This Project is co-funded by the European Union
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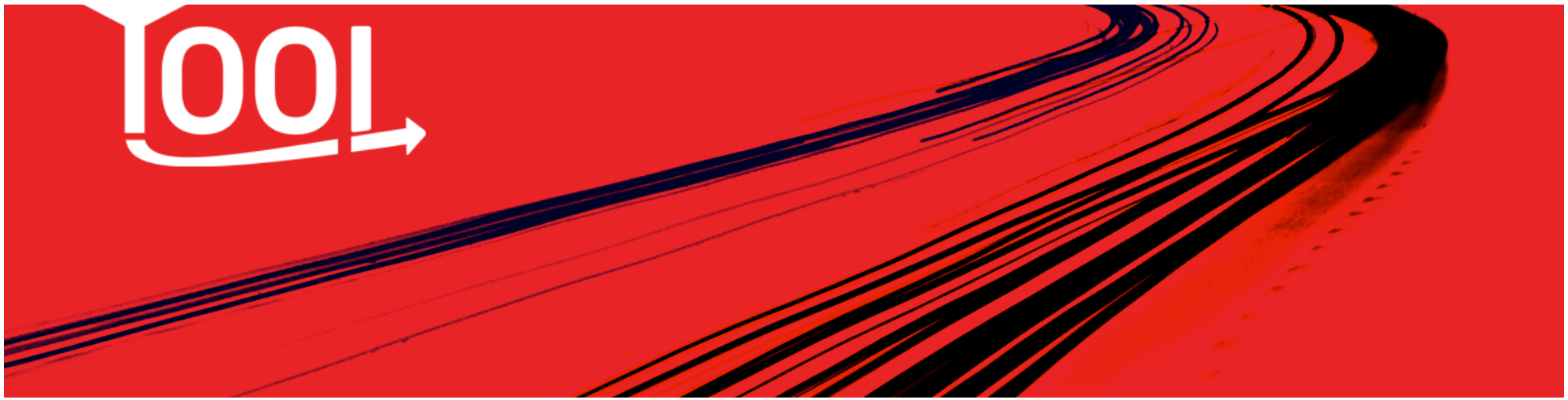


HIGH-TOOL session at ETC

29 September 2015, Frankfurt, Germany

Dr. Benedikt Mandel, MKmetric GmbH

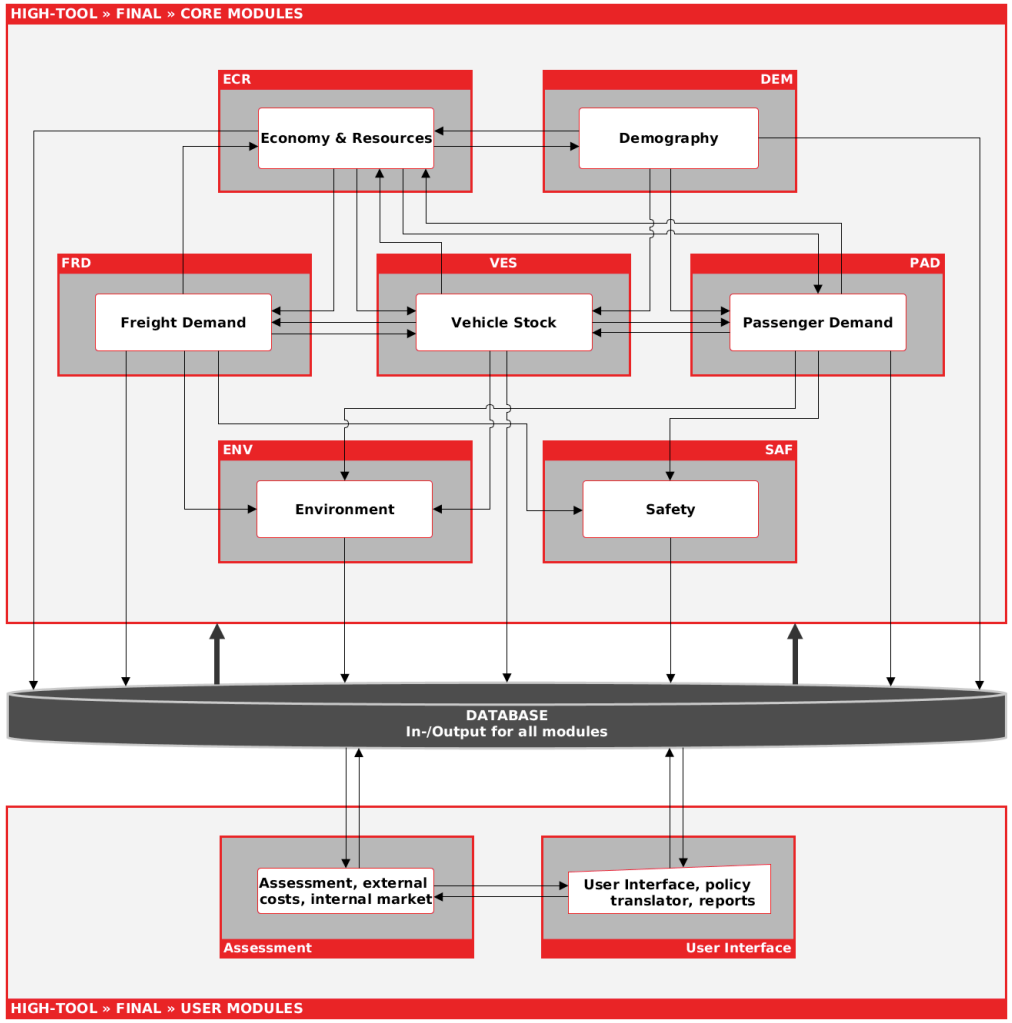
The structure of the HIGH-TOOL model and scope of transport policies covered

