

# Pedelec-test (In Andritz)

In the context of European Union project



Project carried out by

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Aided by City of Graz



## **Executive summary with recommendations for the City of Graz**

In the context of European Union project Active Access there was a pedelec-test carried out in the area of Andritz in Graz. 20 people (14 men, 6 women) at the age of 40 up to 70 years got the chance to test a pedelec for a week. Pedelec stands for "Pedal electric cycle" named by Susanne Brüscher. While pedaling the rider gets additional power from the electric drive system. Acquisition of testers turned out to be very challenging. At the beginning of the test many testers thought sceptically about Pedelecs and were afraid of handling with pedelec's technology. After the pedelec-test testers changed consistently their opinion. Most of doubts and scepticisms were gone. Testers with their Pedelecs were well received by their environment (family, friends and passengers). Curious people asked them for a trial. In general pedelecs have high credits. Anybody was laughed because of using a pedelec. Nevertheless target group often argued being fit for a conventional bicycle without additional power.

After the pedelec test testers stated the high price of purchase of Pedelecs as most important barrier. Subsidies of Graz and Styria are predominantly unknown. Testers esteem the amount of subsidies as not big enough to be a serious incentive. Testers tend to use their pedelecs in order to reach their workplace. It's easier to inspire working age people than senior people to use a pedelec (although senior people might be less fit than working age people because of a lack of exercises and sports). Therefore the additional power from the electric drive system would be a quite good assistance). Pedelecs are advisable for people with limited constitution who take much pleasure in animation and independence.

Pedelecs in a social context: Pedelecs encourage people to go to bike rides in groups with other bikers because they don't run the risk of slowing down the rest of the group because of different constitutions. People can enjoy pleasures of bicycling because they can use the additional power from the electric drive system as needed.

Contrary to some fears pedelecs do not attract users of conventional bikes to become users of pedelecs. Therefore Pedelecs do not reduce society's fitness. Pedelecs contribute to increase animation of people with limited constitution. Pedelecs increase the mobility of society.

Overall in August 20 testers cycled about 1500 km with Pedelecs (Each tester 1 week). About half of 1500 km would have been driven by car. So Pedelecs

encourage a model shift from cars to sustainable mobility. On an average 1 tester cycled 73 km in more than 3 hours (23 km/h average speed).

On an average 1 tester covered 12 trips a week by pedelec. In general people of Graz do 3,7 trips a day at an average. (Sammer / Röschel, 2008). That means that testers did 46% of their trips by pedelec. Every other trip would have been driven by car. Half of the trips which were done by pedelec instead of a car were shorter than 6 km. A distance which is suited outstandingly for pedelecs.

### ***Recommendations for Graz:***

- Construction of bike parks near target and starting point. Bike parks should be at ground level, burglar proofed and protected from the elements.
- There should be pedelec-tests and try-outs more often. Pedelec tests should take place at a small scale themed “small but nice” for example at city squares in small areas or colonies or in combination with other local events like funfairs. People should get the chance to test a pedelec in 2 phases: first, they should bike for a few minutes to get to know the “pedelec-feeling”. Second, they should get the chance to test a pedelec in their normal course of live for a longer time (a week). People need a male and a female carer to talk to.
- Good quality bikes are necessary for an optimal test.
- The information on subsidies does not achieve enough attention. Information must be focused on target groups. For further more tests it is advisable to combine testing and mentoring.
- Social and health component should be pointed out for argument: there are bike rides in groups, everyone should participate. According to individual constitution people can go by conventional bike or by pedelec.
- Change basic conditions: fear of accidents is still a major barrier to the use of bicycles. Speed must be reduced to 30 km/h and abidance of speed limit must be monitored.

