Behavioral intervention – Results

An experiment to increase student and staff use of sustainable modes of transport .



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Summary

The project involved implementing transport interventions among students and staff in the Vatnsmýri area with the aim of reducing private car use and increasing the share of sustainable transport. The intervention was based on an incentive and reward system and used an app to track participants' travel behavior. The results show that such an intervention can have a measurable effects on behavior.

In the student study, participants were divided into 3 groups: a control group, a group that had the opportunity to win multiple small gift certificates, and a group that had the opportunity to win one large gift certificate worth ISK 75,000. In addition, a participation prize was awarded, with one participant, regardless of group, winning an ISK 75,000 gift certificate. Among students, car use was lower among those who took part in the intervention compared with the control group, and car trips decreased more among groups that received rewards. At the same time, use of sustainable modes, particularly public transport and cycling, increased, with the greatest effects in the group that had the opportunity for a larger reward. However, before the intervention was administered, the car use of the control group was already more than the intervention groups. When controlling for the baseline differences, the difference between group was no longer significant. Even then, about one-third of participants of the intervention groups felt that participation had affected their own travel behavior, including through reduced car use and increased use of sustainable transport options. This suggests that incentives, rewards and increased awareness of one's own behavior can be effective factors in changing travel behavior.

The effects of the intervention on staff were more limited, likely because this group already had relatively sustainable travel habits, with walking and other active transport modes predominating. Nevertheless, about one-fifth of participants reported an effect on their travel behavior from the intervention. The results also show that seasonal effects are substantial, as private car use increases in winter at the expense of other modes, likely due to weather and conditions.

The main learnings from the project are that incentives and reward systems can have an effect on travel behavior, also for private car users. Presentation matters for the outcomes as well as the choice of tools to record trips, and conditions such as weather and timing. In addition, the results suggest that increased awareness of one's own travel habits can in itself contribute to positive changes. To improve outcomes in the future, it is important to improve preparation, simplify participation, and strengthen incentives, for example through direct support for sustainable modes of transport.

Introduction

AMIGOS is a European project funded by Horizon Europe that focuses on residents' travel habits and the safety of pedestrians and cyclists, including in the Hlemmur area during the construction period.

Pilot Cities is a European project supported by Climate-KIC that focuses on studying the habits and barriers residents face in relation to transport and waste. The project also aims to develop solutions based on feedback and resident participation.

Twinning Learning Programme is a European collaboration in which the City of Reykjavík was paired with the city of Lahti in Finland, which participated in the Pilot City programme. The aim was to learn from their experience in increasing the use of sustainable transport modes and transfer that learning through a pilot project in Reykjavík.

These three projects were running concurrently in the city. In light of this, it was decided to coordinate parts of the projects and undertake a joint transport intervention. Its aim was to reduce car trips among university students and staff in the Vatnsmýri area.

The transport intervention with university students was carried out from 3 September to 1st December 2025.

The transport intervention with staff at workplaces in Vatnsmýri took place from 20 October to 7 November 2025.

Students

Results from surveys and interviews conducted as part of three different projects in 2024–2025 showed that young people aged 18–24 are the group that uses cars the most. Based on this, a transport intervention was designed with the aim of encouraging young people to use more sustainable modes of transport.

Table 1 shows the share of modes of transport by age, based on results from a survey conducted as part of the AMIGOS project.

The aim of the research project was to reduce car trips among young people by increasing the share of sustainable modes of transport. For this purpose, a specific incentive and reward system was developed to promote increased use of sustainable transport modes among students.

Table 1: Share of trips by mode of transport by age group. Results from the AMIGOS survey.

Age	Walking	Cycling	Bus	Driving
18-24, n=45	20%	11%	9%	51%
CHILD, n=12	23%	0%	8%	58%
WITHOUT CHILD, n=33	18%	15%	9%	48%
25 – 29, n=61	20%	11%	20%	36%
CHILD, n=8	12.5%	12.5%	25%	37.5%
WITHOUT CHILD, n=52	21%	11.5%	19%	36.5%
30 – 39, n=164	17%	16%	14%	43%
CHILD, n=87	13%	18%	8%	54%
WITHOUT CHILD, n=76	22%	13%	21%	31.5%
40 – 49, n=166	17%	17%	10%	49%
CHILD, n=115	14%	20%	10%	50%
WITHOUT CHILD, n=49	26.5%	12%	12%	47%
50 – 59, n=136	18%	21%	11%	40%
CHILD, n=25	24%	24%	8%	36%
WITHOUT CHILD, n=109	17%	20%	12%	41%
60 – 71, n=137	18%	15%	7%	47%
CHILD, n=4	NA	NA	NA	NA
WITHOUT CHILD, n=128	19%	15%	7%	48%

Staff

In the Pilot Cities survey, a large proportion of participants were staff at workplaces in the Vatnsmýri area. When the results for staff in Vatnsmýri were examined separately, it emerged that only 23.9% of staff wanted to use a private car to get to and from work, while 44.5% use a

private car as their main mode for getting to and from work. Thus, about 20% who use a private car to get to work would like to change mode.

Shortly before the intervention, the frequency of public transport services was substantially increased. Paid parking was also introduced at the University of Iceland. The intervention was therefore designed to encourage the use of sustainable transport in the area using the same incentive and reward system as for students.

Workplaces in Vatnsmýri that took part in the intervention were the University of Iceland, Reykjavík University, one Landspítali site, and Reykjavík City Hall.

Methods

The MotionTag app was used to track all student and staff trips. The app recorded information about trips, modes of transport, and trip duration. Winners were selected based on their travel behavior. The app provided users with an overview where they could view individual trips, a summary of trips, and compare themselves with other participants in their group (Figure 1).

