



# Requirements for efficient time use on train journeys

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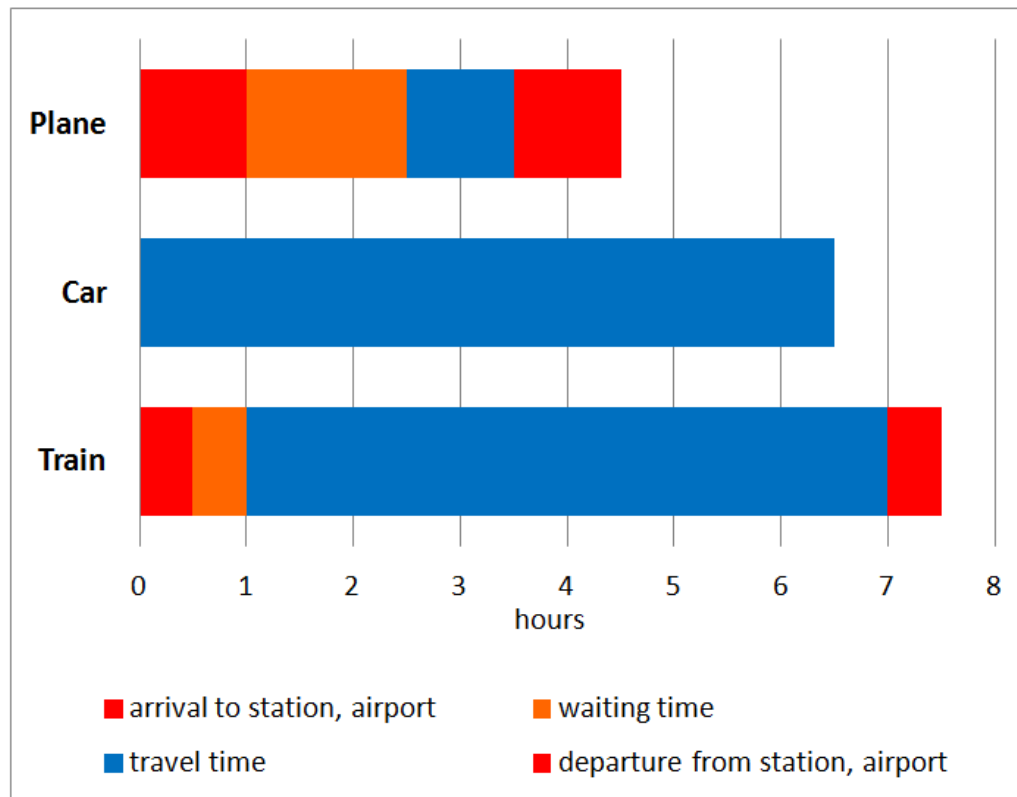
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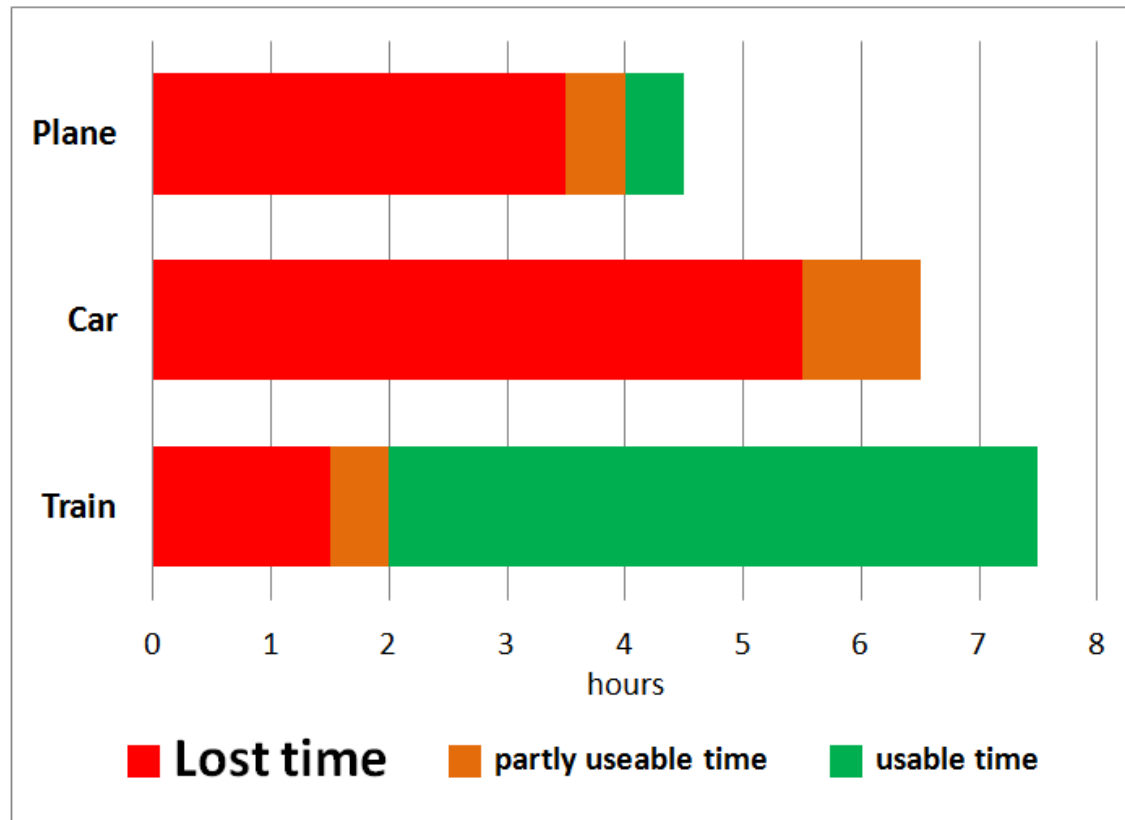
## Advantage of railway system:

- **Travel time** can be used **meaningful**
- Lost time is much shorter compared to other transport modes

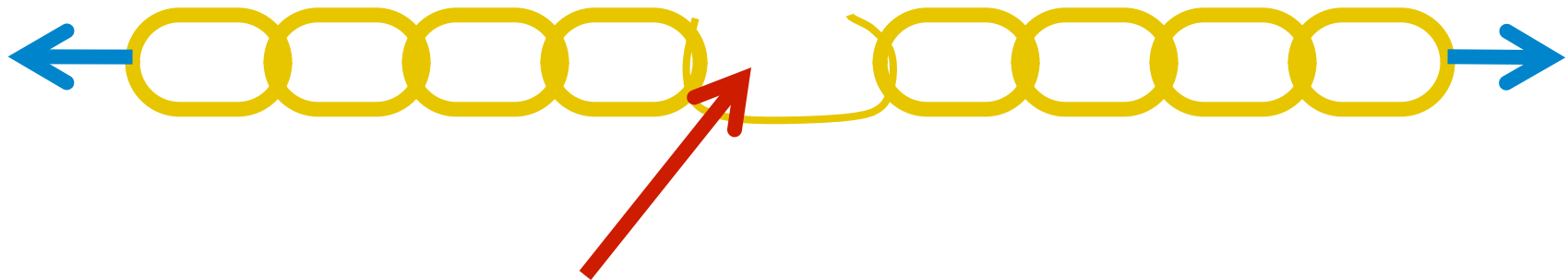


## Advantage of railway system:

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Each chain is only as strong as its weakest link!!