- Firms must be enlisted for pedelec-tests: There is a high potential for pedelecs in order to reach workplace and for trips during work. Additionally, many people can be informed and motivated in short time

# Initiative “Pedelec-test” in detail

## Test area

The pedelec-tests took place in Andritz, 12<sup>th</sup> area of Graz. The North of Andritz is characterized by start of splinter development similar to suburban regions. Andritz is the largest area of Graz. Andritz evolved from 3 villages and 1 dispersed settlement. Density of population is about 1000 inhabitants per square kilometre (3000 inhabitants / km<sup>2</sup> in the city). With the additional power from the electric drive system testers should be well prepared for requirements of local topography.

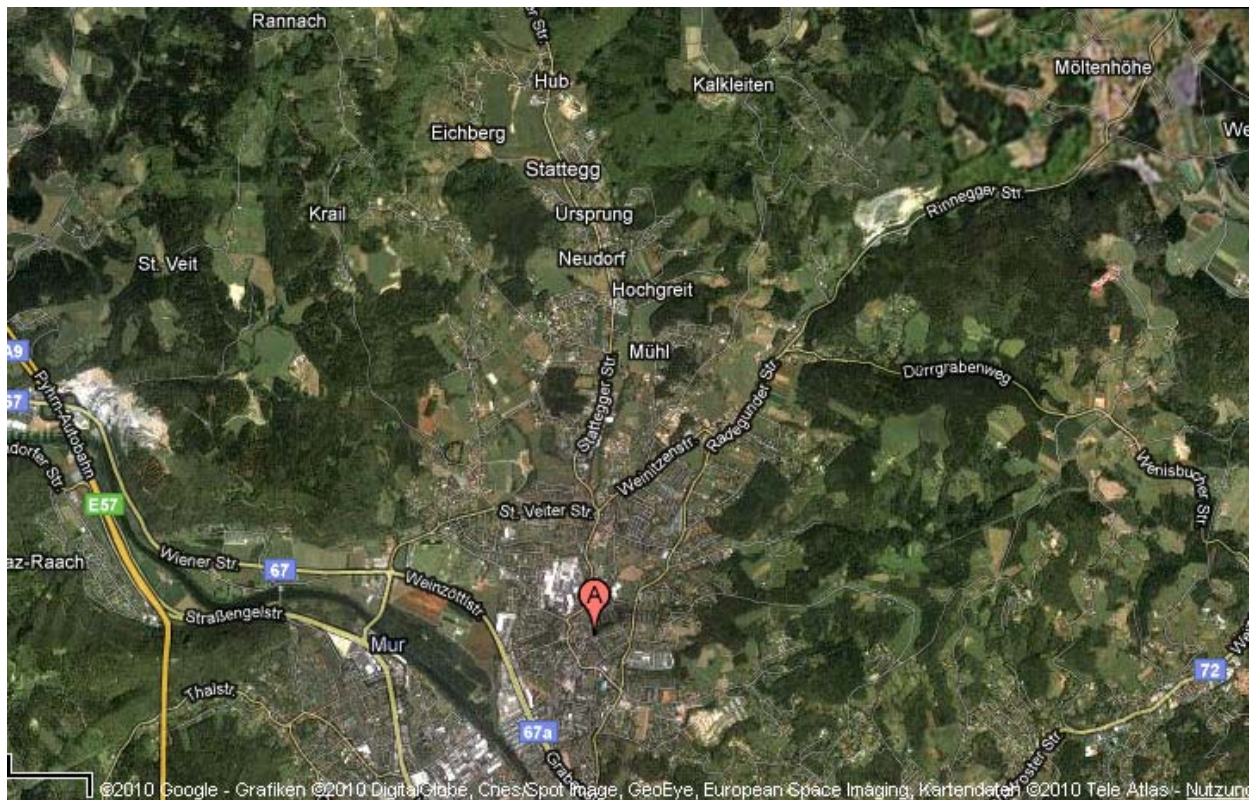
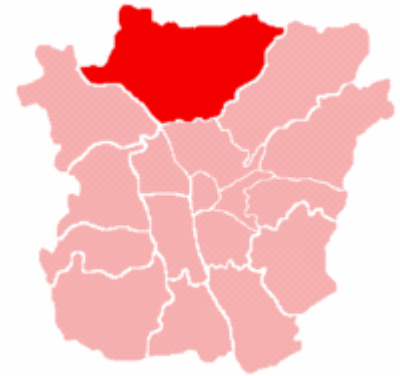