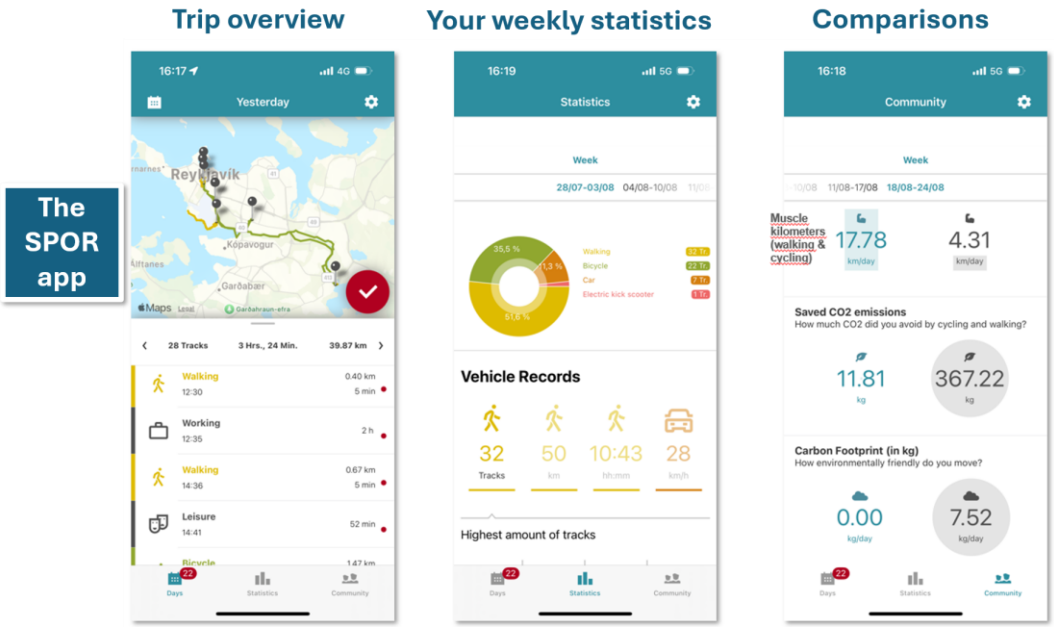


Figure 1: Overview of the MotionTag app. The first screen on the far left shows individual participant trips, the middle screen shows a summary of trips, and the screen on the far right shows a comparison with others in your group (emissions and "muscle-kilometres").

The MotionTag app had been selected by the AMIGOS project to measure the effects of different interventions, but it was decided to use the app directly as part of this transport intervention.

The app can be used to send both notifications and surveys to users. The notifications were used to motivate participants through weekly motivational messages.

Students

Students at the University of Iceland and Reykjavík University were invited to participate during orientation days held at the beginning of the academic year, and participation was voluntary. The study was presented to students as a study of travel habits, and it was therefore not stated that they were being encouraged to use sustainable modes of transport.

Students were divided into three experimental groups:

- **Control group**: No intervention
- **Group S**: Multiple small rewards available (e.g. meal gift certificates) for use of green modes of transport
    - *6 gift certificates available each week during the intervention period*
    - *Total prize value: ISK 75,000*
- **Group B**: One big reward (ISK 75,000 gift certificate) available for use of green modes of transport

Both experimental groups (Group S and Group B) received weekly notifications from the app while the control group had no opportunity to receive rewards and therefore did not receive notifications in the app.

Examples of notifications received by students:
“New week, new prizes!
Six participants once again have the chance to win great gift certificates from Lemon, Te & kaffi, Brikk, Kaffitár, Stúdentakjallaranum, Bíó Paradís or Óskaskrín.
Take the opportunity – this could be your week!”

The study was divided into three periods:

- **Baseline**: *3rd –9th Sept 2025*
- **Intervention period**: *10th Sept–12th Oct 2025*
- **Follow-up**: *13th Oct – 1st Dec 2025*

All groups received a survey through the app before the intervention period, asking about travel habits in order to assess change during the intervention period. After the intervention period, a survey was sent to the groups that received the intervention (Group S and Group B) to assess attitudes toward the intervention and its effects on them.

Two surveys were conducted and distributed through the app;

- At the beginning of the intervention period
- After the intervention period

At the start of the intervention period, the two experimental groups were notified that they could win prizes and that the rules were the following:

1) each minute where a green mode of transport was used would result in 1 ticket in a lottery at the end of each week (group S) / the month (group B), therefore increasing likelihood at being drawn from the lottery.
2) After a winner of the lottery had been drawn, one random day of that week/the month would be chosen for them. If they did not at all use a green mode of transport during that day, they would not get the prize and another draw would be made.

This was added to increase the likelihood of consistent use of green modes of transport, rather than a few long sessions. The control group just got a notification reminding them to keep the app active until the end of the study.

Staff

Staff were not divided into groups as in the student study. The reason was that the aim is to make this an annual transport initiative for staff, rather than an annual research study. The aim was therefore to measure how such an initiative would work in practice, but it is difficult to measure a baseline for staff without revealing the purpose of the study. Also, if this becomes an annual initiative, the purpose cannot be concealed. It was therefore decided to distribute a questionnaire before the initiative to examine staff travel habits to and from work, both in summer and winter, and compare them with tracking data.

An in-person presentation was held for all staff at Reykjavík City Hall by joining an office meeting, while at the other workplaces the initiative was presented by email that was prepared by the pilot project staff, as well as through workplace intranets and information screens. The method of

communication did not affect the number of participants. At the start, staff received information about the intervention, use of the app, and prizes that could be won at each workplace, with workplaces selecting and paying for the prizes themselves. The same app was used for staff as had been used for students, and it tracked all trips and modes of transport. Although the intervention only concerned staff travel during working hours, it was not possible to distinguish trips to and from work, so all trips were tracked.

Two surveys were conducted and distributed through Microsoft Forms;

- At the beginning of the intervention period
- After the intervention period

The intervention period was from 20 October–7 November 2025. It is important to note that the autumn break was taking place in week 1, and a major snowstorm occurred in week 2, with associated transport disruption.

Results of student intervention

When comparing the share of car trips between the experimental groups during the intervention period (Figure 2), the share of car trips increased most in the control group, by about 5% from baseline, while the increase among the intervention groups was only about 3.3% (small rewards) and 1.8% (big rewards). When the change from baseline to the follow-up period is examined, the largest change is in the control group, which received no rewards, where the share of car trips increased by 5.1%, while both intervention groups increased by 2.2%. The difference in change from baseline was statistically significant between the big-reward group and the control group. However, it should be noted that randomization between groups did not work sufficiently well because people in the control group were more car users than the other groups before the intervention took place. The difference between the intervention period and the follow-up period could therefore be due to this difference between the groups rather than the intervention.