**Customer satisfaction** is very important  
along the **whole mobility chain**

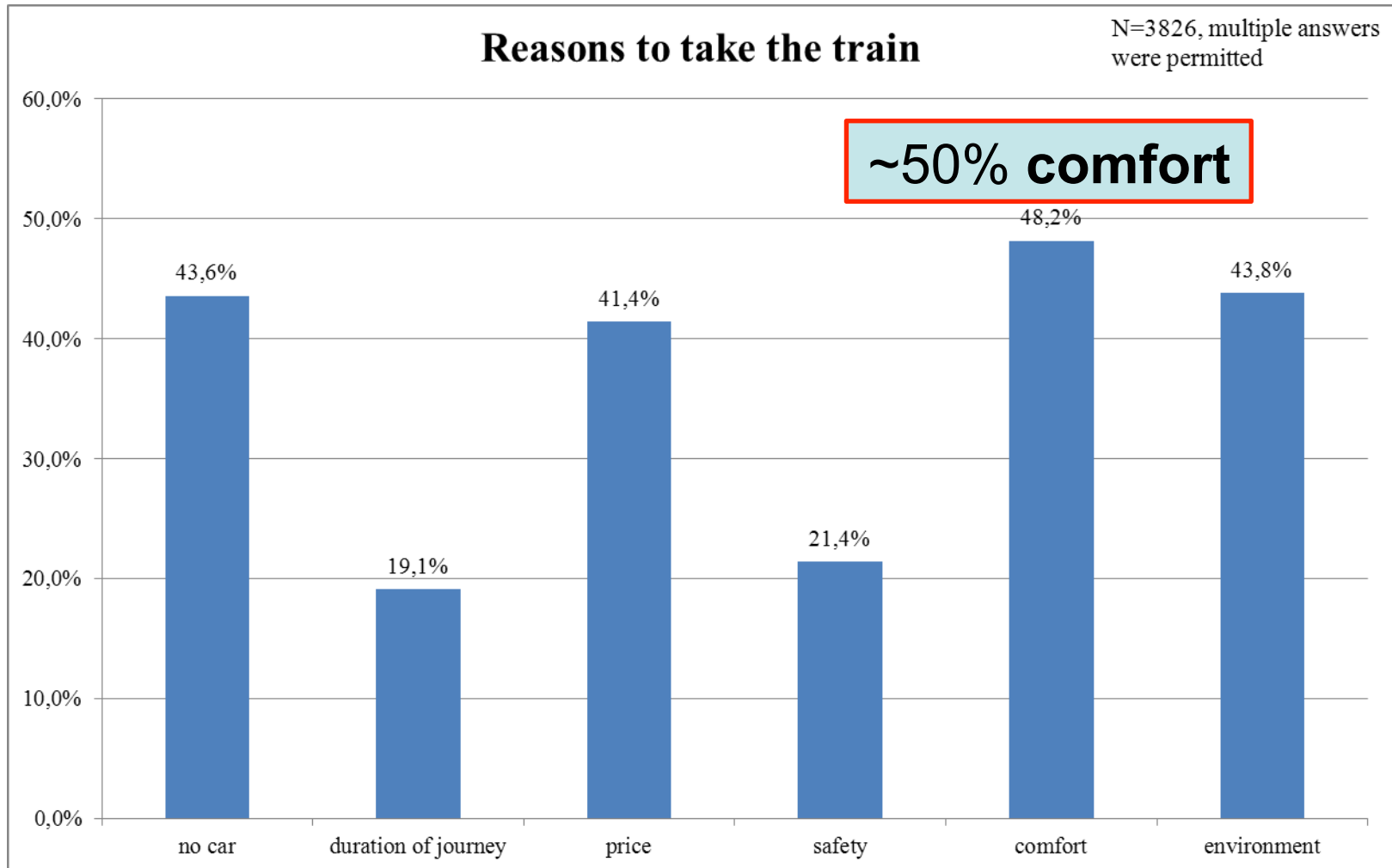
- Passengers **must be able to use** the **time** as they prefer
  - Passengers must be satisfied during the entire trip (from door to door)
- Passengers must be **satisfied** during the **entire train journey** in the passenger coach and on their seats

- The highest priority for the railway industry and the operator must be: **„The customer is always right!“**
- The customer must be in the focus, therefore it is required to know about:
  - actual behaviour
  - actual satisfaction or dissatisfaction
  - **needs**
  - **expectations**

- Austrian research project “FLEXICOACH” focuses on the needs and expectations of passengers.
- Aim: Gather information about passenger’s needs and their requirements on a journey.
- Passenger opinion surveys: About 5.000 passengers were interviewed.
- Analyses of passenger’s actual behaviour.

- Two principles are important to gain as many passengers as possible:
  - **What do passengers need to be really able to use the time efficiently?**
  - **What do passengers need to be satisfied?**





## Mobility chain! – Chain link „*train trip*“



- Boarding and alighting the train
- Moving in the train
- Finding a free seat
- Storing luggage
- Seating comfort
- Climate conditions in the vehicle
- Disturbing by other passengers, high utilization rate
- Noise, light, (bad) smell
- Quite running / unsteady running, vibrations

## Combination of difficulties

- Personal mobility reduction, age of passengers
- Luggage, baby prams, bicycles ....
- Entrance: high, width, steps, gap .....

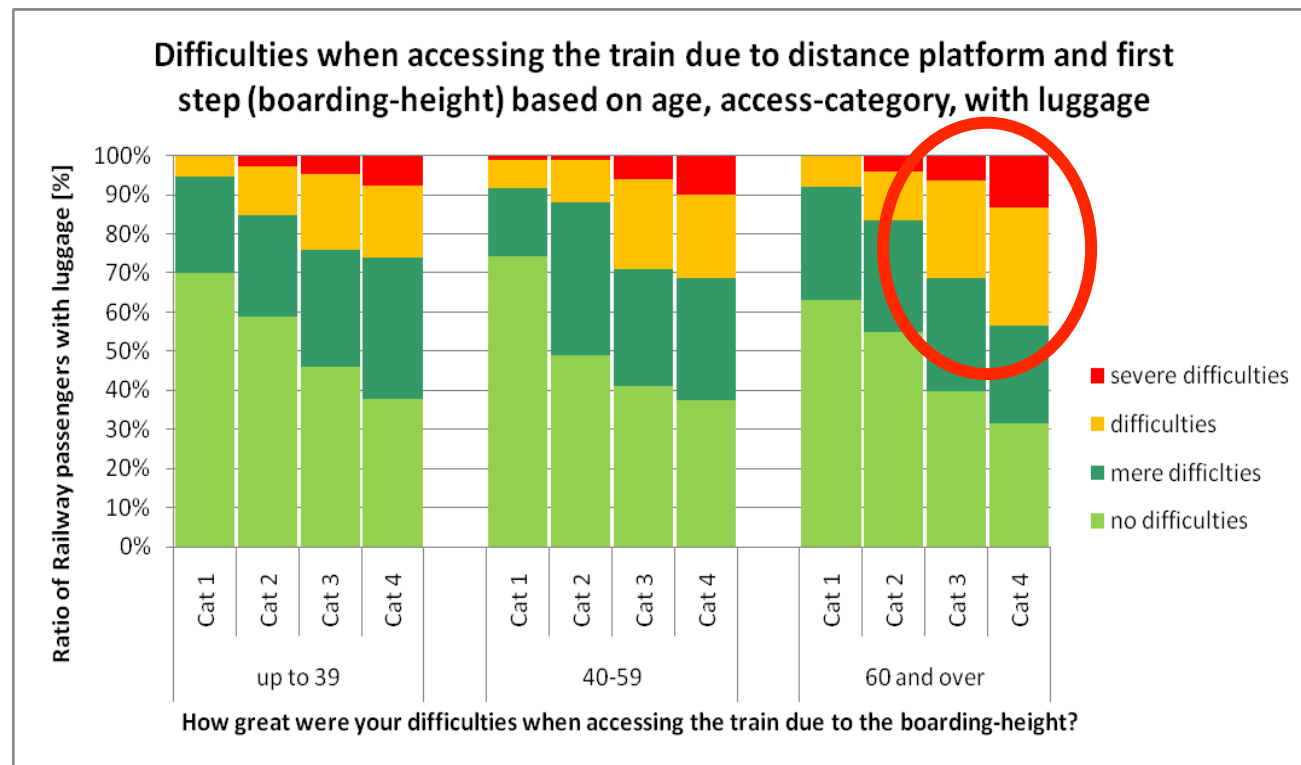


Cat 1: level boarding or one step

Cat 2: ICE, TGV etc.

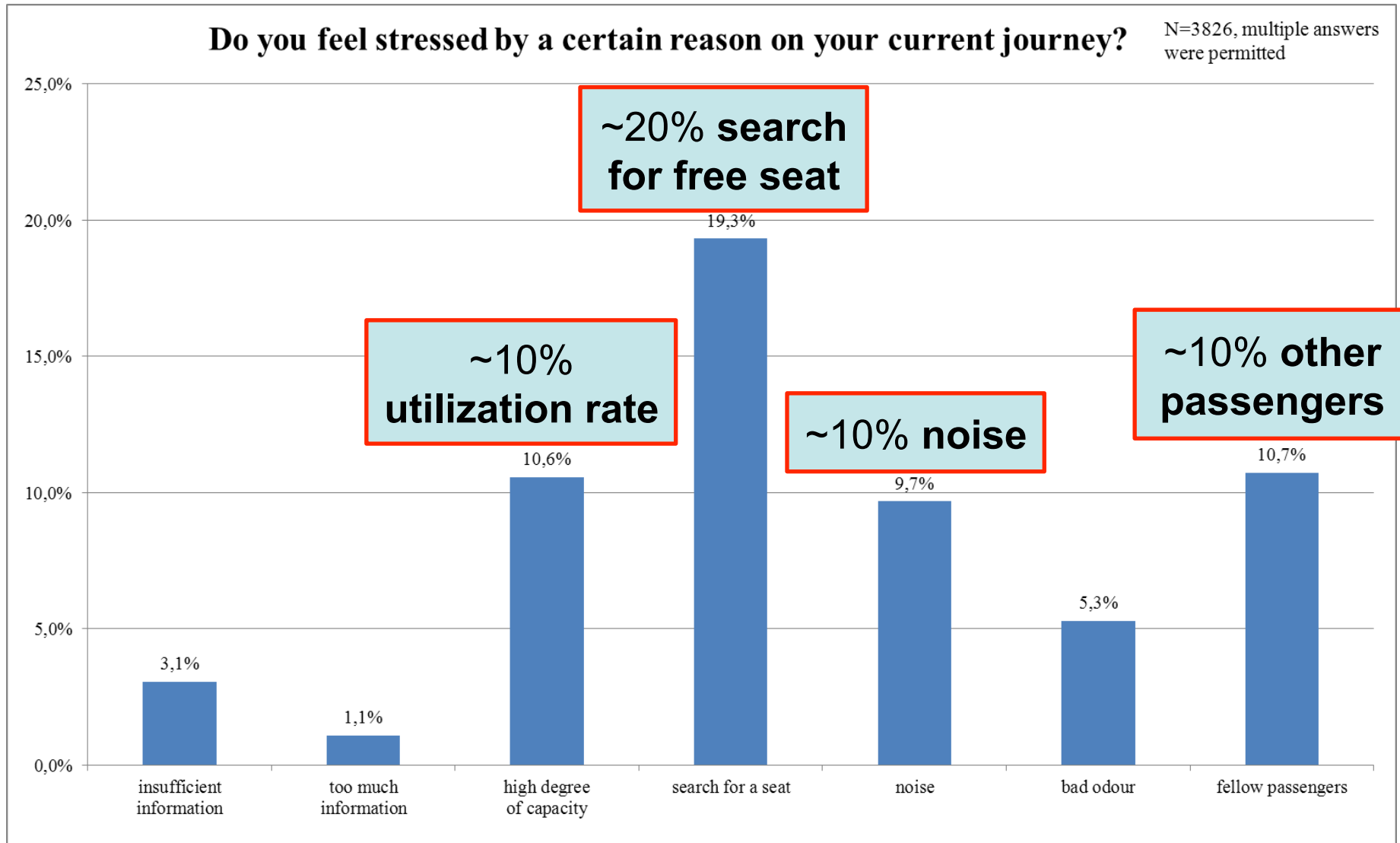
Cat 3: typical passenger coach, 55cm platform