Figure 2: Map of Andritz (Source Google Earth)

## ***Goals, aims and target group***

Target group consists of men and women between 40 and 70 years. Pedelec tests targets to find out how middle-aged and senior people use pedelecs for their daily trips (especially shopping-trips and recreation-trips) and what kind of advantages and disadvantages appear in daily use.

Pedelec test should add to reduce scepticism about e-mobility and to encourage people to be more active even in senior age. It's an important goal to keep people fit, active and independent as long as possible.

Proportion of male bikers in senior age is very small. Probably the technical aspects of pedelecs could add to awaken their interests in cycling.

Walking, cycling and also cycling with pedelecs could contribute to increase people's quality of life in an area. Individual well being is increased by "active mobility".

## ***Pedelec-test***

Pedelec-test should analyse pedelec using by middle-aged and senior people in an outer area of Graz for daily trips. Pedelec-test focused on shopping-trips and recreation-trips. Pedelecs were made available to testers in Andritz for 1 week.

Testers used their pedelecs for most of their trips and noted their experiences in a mobility-log. After pedelec-test testers were interviewed individually.

## ***Milestones of pedelec-test***

- There was a start-up meeting where testers were briefed about goals and aims of pedelec-test and unstructured about use of pedelecs. At this meeting testers got to know each other to get in contact to compare their experiences.
- During test-week testers were serviced constantly (mobile phone hotline) to solve and answer any problems.
- After 4 weeks of testing there was another meeting where results were discussed and testers were interviewed altogether about their experiences.
- Finally results were published to the media.

## ***Course of pedelec-test***

<b><i>Phase</i></b>	<b><i>Description</i></b>
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<p><b>Prearrangement</b> July 2010</p>	<ul style="list-style-type: none"> <li>• Selection of testers</li> <li>• Embedding of associates</li> <li>• Project management, research (mobility-log, contact information, aso.)</li> <li>• First information of target group</li> </ul>
<p><b>Start</b> August 2010</p>	<ul style="list-style-type: none"> <li>• Start-up meeting</li> <li>• Start with first 5 testers</li> <li>• Handover of pedelecs</li> <li>• Instruction for use of pedelecs, explications about mobility-log and course of pedelec-test</li> </ul>
<p><b>Pedelec-test-week</b> August 2010</p>	<ul style="list-style-type: none"> <li>• 7 days 5 testers cycle most of their trips with pedelecs and make notes of their experiences and details of their trips</li> </ul>
<p><b>Finish first test-week</b> August 2010</p>	<ul style="list-style-type: none"> <li>• Terminal meeting of all 5 testers - &gt; return of pedelecs, first testers' experiences</li> <li>• Testers can compare their notes</li> <li>• Interviews</li> </ul>
<p><b>Post-editing</b> August / September 2010</p>	<ul style="list-style-type: none"> <li>• Individual interviews</li> <li>• Evaluation of mobility-logs</li> <li>• Analyse of learning outcomes</li> <li>• Adapting of concept for further pedelec-tests</li> </ul>
<p><b>Iteration</b> August / September 2010</p>	<ul style="list-style-type: none"> <li>• Pedelec-test is iterated 4 times with different testers</li> <li>• Therefore there are 20 mobility-logs</li> </ul>

## ***Qualitative Results***

For marketing implementation it's counterproductive to position pedelecs and bikes as transport means for senior people. Bikes and pedelecs should be seen neither as a transport mean only for senior people nor as a mobile walker. The image of "someone is not fit enough to go by bike" must be avoided.

Senior and medium-senior people appreciate pedelecs because pedelecs enlarge their cruising radius. "City is getting smaller" was a significant statement.