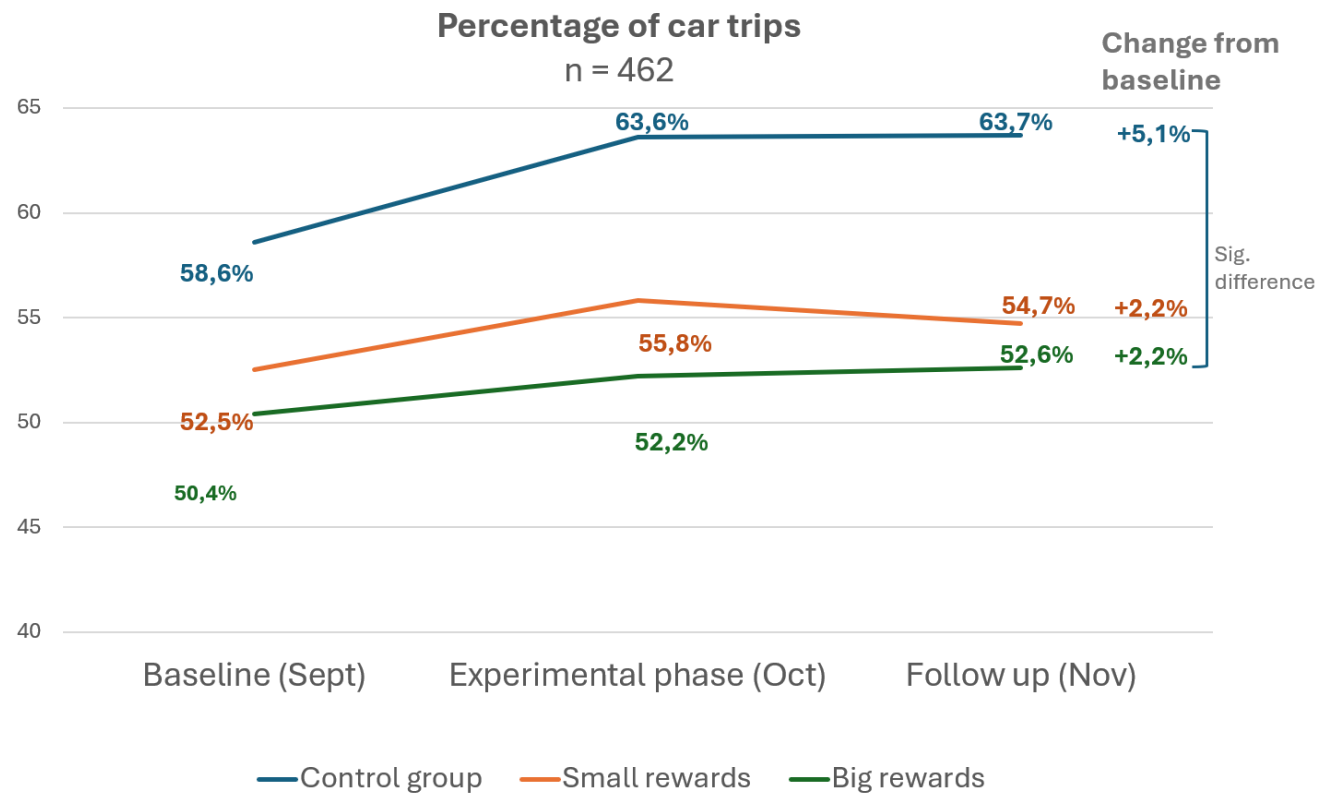


Figure 2: Share of trips by group and period.

A linear regression analysis (linear mixed-effects model) was also conducted to adjust for the difference observed at baseline (Figure 3). Adjusting for the baseline difference means that when the change in the share of car trips between groups over time is estimated, account is taken of the fact that participants had different shares of car trips at the start of the study. Thus, the estimate of the change over time is adjusted for this initial difference, and comparison between groups is based more on change from baseline than on absolute differences between groups. In this model, the difference between the groups during the follow-up period remains in the same direction, but is not statistically significant between the control group and the intervention groups.