Cat 4: Old passenger coach with steep entrance, low platform

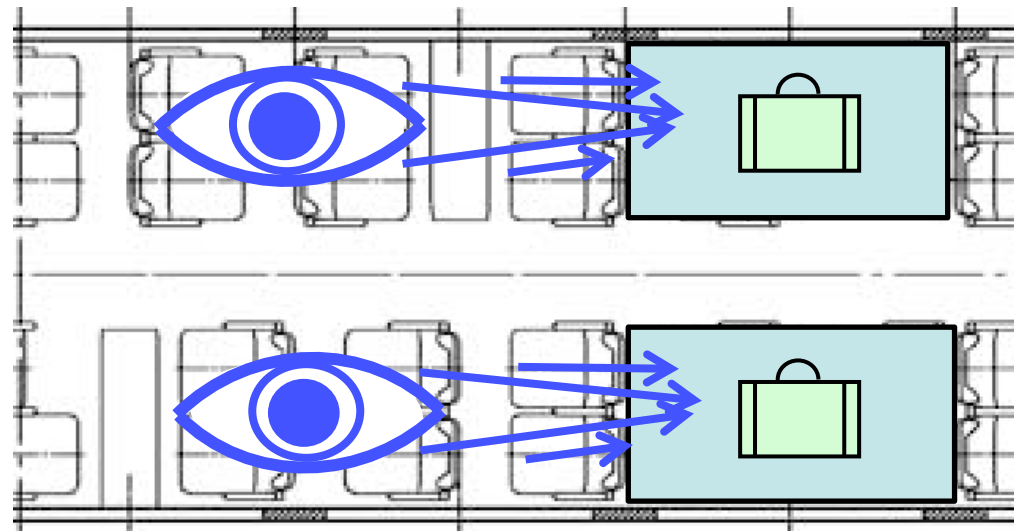
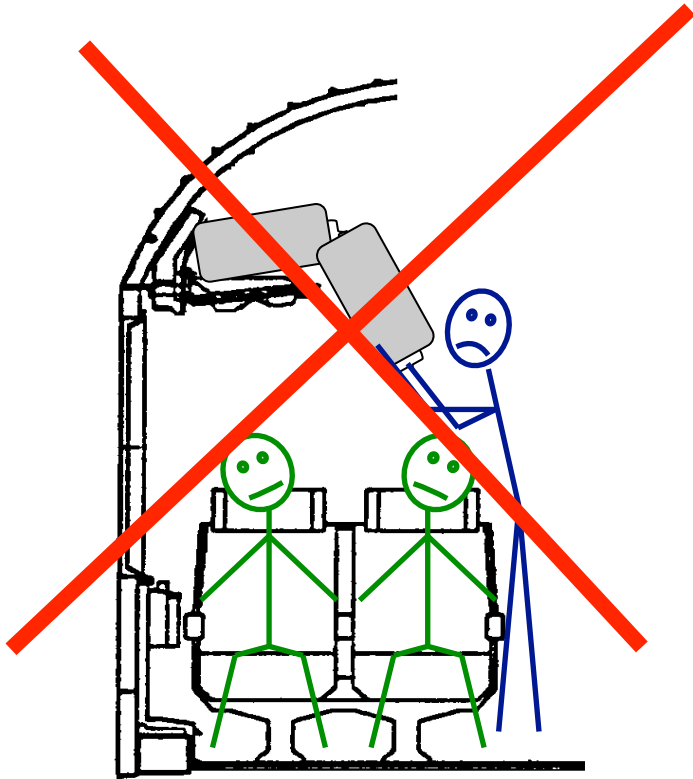


**Do you feel stressed by a certain reason on your current journey?**

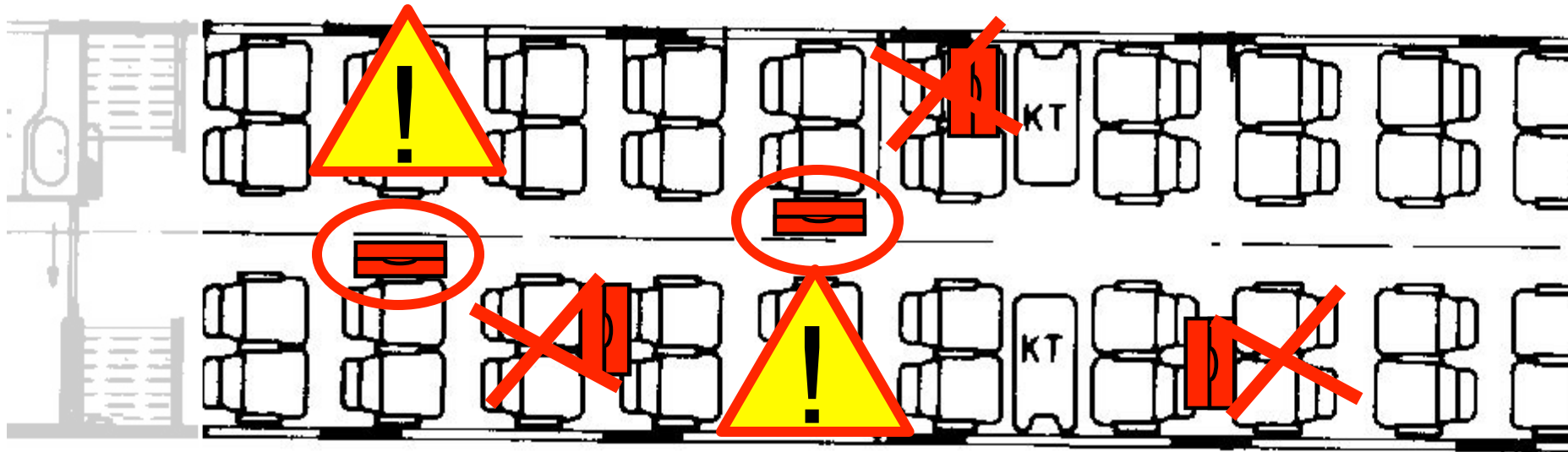
N=3826, multiple answers were permitted



- Passengers.....
  - do **not** want to **lift** their **luggage**
  - want to have an **intervisibility** to their **luggage**



Many large items are stored on floor level →  
**ON or BEFORE SEATS / IN THE AISLE**