Pedelecs are suited for especially for chains of ways because different activities can be handled flexibly in short times. There are advantages that accrued compared to car (traffic-hold-up, parking area) and public transport (time-consuming, inconvenient).

The additional power of the electric drive system made a substantial contribution to overcome the obstacles of the hilly topography in Andritz. Testers sampled starting-aid (not at every pedelec attached) very comfortably at crossroads and if you have to push your pedelec.

Senior people are very sceptic to test modern bikes like pedelecs. They are afraid of handling with a pedelec because of its technique, their constitution and busy situations in traffic. Often senior people neither take nor risks and do not participate in pedelec tests even though they would have been interested in pedelecs. At the beginning of the test many testers thought sceptically about Pedelecs which changed immediately after the first ride with the pedelec. Most of doubts and scepticisms were gone.

There is a great demand for additional pedelec tests but in a smaller scale for instance as an additional offer in combination with other activities. These packages should be published by mouth-to-word or familiar institutions. There should be 2 phases. At first, giving Pedelecs a try. Second getting to know pedelec's advantages over a longer period (for instance for a week).

All testers embraced the principle of additional power from the electric drive system. At the beginning of the test most of the testers were of the opinion that today they are too fit to bike with the aid of additional power. After the test they reconsidered their opinion. Most of them could imagine using a pedelec already today.



It's very important that test-pedelects are high quality pedelecs. To take advantage of current pedelec-hype there is a need of more qualitative pedelecs than "Sytria Bikes" provided by "Energie Steiermark". We appreciated getting pedelecs for free from "Energie Steiermark, but all testers criticised pedelec's scarcities. Additionally pedelecs were fit up with speedometer, shopping baskets, u-locks and insurance.

If pedelecs should be part of futures transport system for senior people, you have to approach people at an earlier stage. Pedelec test revealed that people in working age who try pedelecs for their journey to workplace get a stronger connection to pedelecs than people who get in contact with pedelecs in senior age.

Pedelec's acquisition costs are named mostly as a barrier. Subsidies are not well known by target group and also not stimulation enough. Testers do not trust in extreme cheaply pedelecs. A complete substitution of cars by pedelecs is not possible today.

Senior people (over 60 years) do not use pedelecs for shopping-trips very often. Shopping-trips in Andritz are short trips. Senior people use for shopping-trips especially public transport systems or they go by feet.

Middle-aged people (40-60 years) use pedelecs for shopping-trips very often.

The main barrier why pedelecs are not used more often for shopping-trips is that people are afraid of burglary (it's the same argument like in connection with conventional bikes). They are not afraid of burglary while they are shopping. People are afraid of burglary at home during the night. That's why people store their pedelec in their basement or in their flat. Often because of pedelec's heavy weight (about 25kg) it's too complicated to carry it out for a short trip. Instead people go by feet. There would be an improvement of situation if there would be built easily accessible bike parks nearby pedelec users' habitations.

Burglary and bike parks are the main reasons why middle-aged people do not use pedelecs for daily trips very often.

Recreation traffic by pedelecs (especially getaways)

Pedelecs proved itself for recreation traffic. On the one hand pedelecs support less fitter people at family-getaways. On the other hand pedelecs support less fitter / senior people that they can go on a bike tour with fitter / younger people.

In connection with recreation traffic it is notable that senior people appreciate pedelecs as a safeguarding in case of being at the end of their rope. Often people use the lowest step of additional power because they want to exercise.

A very important target group of pedelecs are middle-aged and senior women who are not discouraged because of high acquisition costs. These women are less influenced by image than men. Men tend to dismiss pedelecs more frequently than women because they are afraid of losing their sportive image.

Testers received positive reactions from their environment (family, friends, and passengers). People asked them about the pedelec and wanted to test it.

Testers discovered new routes and corners in Graz (for instance short cuts or in general the bike traffic system).

Testers in working age especially appreciated reaching targets without transpiration.