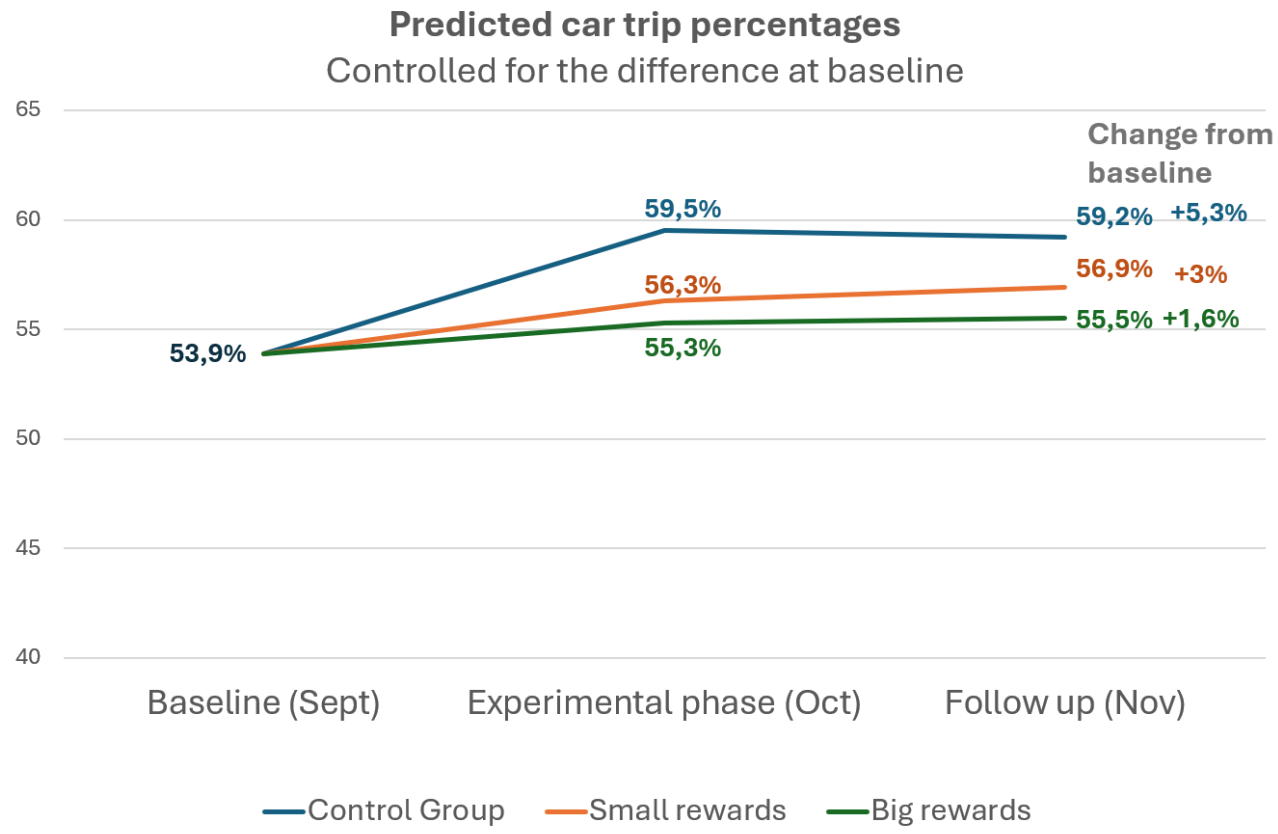


Figure 3: Predicted car trip share when controlling for the baseline differences. Numbers from linear mixed effects model.

As seen in table 2, there is a difference between number of trips per day using the private car between groups in the baseline period: the control group makes the most trips per day, 3.6 trips, while the small-reward group makes 2.9 trips and the big-reward group 3.1 trips per day. The number of trips per day however decreases between periods in all groups. When the number of trips between baseline and follow-up is compared, car trips decrease least in the control group, by 0.4 trips per day, while the small-reward group reduces car trips by one car trip per day.

Table 2: Number of daily private-car trips by period.

Number of daily private-car trips			
Period	**Group**		
	Control group	**Small rewards**	**Big rewards**
Baseline	3,6	2,9	3,1
Intervention period	3,3	2,7	2,8
Follow-up period	3,2	1,9	2,5

The baseline lasted only one week, so it is natural that more people use public transport over a longer period. All experimental groups used public transport equally during the baseline period, but during the intervention period more participants in the intervention groups used public transport, about 10% more than the control group. (Table 3).

Table 3: Comparison between groups in public transport use during the baseline and intervention periods.

Share of students who used public transport			
Period	**Group**		
	Control group	**Small rewards**	**Big rewards**
Baseline	49%	50%	50%
Intervention period	71%	81%	81%
Follow-up period	77%	75%	80%

When the share of students who cycled is examined (Table 4), all groups are equal during the baseline period. However, the big-reward group stands out because 60% of participants used bicycles as a mode of transport, compared with 46% of participants in the control group and 49% in the group with the opportunity for small rewards. It is not possible to explain why more

participants in all groups cycled during the follow-up period, but this should nevertheless be considered positive.

Table 4: Comparison between groups in bicycle use during the baseline and intervention periods.

Share of students who cycled			
Period	**Group**		
	Control group	**Small rewards**	**Big rewards**
Baseline	38%	37%	37%
Intervention period	46%	49%	60%
Follow-up period	61%	63%	62%

At the end of the study, participants were asked whether it had affected their mode of transport. 30% of participants said that the study had affected their travel habits, see Figure 4. 16% said that they had used the car less, and 12.4% said they had used sustainable modes of transport more.

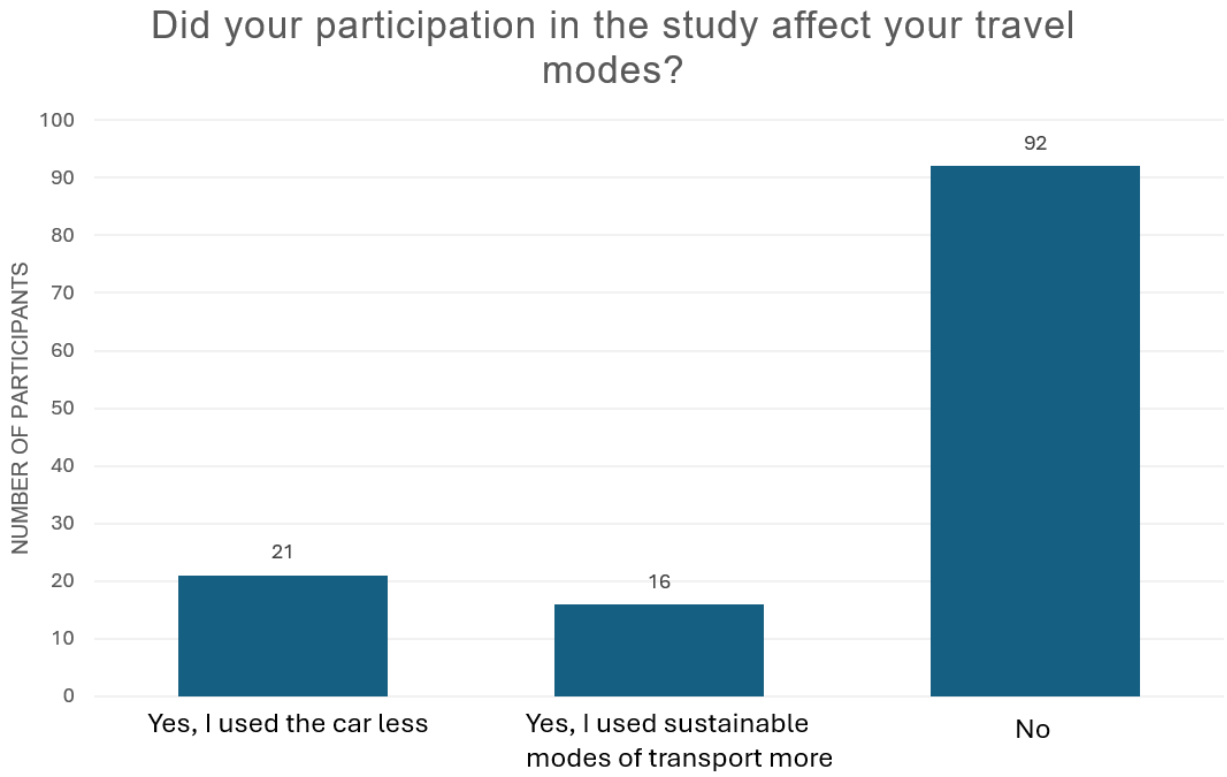


Figure 4: Results from the survey administered to the groups (Group S and Group B) that received the intervention during the intervention period.

