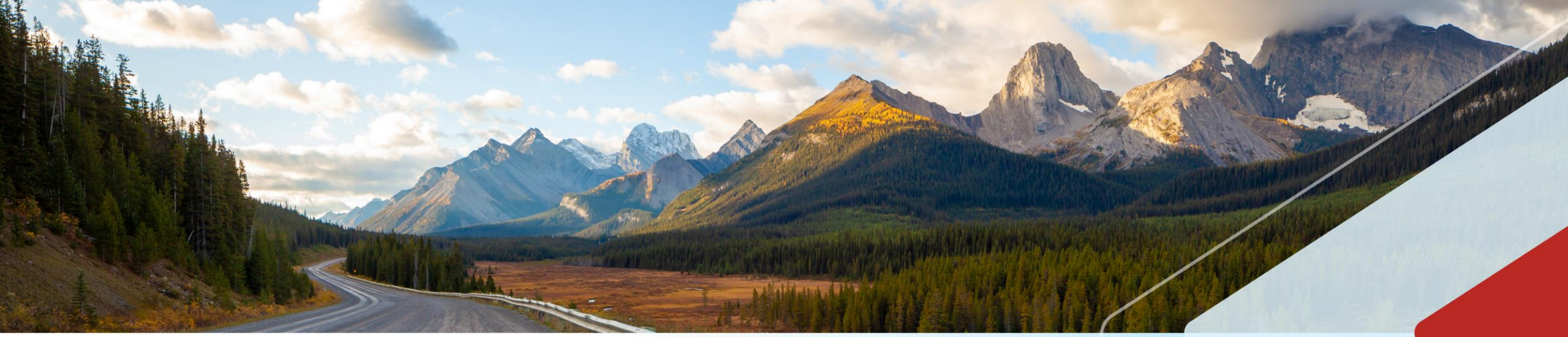
Results

Safety

- Optimising road management to match dynamically demand and safety can improve 15% overall safety (conflicts levels)
- Bicycles are the vehicle where safety changes would suffer higher increase as they coexist unsegregated several time with vehicles at much higher speed in the same space (35%)
- Pedestrians are also improved, by better traffic segregation but also from space that is converted from parking to sidewalks (12%)
- Better management also reduces double parking, specially for freight, improving also motorised vehicles fluidity, although at lough free flow speeds

Main takeaways

- **Safety and Predictability**
  - **more modes** in a **shared space** at **different speeds** → increase the **likelihood of conflicts and accidents**
  - **safe-system principles** should guide the re-allocation of space
  - default **low and safe speeds** could go a long way!
- **Data and measurement**
  - appropriate **space consumption indicators** for policy and appraisal assessments
- Building **more Inclusive, more Sustainable and more Resilient** urban transport requires adjustments to the **space allocation** rationale and the **speed** of urban activity



Thank you

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