Agenda

1) Structure of the HIGH-TOOL model
2) Scope of transport policies

Structure

Modular structure of the HIGH-TOOL model



- Three main blocks
  - » User
  - » Data stock
  - » Core model
- Top down
- Interdependences
  - » ECR – DEM
  - » ECR – PAD, FRD
  - » VES – PAD, FRD
  - » ECR – VES
  - » DEM – PAD, VES
  - » User – Reporting & Data
- Data stock
  - » Link to all modules
  - » Base for all data

Structure

Components of HT

Demography

Cohort model, historic trend / factors

Economy & Resources

Targeting transport related effects

Trade and GDP as main drivers needed

Concentrating on energy consumption

Freight Demand

Trade converted into tons

Route & mode choice

Passenger Demand

Equations, 3 of the 4 steps, urban, air

Vehicle Stock

Trend, load factors, transport performance

Environment

Emission calculation

Safety

Trend & Adjustment by anticipated effects

Database

In-Output of all data

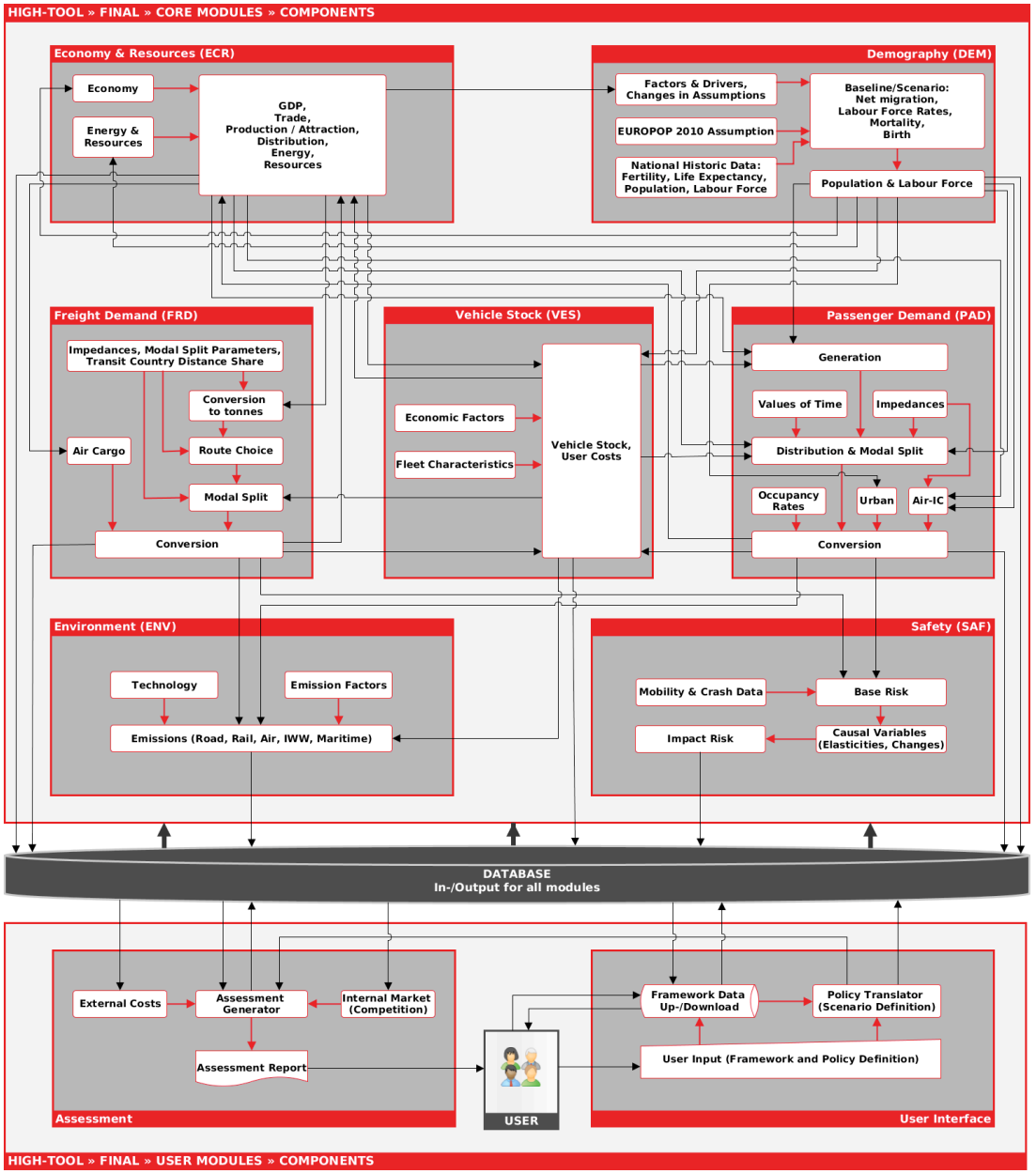
Assessment

External cost calculation, internal market

Report generation

User Interface

Manual input, Up-/download of data



Structure

In- / Output matrix of the HIGH-TOOL model

Module delivers data / information to	Demography	Economy & Resources	Vehicle Stock	Environment	Freight Demand	Passenger Demand	Safety	Database	Assessment (incl. External Costs, Competition analysis)	User/ User Interface
Demography										
Economy & Resources										
Vehicle Stock										
Environment										