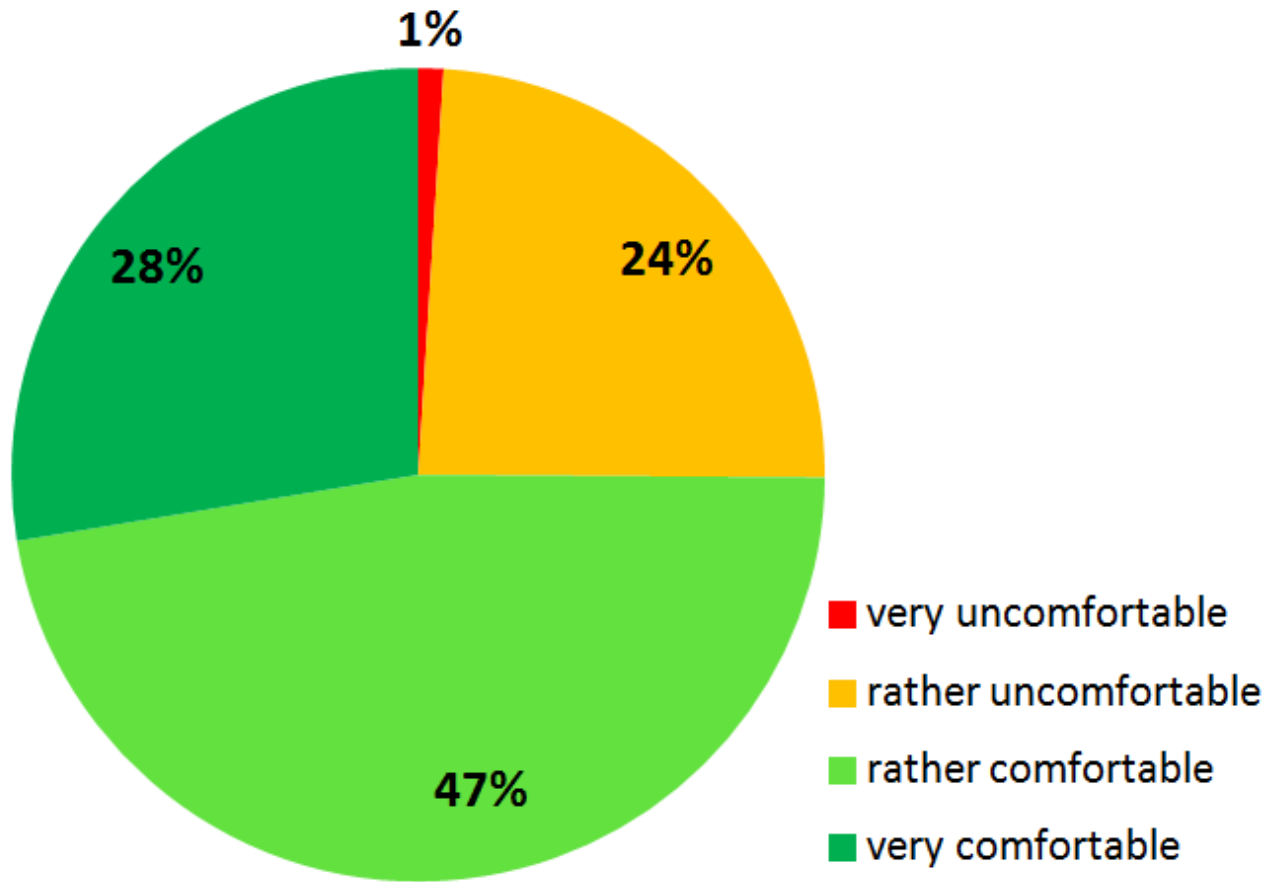


Hindrance in the aisle

Seats are blocked!

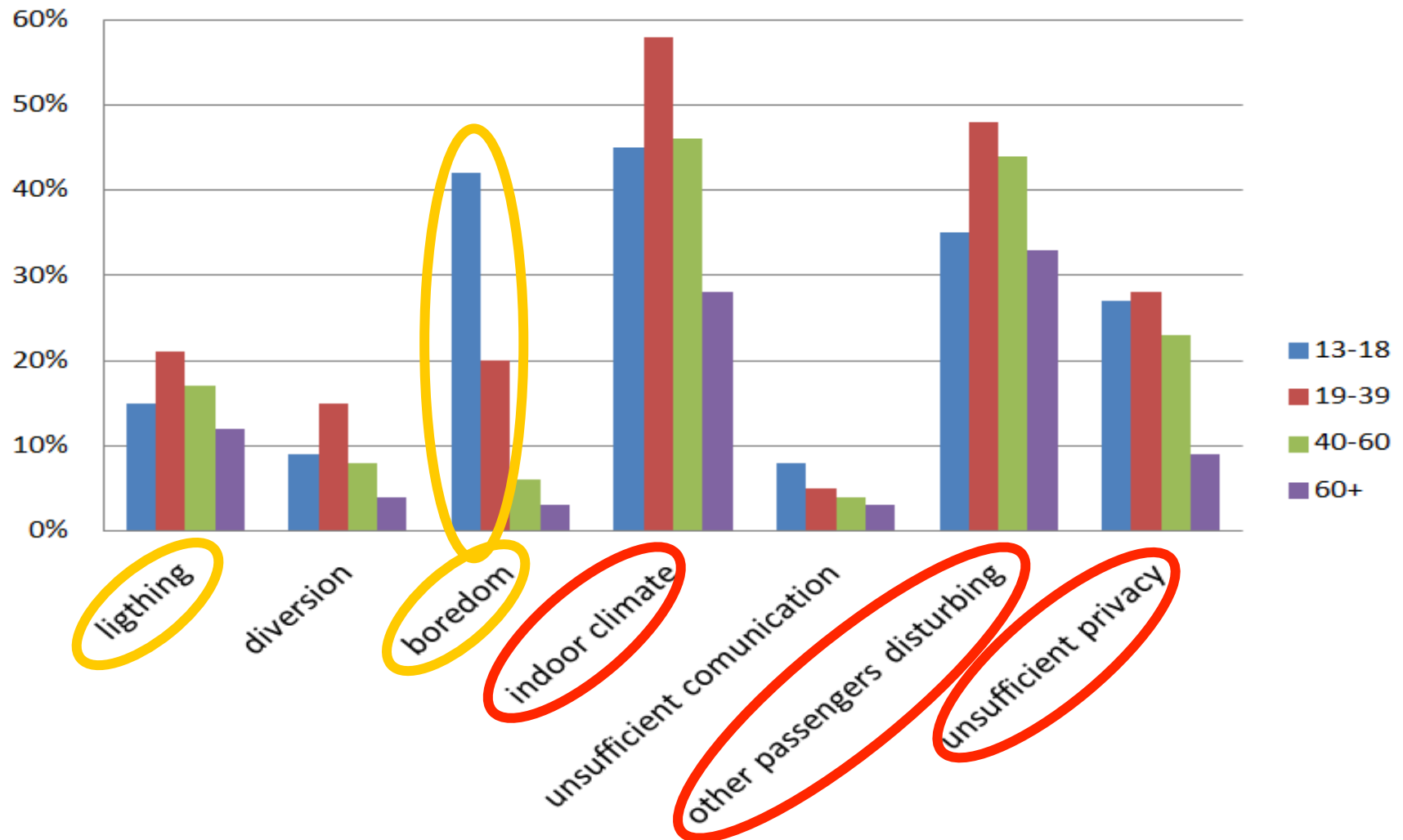
**Well being factors:** Moving in the train / Finding a free seat / Storing luggage