As shown in Table 5, participants in all groups spent the most time on public transport and in cars (about 14 minutes) and less time walking, cycling and using electric scooters. There was no difference between groups in how far they travelled by each mode.

Table 5: Averages in distance and time per group per travel mode

Mode	Big rewards [km]	Big rewards [mín]	Small rewards [km]	Small rewards [mín]	Saman-burðarhópur [km]	Saman-burðarhópur [mín]
Walking	0.42	12.19	0.40	11.50	0.37	11.43
Public transport	4.92	14.21	5.36	14.96	4.67	14.24
Car	7.59	13.74	7.45	13.64	7.36	13.64
Electric scooter	1.00	6.19	6.62	13.73	—	—

Bicycle	2.14	9.57	2.34	10.74	2.18	9.21

The survey administered at the end of the study included open-ended questions about attitudes, what worked well and what could have been improved. The main findings from the questions are summarized below.

How did participation **change your attitude**?

- Awareness: participants became more aware of their own behavior and enjoyed following it. Awareness of other modes of transport also increased.

What did you think **worked well**?

- Gift certificate: most participants talk about this as a motivating factor
- App data: Being able to monitor one's own behavior and compare with others
- Notifications and emails: Motivating
- Positive effects of increased time outdoors and physical activity

What could be **improved**?

- Students could have received free public transport during the study
- Carpooling as an option in the app
- More rewards
- More notifications (e.g. encouraging cycling when the weather is good)
- Education about active modes of transport

Participant descriptives

Table 6 shows the distribution of genders per group. There was not a big difference in variance between groups but there were more women in all groups.

When citizenship status is examined in each group, there were most foreign citizens in the intervention group that received big rewards: 34% of participants indicated that they were foreign citizens residing in Iceland. Table 7 shows distribution in the groups.

To assess whether background variables affected the results, analyses were adjusted for students' citizenship. When this was done in a linear mixed-effects model, the difference between groups remained but lost statistical significance. This was done because many foreign citizens are exchange students who are less likely to have access to a car, and therefore more likely to use sustainable modes of transport.

Table 6: Gender distribution by group (number).

Gender distribution by group			
Gender	Control group	Small rewards	Big rewards
Male	21	24	21
Female	53	45	54
Gender neutral or other	1	3	1

Table 7: Citizenship status by group (number and %).

Citizenship status by group			
	Control group	Small rewards	Big rewards
Icelandic citizen	60	57	53
Foreign citizen (residing in Iceland)	14	15	23

Foreign citizens (%)	22%	30%	34%

Figure 4 shows the age distribution in the groups, which is fairly even between groups. The median age in the groups is 23–24 years; there is also only a one-year difference between the group with the lowest mean age (small rewards) and the highest mean age (big rewards).

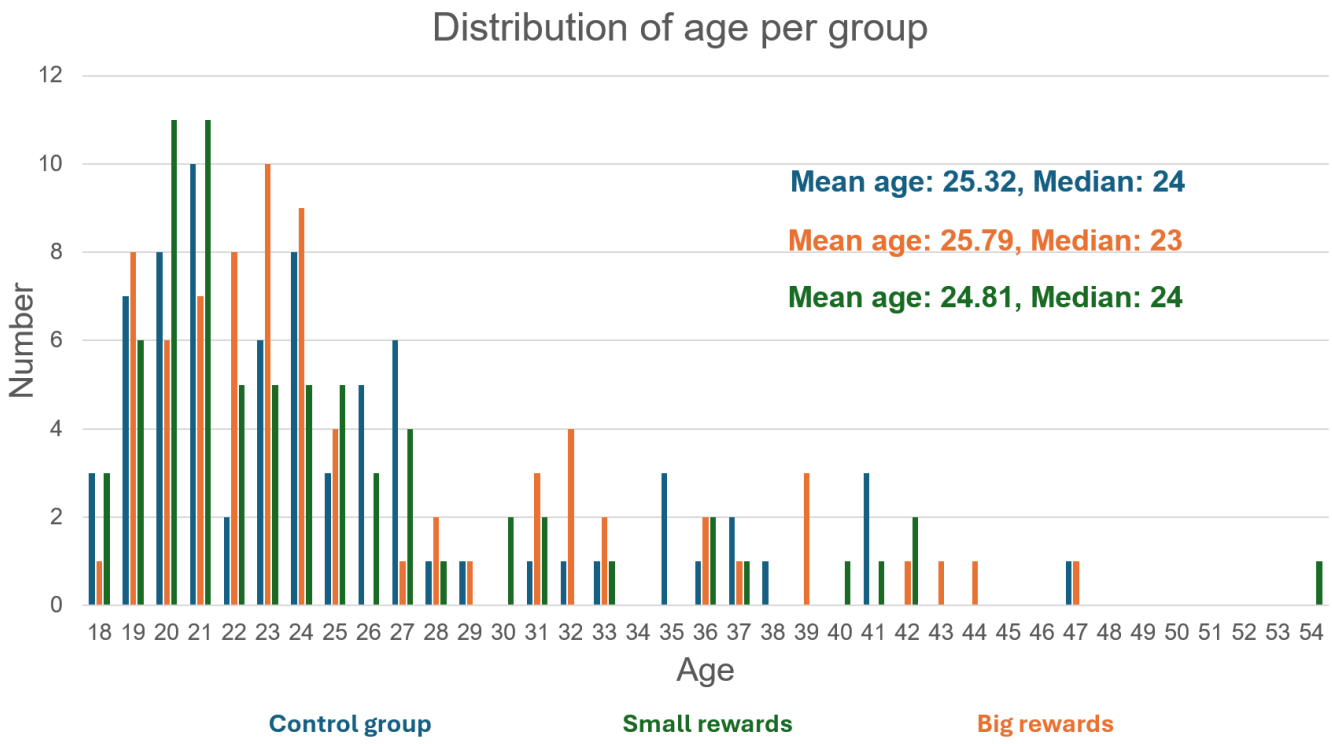


Figure 4: Age distribution of participants by group.