Freight Demand										
Passenger Demand										
Safety										
Database										
Assessment (incl. External Costs, Competition analysis)										
User/User Interface										

Input requested
No input
To be decided
Diagonal

Structure

In- / Output matrix of the HIGH-TOOL model

Module delivers data / information to	Economy & Resources	Vehicle Stock	Freight Demand	Passenger Demand
Demography	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0, Rest of World bundles o_de_labour o_de_pop	For EU28+NO+CH on NUTS-0 o_de_pop (for the final)	No input required	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0, Rest of World bundles o_de_labour o_de_pop
Economy & Resources		For EU28+NO+CH on NUTS-2 o_er_gdp_capita (for the final)	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0, Rest of World bundles o_er_trade	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0, Rest of World bundles o_er_gdp o_er_empl o_er_income o_er_gva
Vehicle Stock	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0 o_vs_tax_revenues o_vs_purch o_vs_cstavggen_fix_vkm, o_vs_cstavggen_var_vkm, o_vs_veh_stock_n2, o_vs_vkm_n2		For EU28+NO+CH on NUTS-0, Rest of Europe NUTS-0 o_vs_cstavggen_fix_tkm o_vs_cstavggen_var_vkm	For EU28+NO+CH on NUTS-2, Rest of Europe NUTS-0 o_vs_veh_stock For EU28+NO+CH on NUTS-0, Rest of Europe NUTS-0 o_vs_cstavggen_fix_vkm o_vs_cstavggen_var_vkm o_vs_cstavggen_fix_pkm (non road modes) o_vs_cstavggen_var_pkm (non road modes)