## well-being during the trip

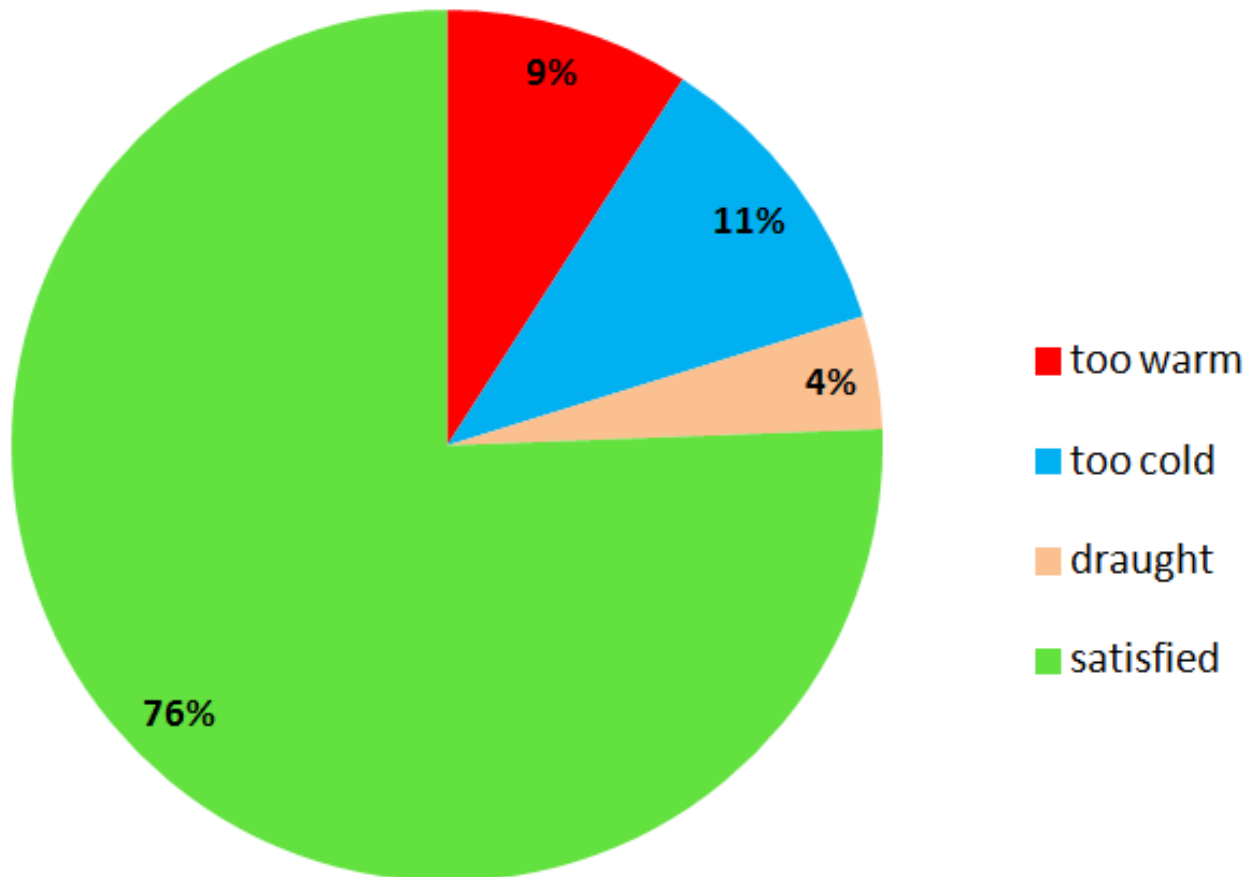




## decrease in well-being

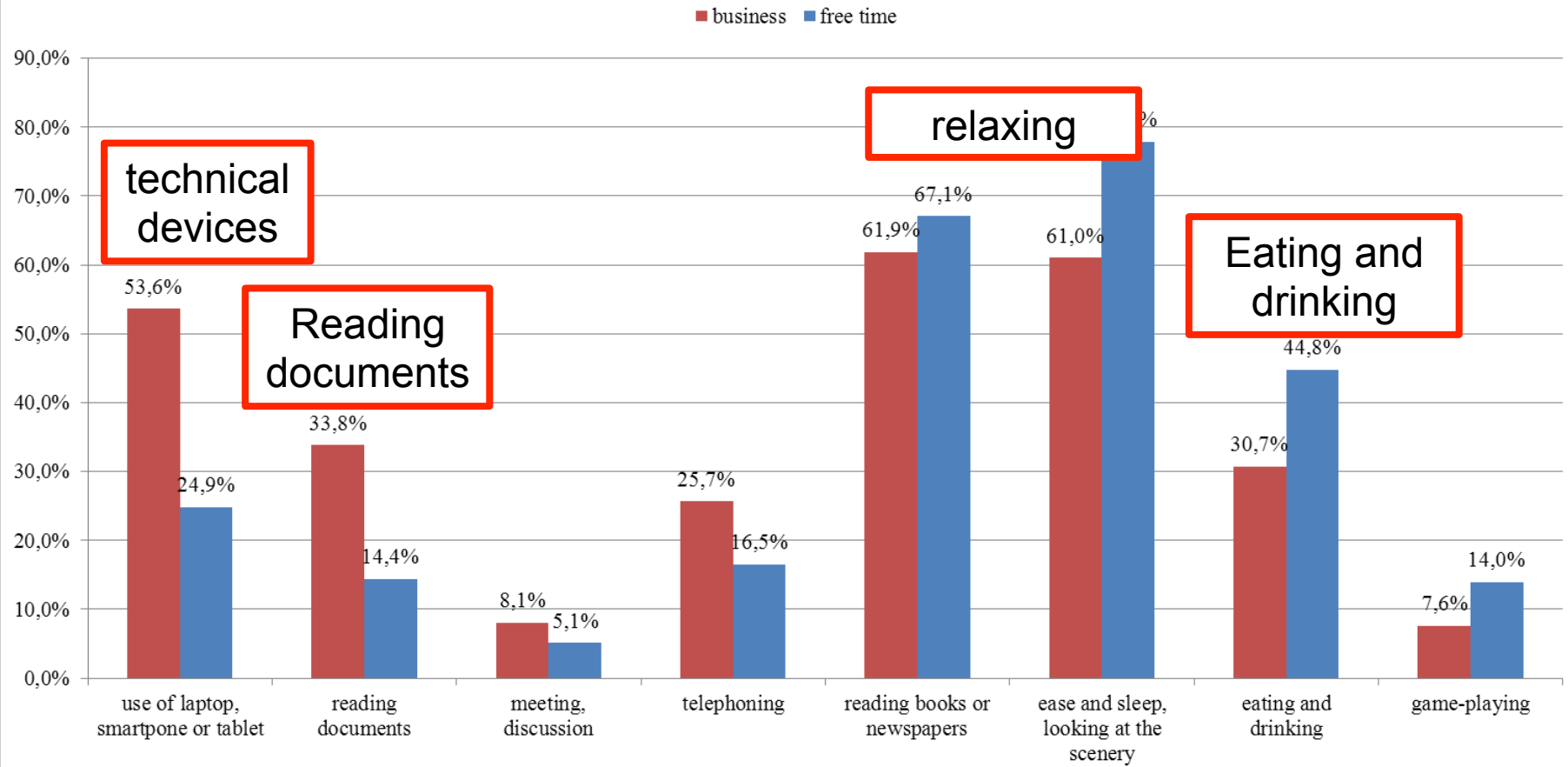


indoor climate

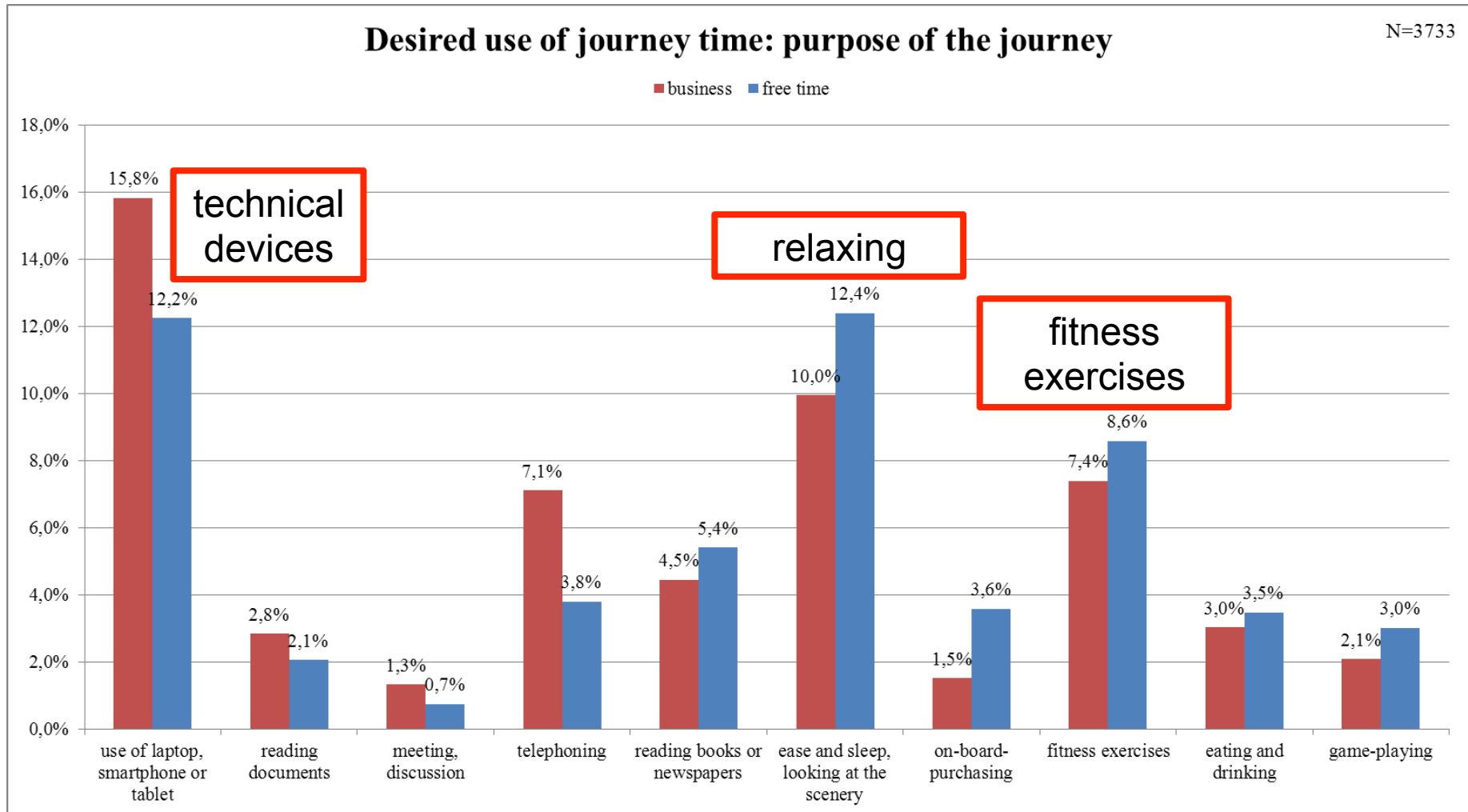


## Actual use of journey time: purpose of the journey

N=3733



What passengers would like to do but for some reason can't.



Main **obstacles** for **using technical devices** like laptops, tablets and smartphones:

- Absence of Wifi-connection
- No practical tables
- Place of deposits (for documents, eating & drinking etc.)
- Power socket

Main **obstacles** for the desired **activity „ease and sleep“**:

- Uncomfortable seats (not adjustable)
- Noise, disturbance by other passengers
- Light

Passengers (want to) do **more than one** activity during the trip:

- Depending on the travel time
- Different activities with **opposite needs**
- Example:
  - Working on technical devices
  - Relaxing (sleeping, looking out of the window...)
  - Eating & drinking
  - Reading papers, books, newspapers.....
  - Do a phone call

Request by more than 10% of passengers:

- General knowledge transfer (e.g. via screens)
- Information about destination
- Facilities for fitness
- Catering (health-conscious, high quality, low-priced...)
- Free water dispenser
- Wake-up service
- Selling of newspapers, books etc.
- Relaxation tape via headset
- Compartments for children (no TV-screens)