Results of staff intervention

Figure 5 shows the number of days per week that staff travel using each mode to and from work. Here, staff responses about their general travel behavior in summer and winter are compared with their responses about their travel behavior during the initiative. In summer, e-bikes are a popular mode alongside bicycles, while in winter staff make frequent use of public transport instead of private cars. Overall, active modes of transport (walking, cycling and e-bikes) are by

far the most common, and the private car is not used much in winters or summers compared to other options for commuting.

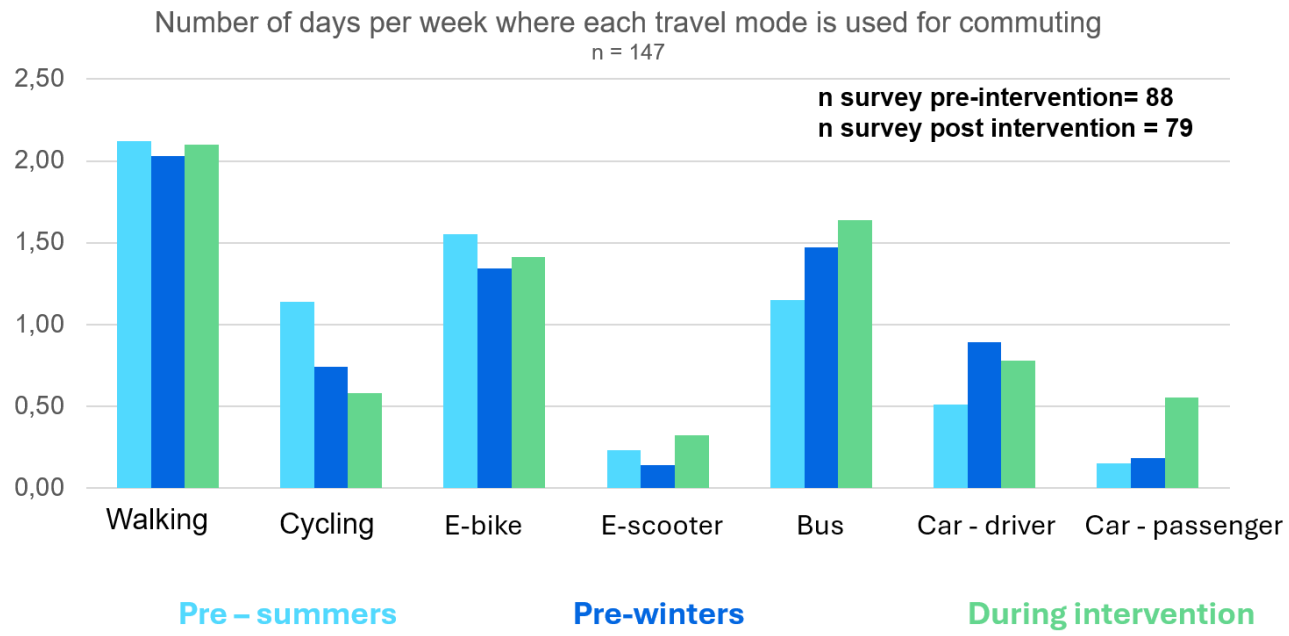


Figure 5: Results of the survey before and after the initiative. Data marked "initiative" are participants' responses after the initiative.

Figure 6 shows the share of participants who use each mode at least once a day to get to and from work, according to the survey sent before the intervention. The results show that walking is the dominant mode all year. However, private car use (as driver and passenger) increases from 35% in summer to 49% in winter. This is the largest change in mode between seasons, and it can be said that some participants shift from active modes to private cars in winter. An interesting finding concerns public transport use, which decreases in winter compared with summer, which can likely be attributed to more people using private cars in winter. E-bike use is stable between seasons, suggesting that they are a stable year-round option used by staff.

