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ON THE RELEVANCE OF TRANSPARENCY OF RAILWAY ANTI-NOISE BARRIERS FOR PASSENGER COMFORT

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1. BACKGROUND

Because of the noise of the future high-speed train in the Netherlands, at some locations high noise barriers (up to 5 or 6 meters) are required to meet the preferred limits of the Dutch Noise Abatement Act (57 dB(A)). Because view reduction is regarded as one of the negative aspects of high noise barriers, the high-speed line decision-makers have plans to apply transparant noise barriers. However, the use of this type of noise barrier is more expensive than other barriers, it is more difficult to clean environmentally friendly. Besides, scientific research proves that residents prefer green barriers [1, 2, 3]. When there are so many negative aspects on the use of transparant barriers, it is important to know if they are really necessary for the benefit of the rail passengers. Against this background, the importance of the view for rail passengers at the choice of the train as transport is investigated. Furthermore their appreciation of noise barriers and tunnels (both block the view from the train) is investigated.

2. METHOD

Interviews were held with rail passengers on two lines:
1. 200 passengers between Amsterdam and Brussels. They are the potential high-speed train passengers. On this line the view is blocked by some noise barriers (up to 2m high) and two short tunnels. This line can be compared with the route of the future high-speed line.

2. 173 ICE-passengers between Hannover and Würzburg. They are the current German high-speed train passengers. On this German high-speed line, the view is blocked by many tunnels and noise barriers (up to 4m high). The German high-speed train can be compared with the future Dutch high-speed train in the matter of comfort and speed.

3. IMPORTANCE OF THE VIEW

It turns out that for the choice of the train as transport, the view is not an important factor. Dutch passengers choose the train because of the 'leisure' of the train and because they 'don't have a car available or dislike traffic jam'. Factors which influence the choice of the German ICE are 'speed' and 'comfort'. When passengers were asked how important they think the view is in itself - apart from the choice of the train - than it appears that half of the passengers regard the view as important. These passengers are mostly recreational passengers. They think the view is important because of the distraction. The passengers who think the view is not important (20 %) or a little important (30%) read most of the travelling time, know the line well or say they travel to cover a distance and not for the view.

4. APPRECIATION OF THE NOISE BARRIERS

As appears from figure 1, the attitude towards the current noise barriers (along the Dutch line mostly 1,5 m and along the ICE-track mostly between 2 and 3 m high) is fairly positive. Most of the ICE-passengers think the barriers are useful for the residents. More than a half of the Dutch passengers have not even noticed the barriers.

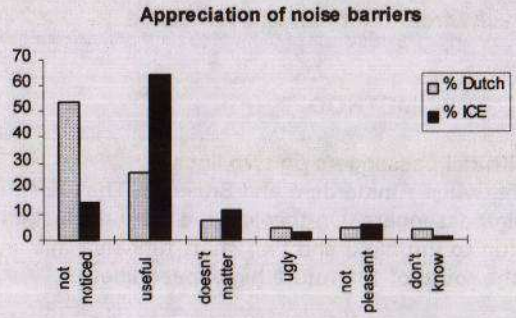

Figure 1

5. APPRECIATION OF TUNNELS

Figure 2 shows that the majority of the passengers have a neutral or positive attitude towards tunnels. Especially ICE-passengers have no problems with travelling in tunnels. Reasons why some passengers do not like tunnels are noise, darkness and closeness.

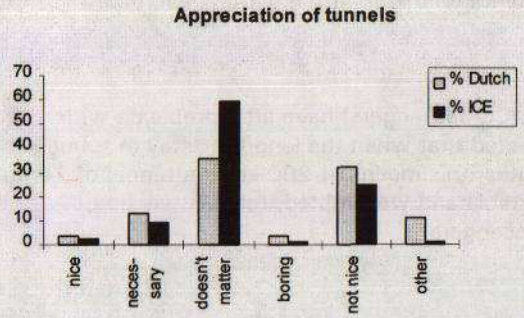

Figure 2

Furthermore, ICE-passengers prefer dark tunnels while Dutch passengers prefer lighted tunnels. An explanation can be that ICE-trains are more comfortable and better lit than Dutch trains, by which the ICE-passengers will be less bothered when they enter a tunnel. Finally 85% of the passengers does not bother riding through a tunnel for about 5 minutes.

6. CONCLUSIONS

View reduction

Rail passengers think the view in itself is important, but it is not an important factor at the choice of the train. More important factors are 'speed' and 'comfort'.

When on the Dutch highspeedtrack, like on the ICE-track no more than one-third of the view will be reduced, this will probably not bother the rail passengers. More important is that the view will not be blocked without any reason. The need for view-reduction must be clear, like limitation of noise annoyance because of barriers or a shorter and faster track because of tunnels.

Noise barriers

It appeared that rail passengers understand the need for barriers because of the residents. Besides, most of the time barriers below 2m were not noticed by rail passengers. The expectation is that the future high-speed train passengers will not be bothered by the barriers. It can be concluded that transparant barriers along the highspeedline are not necessary for the benefit of rail passengers. More important is to take the wishes of the residents who look at the barriers every day seriously.

Tunnels

Passengers (especially ICE-passengers) have little problems with tunnels. It can be expected that when the length of stay in tunnels is not longer than 5 minutes (this means at 200 km/h a tunnel of 16 km) and the train is comfortable and well lighted, tunnels will be no problem for the rail passengers.

Conclusion

Transparant barriers are not necessary for the benefit of rail passengers. When the Dutch high-speed train is comfortable, well lighted and fast, and the view along the line is no more than one-third of the ride blocked (like along the ICE-line), this will not bother the passengers. More important is that the view will not be blocked without any reason. The need for view reduction must be obvious, like limitation of noise annoyance because of barriers and a shorter and faster line because of tunnels.

ACKNOWLEDGEMENTS

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