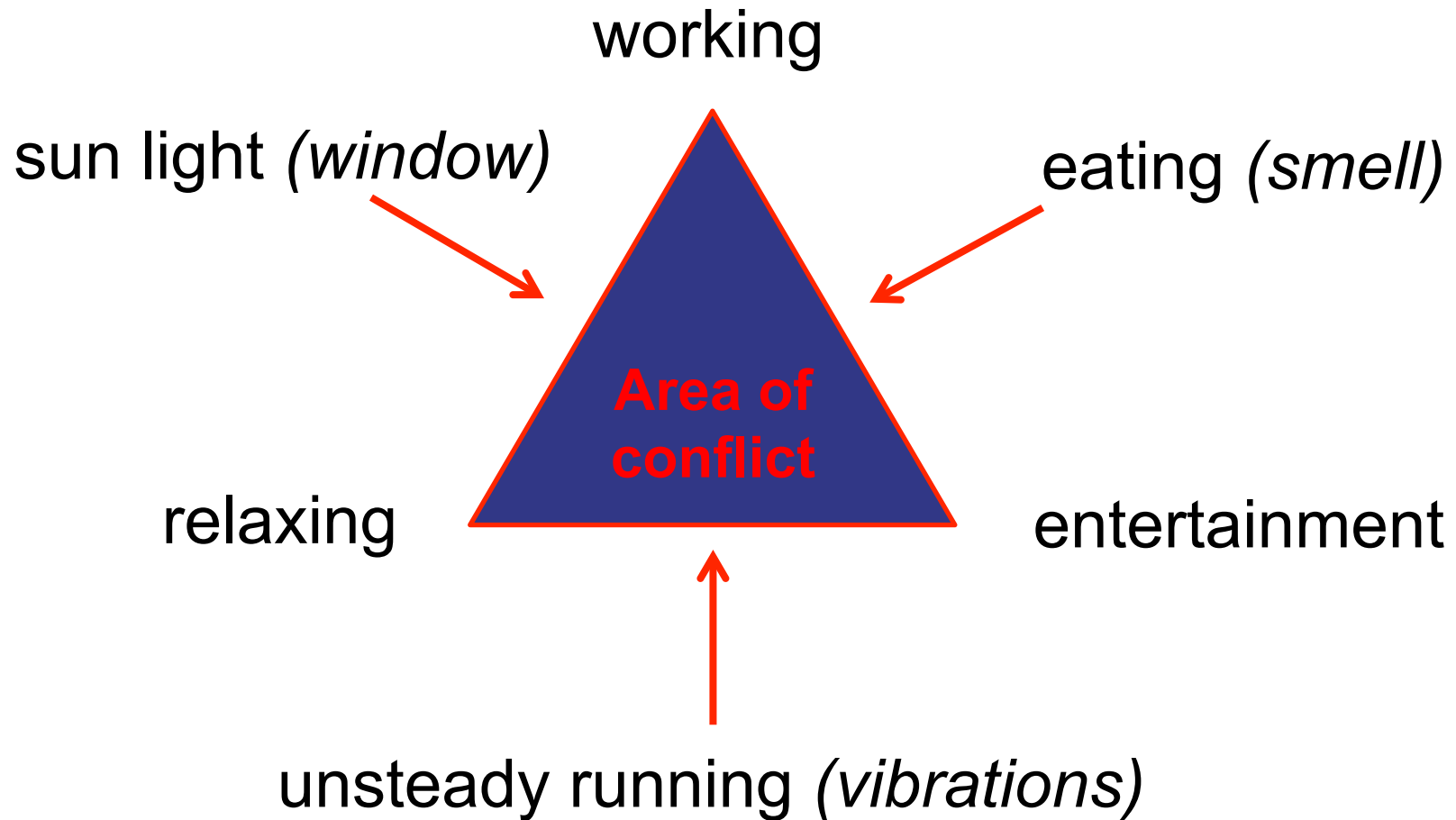
## Different individual (and subjective) **sensations**:

- *Indoor climate:* **too warm**  $\leftrightarrow$  **o.k.**  $\leftrightarrow$  **too cold**
- *Light:* **too bright**  $\leftrightarrow$  **o.k.**  $\leftrightarrow$  **too dark**

## Different **activities** with opposite needs and impacts:

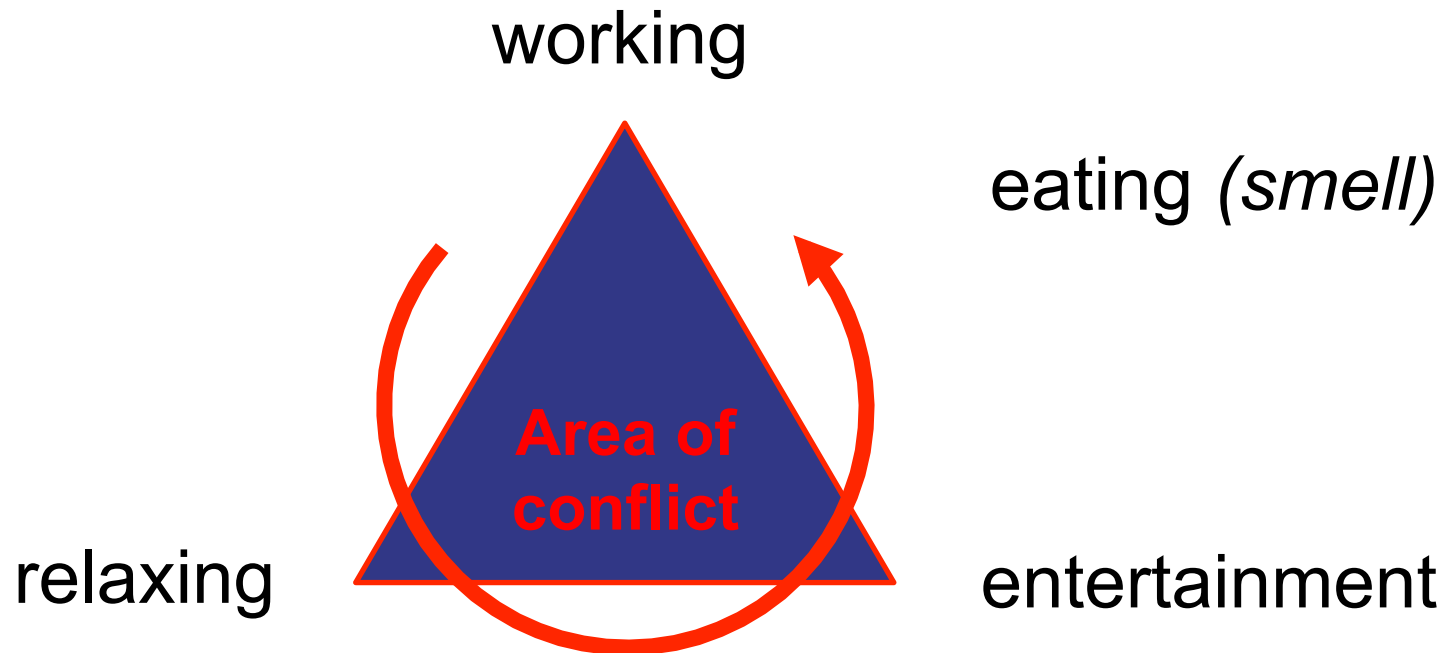
- *Working:* **need light**, (**produce noise**), **need calm**
  - Devices: table, place of deposits, Wifi, mobile reception, power socket etc.
- *Sleeping/Relaxing:* **no light**, **need calm**
  - Devices: adjustable and comfortable seats, lie area
- *Entertainment, playing etc.:* **produce noise**, **need motion space** (e.g. for children)





Offer different areas in a train, for example:

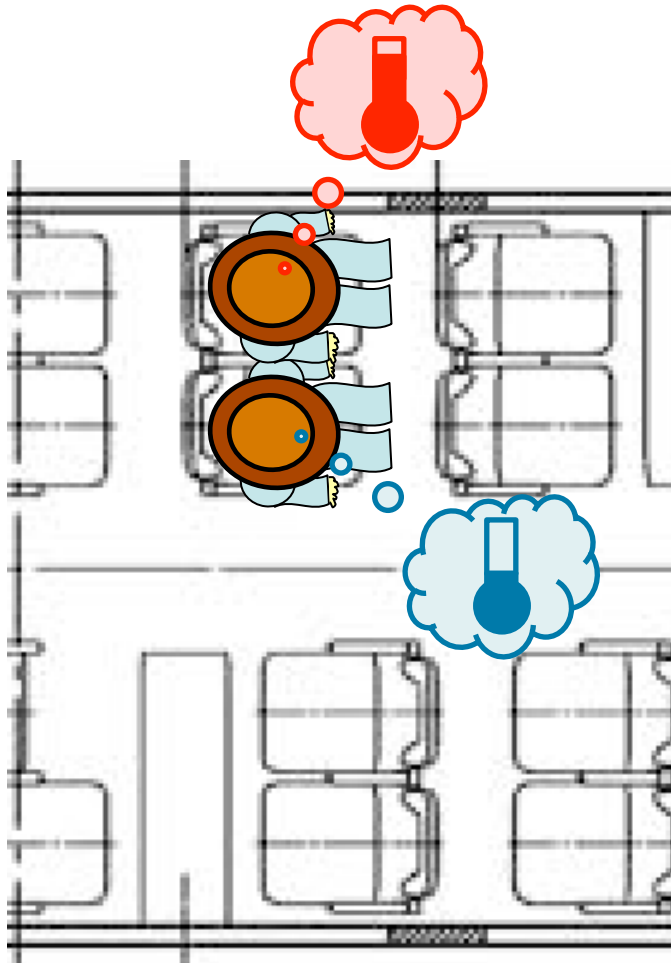
- Business area
- Relaxation area
- Family car
- Restaurant car
- etc.



