Cycling as an alternative means of commuting Evaluation of a "cycle-to-your-work" campaign in the Netherlands

Ilse Urlings, researcher, health scientist, TNO Work and Employment Karin Proper, researcher, human movement scientist, TNO Work and Employment Vincent Hildebrandt, physician, TNO Work and Employment Sandra Eikhout, human movement scientist, TNO Work and Employment Polarisavenue 151, 2130 AS Hoofddorp, The Netherlands I.Urlings@arbeid.tno.nl

Summary

Bike campaigns are popular, not only because of their contribution to the reduction of trafficjams and pollution, but also because cycling to work provides a means of improving one's daily needed physical activity. This is urgently needed: recent research showed that 60% of the Dutch adult population does not meet the current health-based guidelines of physical activity. Although environmental conditions for cyclists are relatively good in the Netherlands, most workers are using the car (or public transport) for commuting. This paper presents the results of an evaluation of a 'cycle to work'- campaign. Besides enhancing the number of workers commuting by cycle, the aim of the campaign was to give financial aid to development countries. The aim of the study is to evaluate the effect and participation of this campaign. In three Dutch companies, both participants and nonparticipants filled in a questionnaire at the beginning of the campaign and 6 months afterwards. It appeared that many of the workers were considered able to come to work by cycle. Eventually, the actual participation was 14%. Only 6% of them were the 'inactive' ones. It was concluded that 'cycle to work' campaigns are worthwhile, especially when their positive effects on traffic congestion and environmental pollution is taken in to account.

1. Introduction

The Dutch are known worldwide for their extensive use of bicycles and the vast infra structural adoptions made to facilitate this . Dutch people are known to use their bikes for all purposes during the week and at the weekend. However, recent research showed that 60% of the adult Dutch population does not meet the current health-based guidelines of physical activity: adults should accumulate 30 minutes of moderate physical activity for at least five days a week (Hildebrandt et al., 1999).

Therefore, promotion of physical activity is important not only from a public health perspective, but also from a business perspective since there is evidence for the correlation between (stimulating) physical activity and (reduction of) sick leave (Proper et al., 2000).

Stimulating people to cycle, in particular during commuting hours, is an attractive and accessible way to enhance physical activity and simultaneously reduce traffic congestion. Dutch environmental conditions are relatively favorable for cyclists which is an important factor.

COS, an organization carrying out regional 'cycle to work' campaigns, asks employers to sponsor their participating employees by paying a certain amount for each kilometer they cycle. The benefits will be invested in small-sized development projects.

Financed by the Dutch Heart Foundation, TNO Work and Employment evaluated the COS 'cycle to work' campaign 1999 (held from May until October). Questionnaires were sent to all participants and to a random selection of non-participants. Besides interviews by phone with intermediaries and decision makers were made; both participating and non-participating companies were approached.

1.1 Research questions

- 1. How many workers are assumed to be able to cycle to work?
- 2. Does the 'cycle to work' campaign actually enhance cycling?
- 3. How many kilometers by car are avoided by this campaign?
- 4. Does this campaign reach the relatively 'inactive' workers?
- 5. What are the motives of employees to participate?
- 6. What are the barriers keeping a person from participation?

2. Method

Three companies that started the campaign in 1999 volunteered. Company 1 (n=908) holds seven locations and one regional office. Employees of company 1 already exercise a considerable amount of physical activity (mainly cycling) in their work in contrast with employees working with company 2 and 3, who mainly perform office work. Company 2 consists of 680 workers; company 3 employs about 775 people.

All participants, along with a random sample of non-participants, received a questionnaire at the start of the campaign (May 1999) and afterwards (October 1999). In this questionnaire demographical data were collected as well as data about the commuting situation, physical activity, enabling factors, and possible barriers for participation. COS distributed the first questionnaire in the companies. The second questionnaire was sent to the home address of the respondent.

3. Results

3.1 Response

Sent for the pretest		Response at pretest			Response at posttest			
Par	n-par	total	par	ar n-par total		par	n-par	Total
n	n	n	n	n	n (%)	n	n	n (%)
75	280	355	46	40	90 (25)	52	19	71 (20)
24	250	274	24	88	115 (42)	31	45	76 (28)
56	250	306	83	58	142 (46)	71	32	103
								(41)
155	780	935	153	186	347 (37)	154	96	250
								(27)
	Sent fo Par n 75 24 56 155	Sent for the pr Par n-par n n 75 280 24 250 56 250 155 780	Sent for the pretest Par n-par total n n n 75 280 355 24 250 274 56 250 306 155 780 935	Sent for the pretest Resp Par n-par total par n n n n 75 280 355 46 24 250 274 24 56 250 306 83 155 780 935 153	Sent for the pretest Response at par n-par total Par n-par total par n-par n n n n n 75 280 355 46 40 24 250 274 24 88 56 250 306 83 58 155 780 935 153 186	Sent for the pretest Response at pretest Par n-par total n n n n 75 280 355 46 40 90 (25) 24 250 274 24 88 115 (42) 56 250 306 83 58 142 (46) 155 780 935 153 186 347 (37)	Sent for the pretest Response at part total part at part total part at part at part total part at p	Sent for the pretest Response at pretest Response at pretest Response at par Par n-par total par n-par total par n-par n <