Input requested, No input, To be decided, Diagonal

Structure
Processing

Time lag t-1 versus t

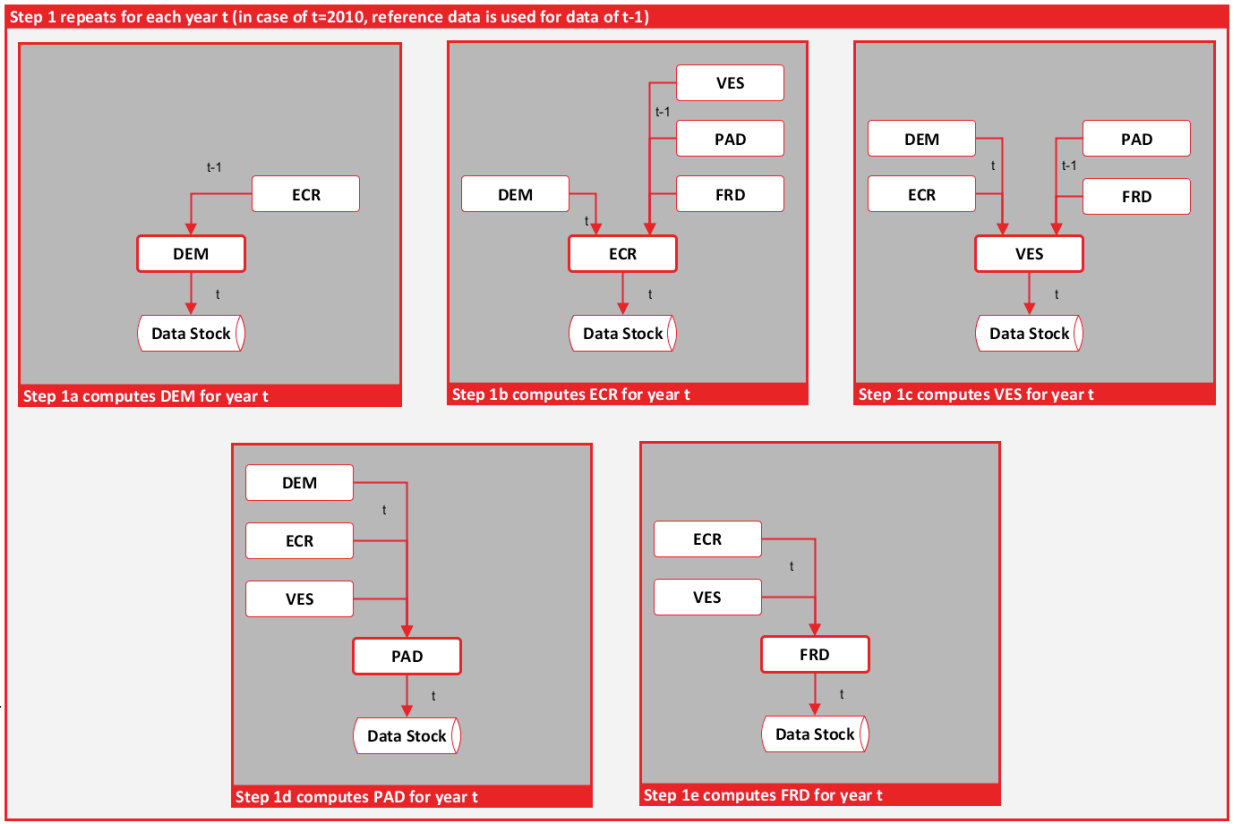
ERC t-1 >> DEM t
DEM t, VES/PAD/FRD t-1 >> ECR t
ECR/DEM t, PAD/FRD t-1 >> VES t