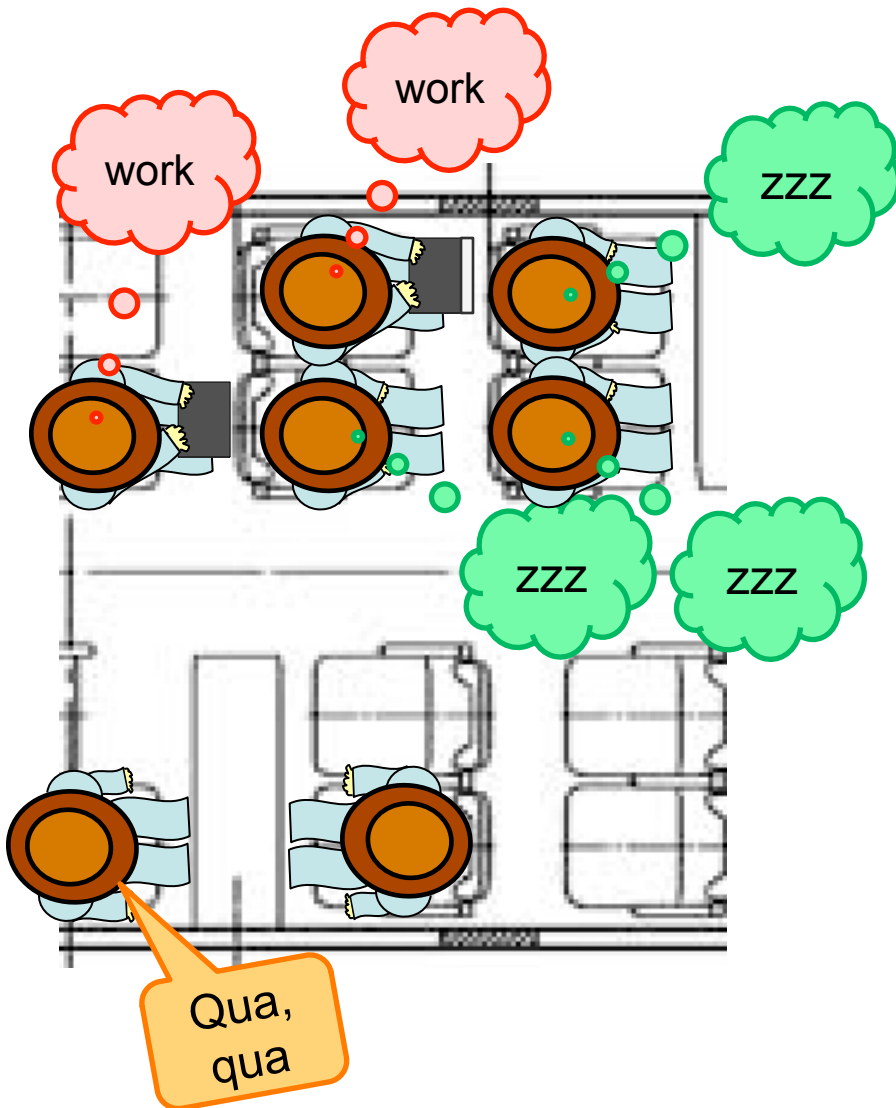
**Multiple** activities during trip

- The desired **activities** must be **known in advance** when booking the trip.
- **Spontaneous trips** (e.g. after a meeting with unknown finish)
  - you may not find a free seat in the area you want
  - you may sit in an area you do not want to sit

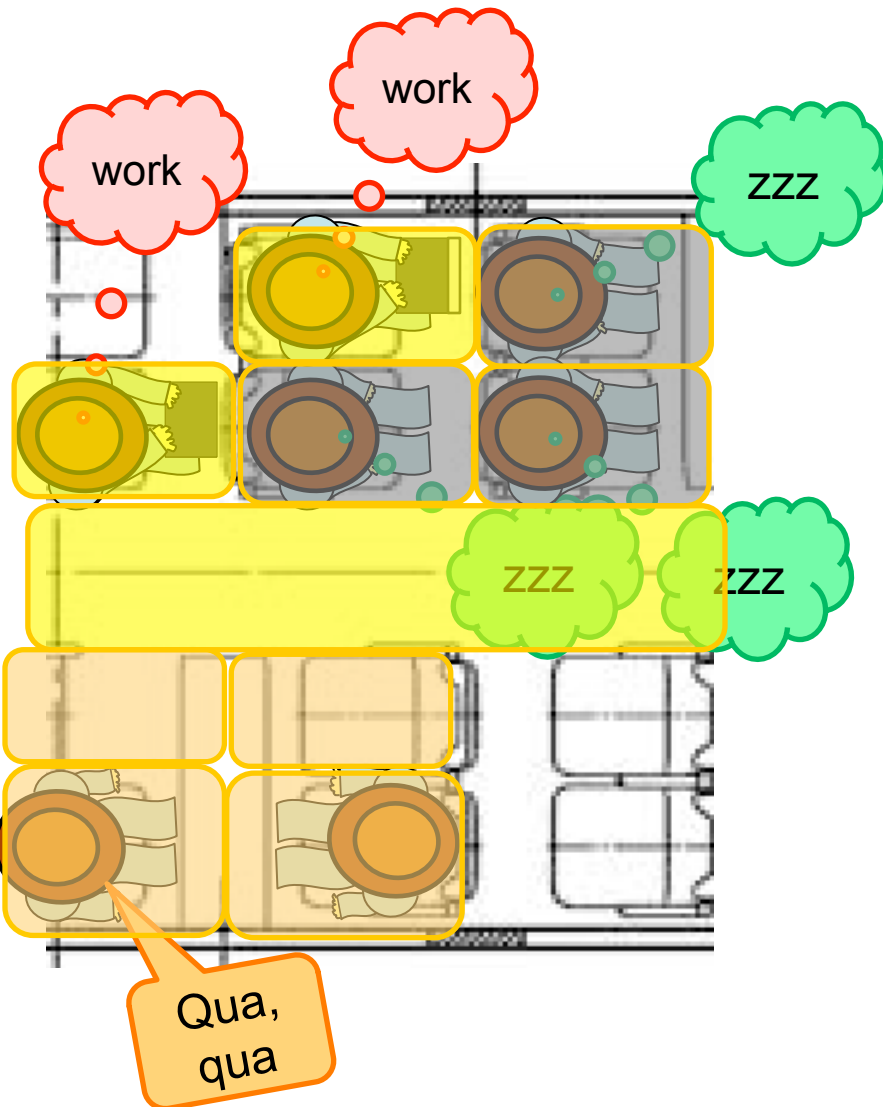
- Some classifications may be meaningful, e.g.:
  - 1st oder 2nd class
  - Special areas for families and children
  - Restaurant car
- All other waggons (within the same class) should be identical
  - You don't need to search for specific areas
  - You can take the next available seat
  - You can do all (usual) activities you want (work, sleep.....)
- **Individualisation of each seat is required!**  
     **→ Individualisation of each zone!**



- Individual heating/cooling
    - Seat heating
    - Seat cooling
    - Ventilation in seat
    - Spezial seat cover (textile with individual conditioning)
- Good ideas and developments from automotive and textile industry



- Individual lighting
  - For each „zone“
  - Individual regulation of brightness
  - Exact boarderline!
  - Possible solutions with LED
- Individual sun shades
  - Smart glass