Table 1 Response to the questionnaires by participants (par), non-participants (n-par) and the total response group (total)

At baseline, 935 questionnaires were sent, of which 347 were returned (response of 37%). The response of the posttest was 27% (n=250). Five out of 154 participants withdrew during the campaign.

Some employees who were not registrated by COS answered in the questionnaire that they did participate in the campaign. Therefore, the actual number of participants in the data to analyze was 179. Comparing participants and non-participants showed a significant non-participation of younger women and higher educated employees.

Since not all employees were approached, an extrapolation to company size was performed to be able to draw conclusions about the potential participation grade. Furthermore, the investigators assumed that the samples concerning distance of home to work and concerning their physical activity were representative for all employees.

3.2. Participants

Employees living less than 10 kilometers away from their work were supposed to be able to commute cycling (potential participants). According to this criterion, a total of 59% of the participating employees and 27% of the non-participating employees, lived within 10 kilometers from their work. Extrapolated to company size, 34% (range between 23% and 49%) of the employees were potential participants. Of these, 14% (range between 8% and 22%) actually participated in the campaign. Another 5% of the employees participated although commuting over a distance of more than 10 kilometers.

In the year prior to the campaign there were no differences in the amount of cycled kilometers between both groups. During the campaign, participants cycled more than the non-participants (13 km versus 10 km, p<.10). It was striking that also the non-participants said they cycled more kilometers per day, namely 10 km. Furthermore, 18% of the participants went cycling more often in their free time while 6% decided to walk to work more often as a result of the campaign.

Participants reported a reduction in car use of 27 km per week (range 0 - 175 km). With an average employee working period of 4.9 days a week, this meant a reduction of daily car use of 5.5 km. Calculated for a company of 1000 employees with similar response, the amount of avoided kilometers covered by car would be 446. Calculated from the 340 potential participants in this company, 14% of the potential employees and 5% of the non-potential employees (n=81) would avoid 446 (81*5.5) km (by car) each day. This emphasizes the relevance of commuting by cycle instead of by car. It contributes to the reduction of traffic-jams and the reduction of carbon dioxide emission (CO₂).

Does the campaign reach the inactive employees?

First, the physical activity of all employees involved is compared to the two existing norms for physical activity: the 'Nederlandse Norm Gezond Bewegen' (NNGB) (Dutch Standard of healthful Physical Activity) and the more energetic 'ACSM-norm'. The NNGB demands at least 30 minutes of moderate physical activity, five days a week. The ACSM-norm demands at least a minimum of 20 minutes of vigorous physical activity or sport, three times a week. A person meeting one of these criteria is considered active according to the 'Combi-norm'.

Also, the percentage of employees was calculated who reported a moderate to bad physical condition (less 'fit' employee).

The year before the campaign, one third of the participants did not meet the Combi norm;. Furthermore, more than one third (38%) of the participants reported having a moderate to bad physical condition. Extrapolated to the total company size, the "cycle-to-work" campaign reached 6% of the less active employees (range of 3% - 12%) and 6% of the less fit employees (range 3% - 9%).

3.3. Determinants of participation

	Participants	Non-participants	
	%	%	р
Good for health	99	95	ns
Nice being outside fresh air	97	95	ns
Better for environment	96	95	ns
It is nice, fun	95	69	.000
Cheaper than commuting by car	93	78	ns
It is relaxation	92	69	.000
Increases the condition	91	84	ns
Enjoying nature	89	72	.001
Feeling more fit	89	79	ns
Prevention of health problems	81	68	.034
Can get off my energy	70	54	.010
Good for my weight	63	62	ns
Good for my figure	61	58	ns
Helping developing countries	45	19	.002

Table 2 Expected advantages of participation

At baseline, participants anticipated more advantages of the campaign than non-participants (table 2). In spite of these differences, both participants and non-participants mentioned the same three most important advantages of participating in cycling to work: 'good for your health', 'nice being outside and having some fresh air' and 'it is better for the environment'. Almost half of the participants mentioned 'helping developing countries' as an advantage as opposed to only 19% of the non-participants. No differences were found between the expected advantages in the pretest and the experienced advantages in the posttest.