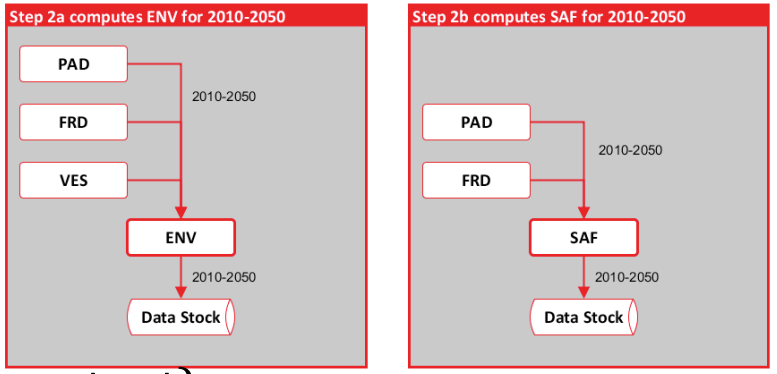
DEM/ECR/VES t >> PAD t
ECR/VES t >> FRD t

Avoiding iterations within one time step.

Environment and Safety as final computation steps for the overall time horizon.

Time steps:
t = 5 years
t = 1 year (reduces time lag to a large extent)





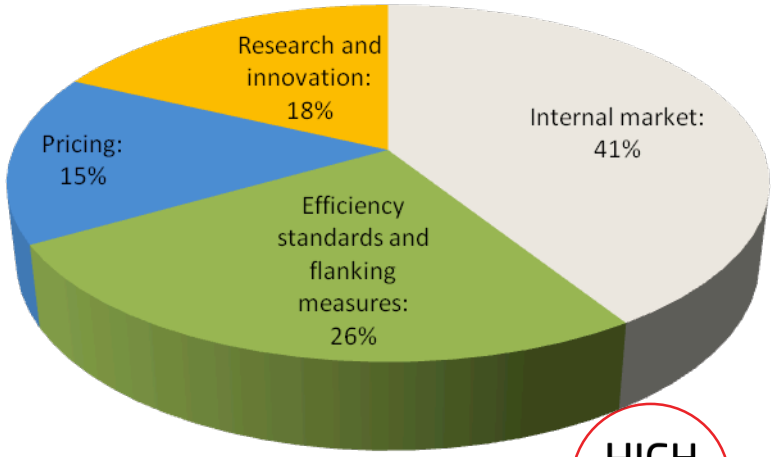
Transport policies

Transport policy measures (TPM)

Category	Transport policy
Efficiency standards and flanking measures	CO2 emissions limits for road vehicles
	Deployment of efficient vehicles
	Diffusion of electro cars
	Diffusion of H2 fuel cell cars
	HDV limitation for urban areas
	Improving local public transport
	LDV speed limit
	Pollutant limits for road vehicles
	Replacement of inefficient LDVs and buses
	Replacement of inefficient cars
Pricing	CO2 certificate system for road transport
	CO2 feebates for road transport
	Circulation tax for cars
	HDV infrastructure charge
	Internalisation of external costs
	Urban road charging
Research and innovation	Dynamic traffic management for road
	Improvement of energy efficiency of vehicles
	Intelligent road vehicles
	Intelligent traffic information system for road
	New fuels and propulsion systems
	Road vehicle safety technology protecting other transport users
	Safety systems for road vehicle users