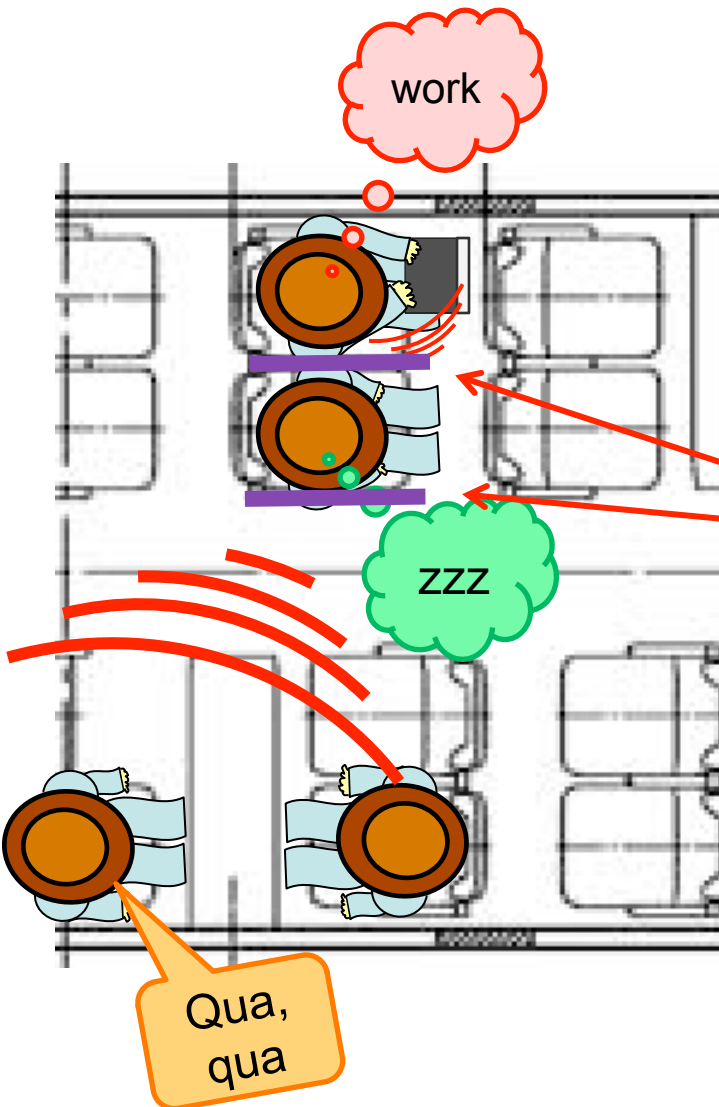
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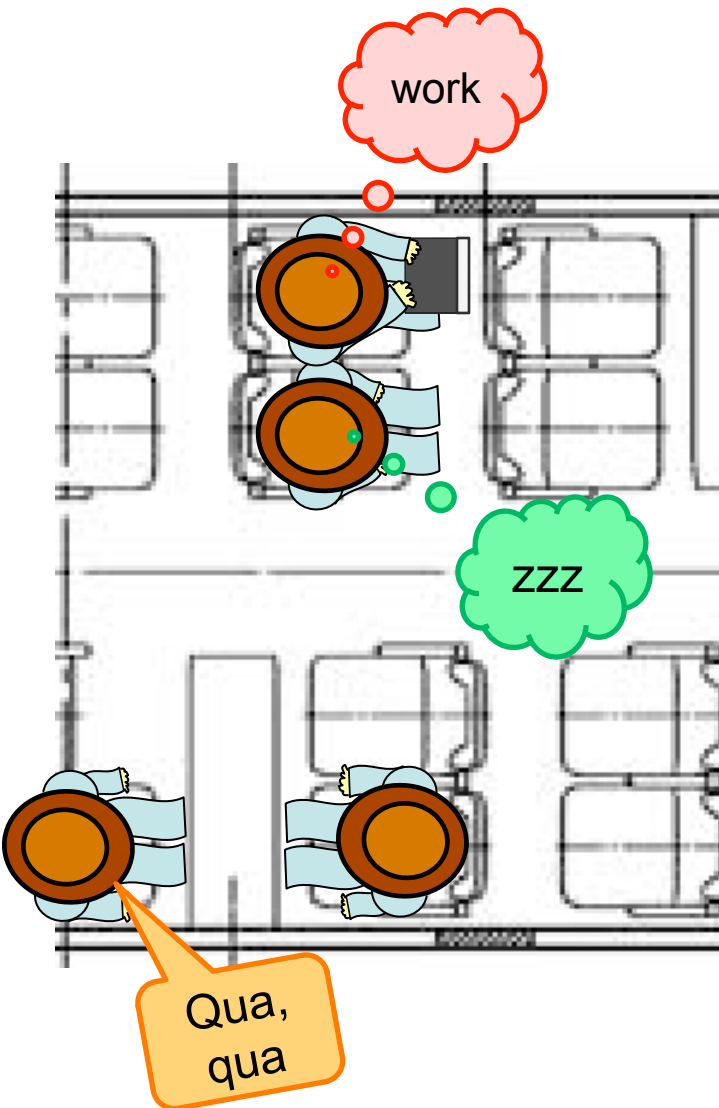
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- Smart glass

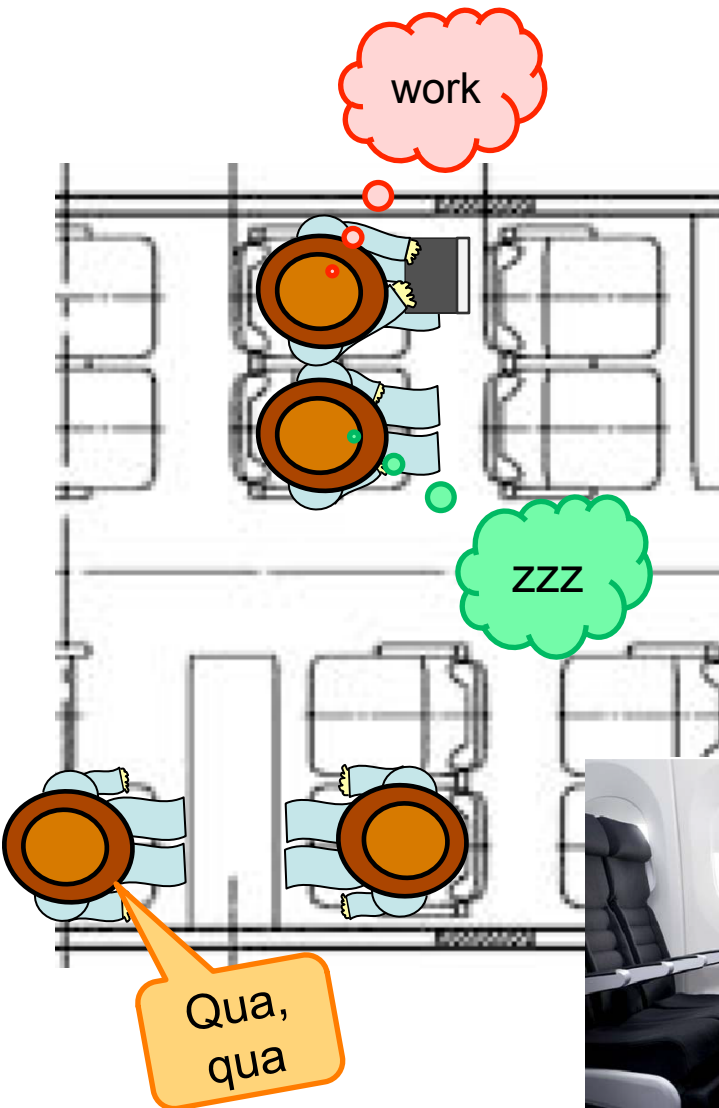




- Individual noise reduction
  - Noise **emission**: sound absorbing elements
  - Noise **immission**: e.g. noise cancelling in head-rest
  - Individual seperative elements

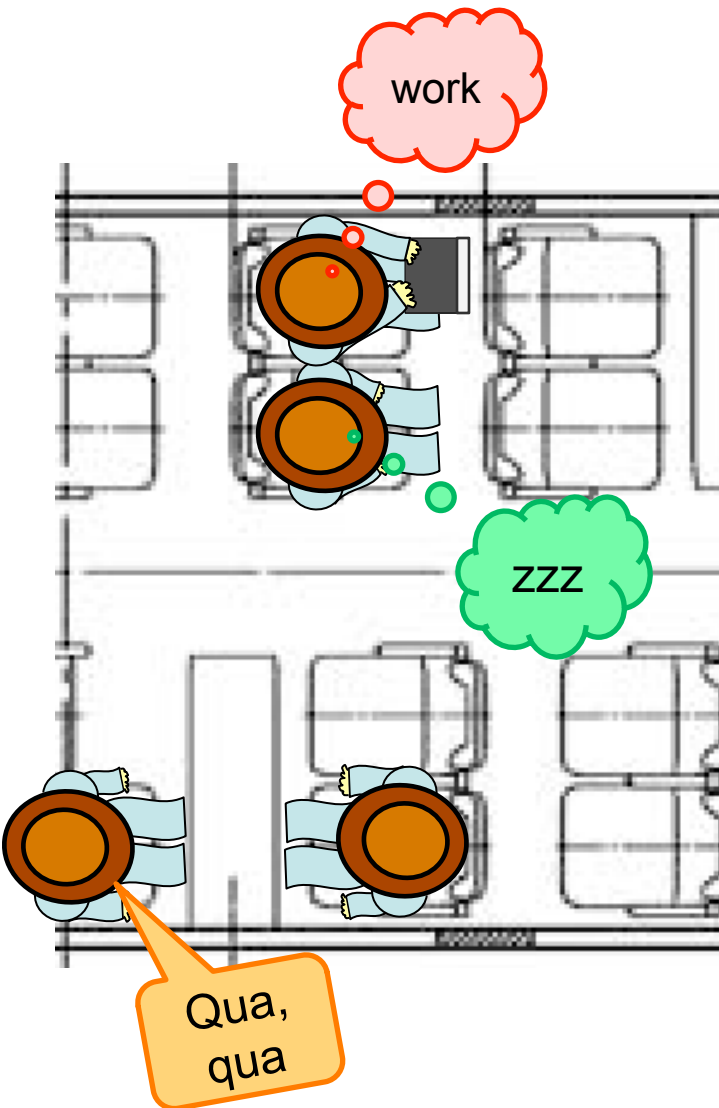


- Working and relaxing
  - **Quite running** of the vehicle
  - E.g. mass-spring-system for the whole cabin
  - or mass-spring-system only for the seat
  - Tables, place of deposit
  - Wifi connexion, power socket
- Individual on-board information system
  - Individualized information regarding the individual trip
  - Specific catering order
  - Booking connecting routes etc.



- Relaxing during trip / evening hours
  - Comfortable, adjustable seats
  - Foldable seats (e.g. to a couch)
    - Usually in the evening hours the utilisation rate is low
    - Especially in the evening hours many passengers want to sleep
  - Or turn down back rest





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  - Or turn down back rest
- Smell prodection!
  - Good air conditioning
  - Spezial wall coats and materials

- Enough luggage storage
- Well situated
  - **No lifting of luggage**
  - **Close to the passengers**
- Luggage racks
- Between the seats
- Or complete new system

- Luggage storage
- Enough individual space (can't compare travel time in the plan and in the train)
- more privacy, individualisation of lighting, indoor climate, noise reduction
- Working: WiFi, tables, place of deposits quite running (vibrations)
- Comfortable seats (sleeping, relaxing)

# Thank you for your attention

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