	Total response group			Potential participant group			
	Participants	Non-		Participants	Non-		
	%	participants	р	%	participants	p	
		%			%		
Arriving at work flushed	25	63	.000	20	50	.001	
It takes much time	9	51	ns ¹	7	18	.043	
It is no fun	1	18	.000	2	22	.000	
You get tired	1	10	.014	0	6	.007	
Risk of accidents	16	4	.012	16	9	ns	
You get sore muscles	0	2	ns	0	0	ns	

Table 3 Reported disadvantages of participation

¹ too few cells filled

'Arriving at work flushed' is by far the disadvantage mentioned most by participants as well as non-participants (table 3). The chance of getting injuries scored relatively high by participants. Furthermore, it appeared that all non-participants reported more disadvantages compared to the participants. Equal to the advantages, there are no differences in expected and experienced disadvantages for the participants.

Environmental considerations appeared to have small impact on the participation. Also the influence of family, friends and colleagues was negligible (10% resp. 4%).

· · · ·	Total respon	se group	Potential participant group			
		Non-			Non-	
	Participant	participants	p	Participant	participants	р
	S	%		S	%	
	%			%		
Car is easier	11	54	.000	10	31	.003
Car is faster	15	52	.000	13	25	.095
Decent clothing on a bike is	18	39	.000	18	30	.134
impossible						
Weather conditions in Holland	17	37	.001	21	41	.020
I can transport little luggage	16	33	.024	13	44	.000
I do not need to cycle	3	33	.000	3	34	.000
I do not like to cycle	5	31	.000	5	36	.000
I already have enough physical	11	27	.001	11	26	.039
I'm too busy have no time	5	26	000	3	19	002
Does not comply with the nature of	7	20	.002	4	19	.006
my job						

Table 4 Ten most reported barriers for participation

Non-participants reported barriers to participate significantly more often than participants. According to 44% of the non-participants who could be considered as potential participants, the fact that little luggage can be transported by bike (as compared to a car) seemed to be an important barrier. Apart from this, weather conditions (41%) and the comfort of travelling by car (31%) are important barriers for cycling according to this group. And last, there was a significant difference between the expected and experienced barriers for the participants. This concerns the item 'being too busy'. In the pretest 45% of the participants expected this to be a barrier. In the posttest, only 4% had actually experienced it to be so.

3.4. Interviews

Seven decision makers (management) of non-participating companies and twelve of participating companies were interviewed by phone.

According to the managers, reasons for the not taking part in the campaign were expectations about a low participation grade, a large distance for commuting to work for most of the employees, and lack of interest with the employees.

Managers of the twelve participating companies mainly mentioned health and environmental advantages as well as the charity aim (helping developing countries) as most important reasons to participate.

Barriers to implement the campaign in their companies were the long distance for commuting to work, lack of time and the fact that many of the employees only cycle when the weather is good.

Favorable factors for implementation were the presence of a shower at work and a shortage of parking places.

Implementing the "cycle-to-work" campaign was not time-consuming for the company: 1 to 3,5 days during the period of the campaign (6 months). Most of this time was spent with participation in the interview by phone, making lists of participants and keeping in contact with COS.

4. Discussion

This investigation was carried out at three specific companies that participated in the campaign only. Generalization to all Dutch companies is therefore not possible, although the results give a first impression of the possible impact of a cycle to work campaign within companies.

The campaign did not reach many of the 'inactive' employees; however, the 6% who were in fact reached, were reached relatively easily. To improve participation, future campaigns should put more effort in trying to reach the inactive employees. Moreover, a "cycle-to-work" campaign should be part of a broader policy aiming to enhance physical activity, with possibilities like walking during lunch breaks, and offering more facilities for physical activities and sports.

From earlier experiences done by COS it may be concluded that the participation increases through the years. Besides, also many of the non-participators cycle many kilometers to work. The effect of the campaign is additional.

Barriers for non participants, like the impossibility to carry things on a bike, could easily be solved by providing comfortable saddle bags in the campaign, in which employees can put their attaché case or other luggage.

Lack of time or being busy appeared to be an undeservedly feared disadvantage of cycling. This aspect may be stressed in future campaigns.

5. Conclusion

Setting up a "cycle-to-work" campaign in a company, similar to those offered by COS, is a relatively simple and low-budget way of enhancing the physical activity of employees. It also contributes in decreasing the problems of traffic congestion and carbon dioxide emission.

Although the potential impact of the campaign can be substantial (14%), it reached the inactive employees insufficiently. A "cycle-to-work" campaign should therefore be made part of a broader company policy to enhance the physical activity of its employees.

References

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