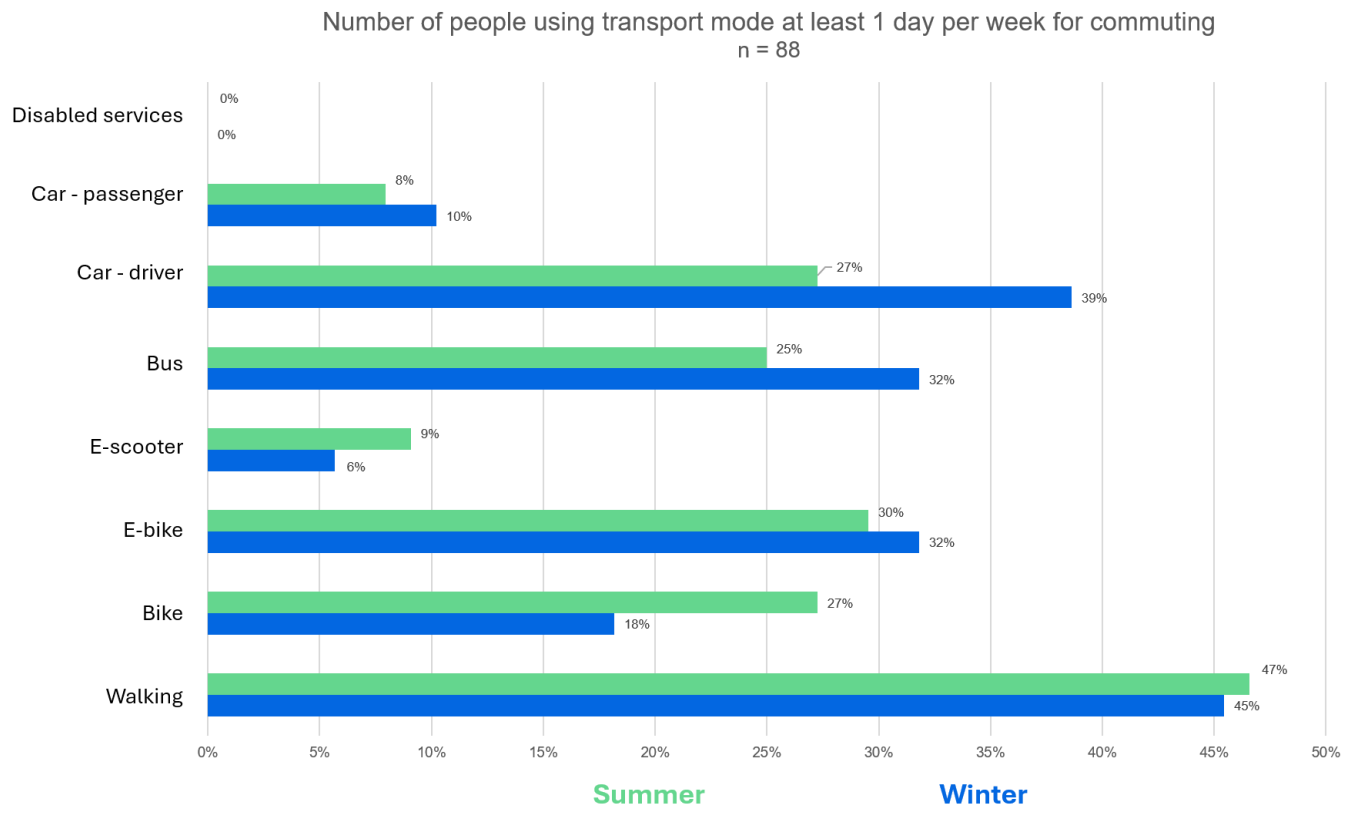


Figure 6: Share of participants who use each mode at least 1 day per week. Results from the survey before the intervention.

When the tracking-app data are examined, it becomes apparent that staff were fairly accurate in reporting their use of transport modes during winter. Figure 7 shows comparable results based on real-time tracking compared with participants' survey responses. As before, it shows that walking is dominant, followed by private car use; however, in reality considerably fewer people used bicycles during the intervention period, which can be attributed to heavy snow in the city and associated transport disruption.

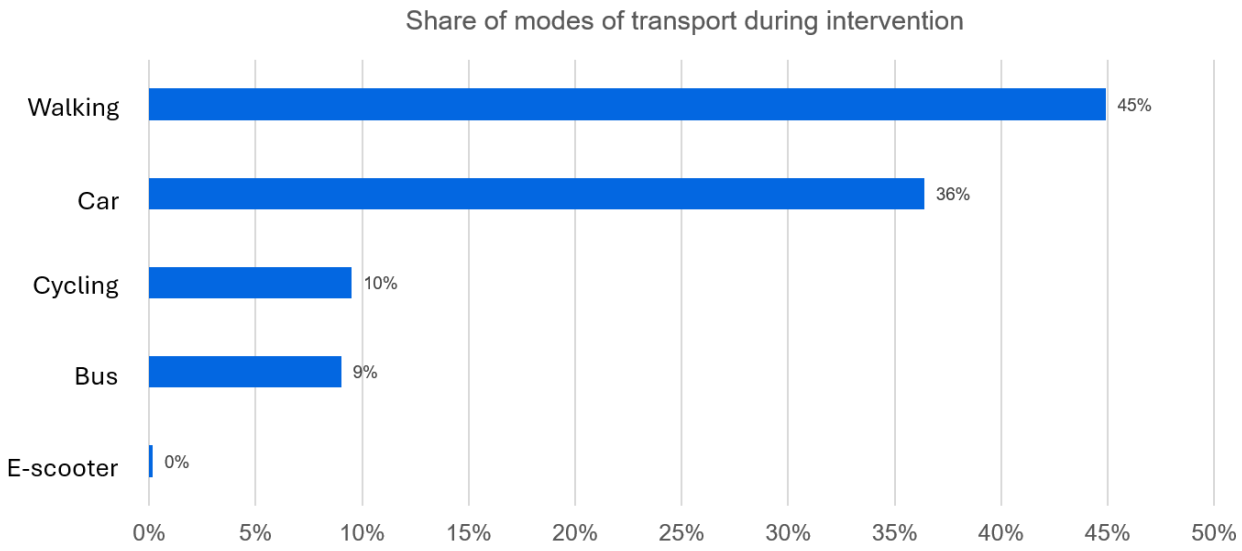


Figure 7: Share of all trips by mode based on tracking data.

As the group can generally be considered relatively sustainable in its travel habits, there was limited scope to encourage use of sustainable modes of transport. In addition as can be seen in Figure 7, 81% of participants said that their main mode of transport was not the car and therefore they did not change their behavior, while 14% said they tried new modes of transport during the intervention. When asked if participation affected their choice of mode, 21% in total said it did.