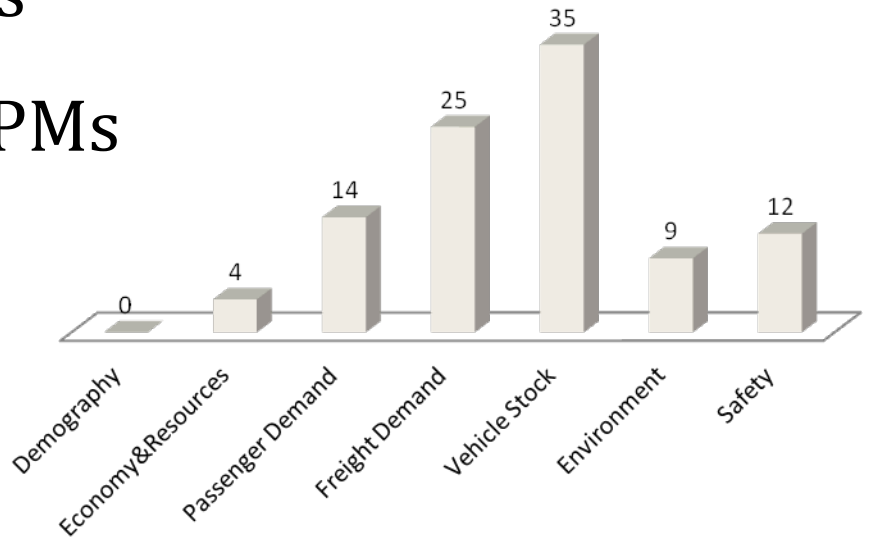
Category	Transport policy
Internal market	Accelaration of TEN-T implementation
	Access to rail infrastructure
	Enhance sercice quality at airports
	Enhance sercice quality at ports
	European Rail Traffic Management System
	Freight corridor management
	Harmonized handling of dangerous goods
	Harmonisation of rail safety
	Harmonized social rules for truck drivers
	Maritime traffic management system
	Opening the internal IWW market
	Opening the internal rail market
	River information system
	Single European road market
	Single European Sky
	Single rail vehicle authorisation and certification

Internal market: 16
Efficiency standards and flanking measures: 10
Pricing: 6
Research and innovation: 7



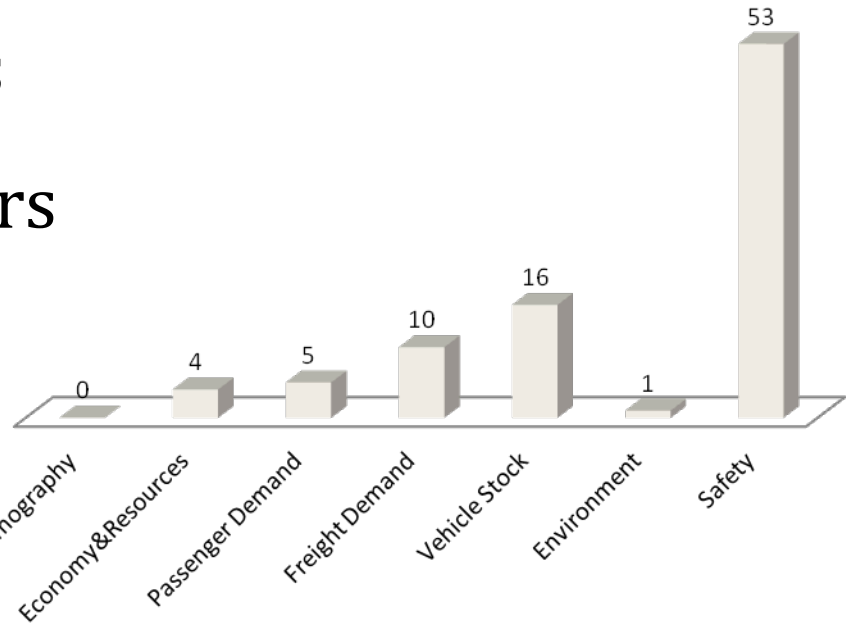
Transport Policies
by module

1) Demography: 0 TPMs
2) Economy: 4 TPMs
3) Freight Demand: 25 TPMs
4) Passenger Demand: 14 TPMs
5) Vehicle Stock: 35 TPMs
6) Environment: 9 TPMs
7) Safety: 12 TPMs



TPM policy levers (-group)
by module

1) Demography: 0 levers
2) Economy: 4 levers
3) Freight Demand: 10 levers
4) Passenger Demand: 5 levers
5) Vehicle Stock: 16 levers
6) Environment: 1 levers
7) Safety: 53 levers



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Thank you for your attention