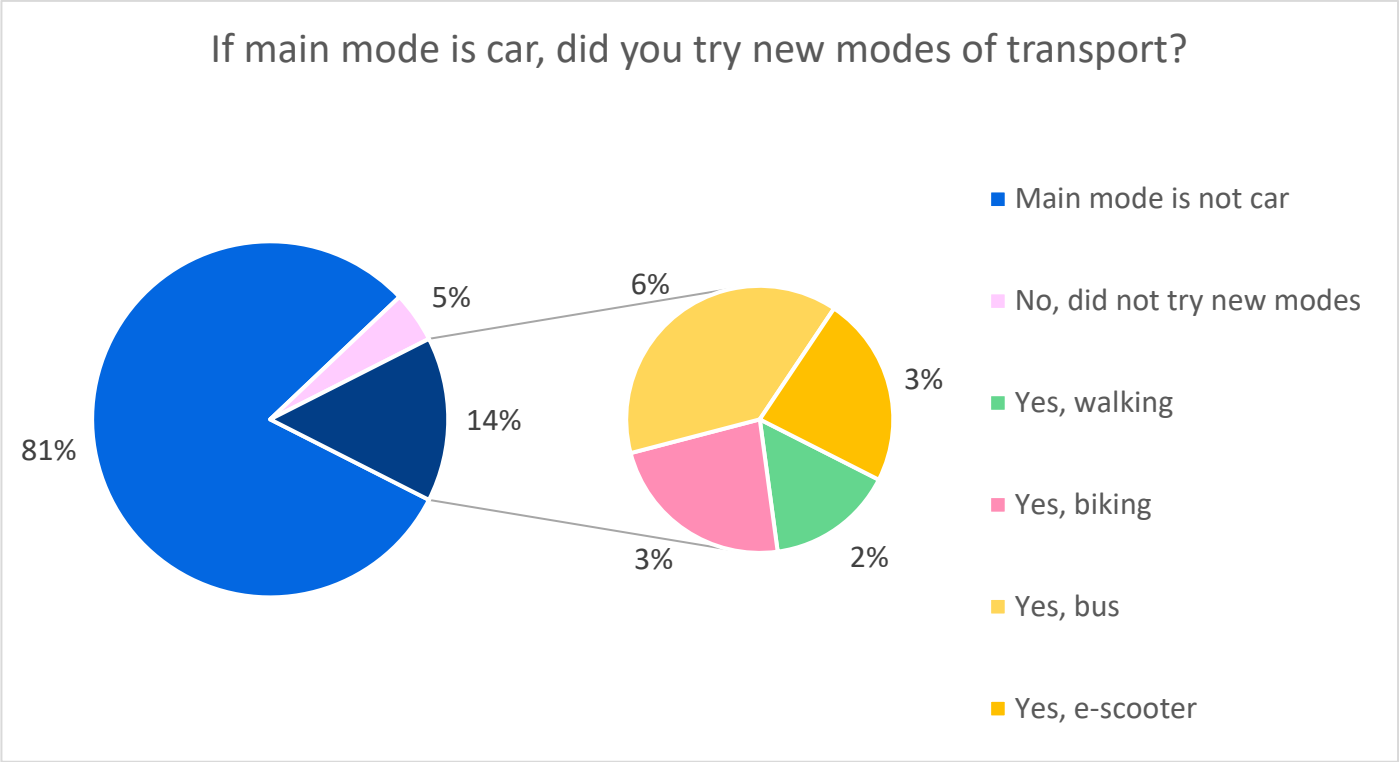


Figure 8: Participants asked whether they tried new modes of transport due to the intervention.

The survey administered at the end of the study included open-ended questions about attitudes, what worked well, and what could have been improved. The main findings are summarized below. niðurstöður spurninga.

How did participation **change your attitude**?

- Awareness: I became more aware when I use a car – it made me think

What did you think **worked well** to encourage sustainable modes of transport in the study?

- App: motivating and fun to see one's trips on a map, the time spent and distribution of modes, and compare oneself with others.
- Competition and rewards: especially on days when weather or tiredness would otherwise have encouraged car use, the competition and rewards worked. The gift-certificate incentive also worked to get people to participate, although the app itself and curiosity about the data then kept the interest going.

What did you think **could have been improved** in the study to encourage sustainable modes of transport?

- App: Participants describe the app as slow and tedious to use, with endless confirmations and sometimes incorrect classifications of transport modes. Some participants experienced discomfort about an unfamiliar app, operated by the employer, tracking trips throughout the day, including outside work and on weekends.
- Statistics and motivation: Many requested better and clearer statistics, competition standings, comparisons between workplaces, and regular motivational messages.
- Things that would make participation easier could have been offered:
  - offer public transport passes
  - shared bicycles during the initiative
- A “carpooling” option was missing from the app
- Rewards could be offered to everyone who increased their use of sustainable transport.
- The initiative could be held at a time when there is less snow.

Learnings from the staff study

A great deal was learned from both projects. To draw further lessons from the staff pilot, contacts and representatives of the organizations attended a “Lessons Learned Meeting” to gain a better understanding of what worked well, what could be improved, and how the next iteration could be improved.

What went well:

- The project was generally enjoyable and successful, despite starting late in the winter.
- Good collaboration between departments (HR, marketing, etc.).
- It was positive that the project team coordinated the implementation.
- Good participation and positive responses, especially given the circumstances.
- The app provided a good overview of trips (despite its shortcomings).
- Good cycling routes and facilities support increased bicycle use.

What could have been improved:

- Late start and little advance communication – more preparation and marketing would have been needed.
- The project was presented as an “intervention” without sufficient follow-up.
- Weather affected participation.
- App inadequate (slow, drains battery).
- Limited communication and promotion afterwards (e.g. news or presentations).
- Staff felt that a better and clearer explanation of privacy was needed, which led to limited registration (staff did not want the workplace to track them throughout the day).

Recommendations and next steps:

- Start earlier and communicate better (stronger marketing campaign).
- Connect the project with Mobility Week (e.g. in September).
- Increase participation:
    - Include more (preferably all) departments.
    - Have representatives from each department at the table.
- Broader incentives:
    - Participation prizes.
    - Cooperation with Public transport/shared mobility (e.g. free trips).
- Improve communication and motivation:
    - Use internal channels (screens, notifications).
    - Share presentations and results more effectively.
- Simpler recording of transport modes rather than a tracking app.

To summarize the lessons and experience for the next iteration of the pilot project, the following are the most important points:

- To get car users to participate, it is important not to describe it as an initiative for sustainable transport. Instead, describe it as a study of travel habits or something along the lines of “Would you like a chance to win rewards? Register your transport modes to get the possibility of participant prizes!“.
- It is possible to influence travel modes through incentives in the form of rewards and motivating communication; the results showed measurable effects that persisted after the intervention period.
- Participants said that the initiative had led them to become more aware of their own travel behavior, which could lead to choosing modes of transport other than the private car.