Pedelecs are suitable for people with adverse effects in consequence of heavy weight, illness or seniority but who wants to train themselves.

## Quantitative Results

During 4 weeks of pedelec-test in the area of Andritz 20 testers (6 women, 14 men) cycled about 1500 km. Testers' average age was 50,5 years. The youngest tester was 40, the oldest tester about 70 years old. 1 tester cycled about 73 km in 3 hours at the average with an average speed of 23 km/h. This average speed affirms the theory that people with pedelecs could go higher speed for a longer time than people with conventional bikes. In 1 week 1 tester cycled 12 trips at the average. 6 of 12 trips were substituted car-trips. So in 1 week 1 tester avoided about 44 km by car at the average.

All trips	km	min.
Shopping- / Erranding-trips	216,05	632,6
Recreation-trips	720,32	1876
Other-trips	529,36	1318,5
Aggregated trips	1465,73	3827,1

Chart: cycled trips by pedelecs during pedelec-test

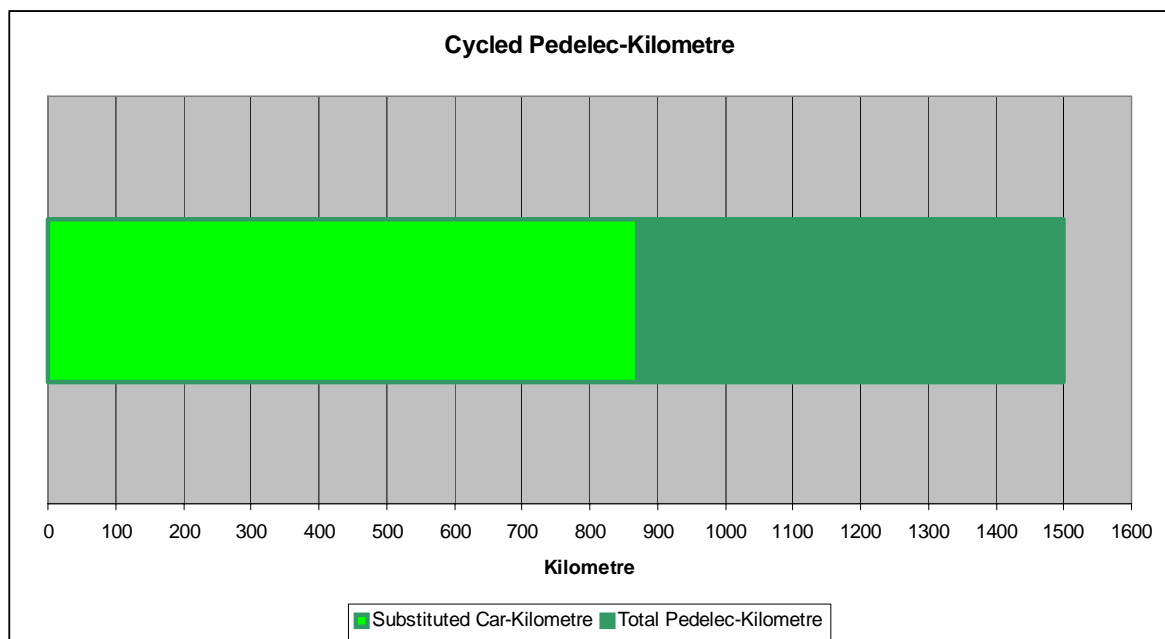


Figure 3: Cycled kilometres by pedelec and car substituted kilometres (own illustration)

Length of trip	Shopping	Recreation	Other	Aggregated
0,0 - 1 km	17	6	10	33

<b>1,1 - 3 km</b>	29	10	22	61
<b>3,1 - 5 km</b>	10	14	22	46
<b>5,1 - 10 km</b>	10	9	35	54
<b>More than 10 km</b>	3	19	6	28
<b>Aggregated</b>	69	58	95	222

**Chart: spreading of distances of trips cycled by pedelecs classified by goal of trip**

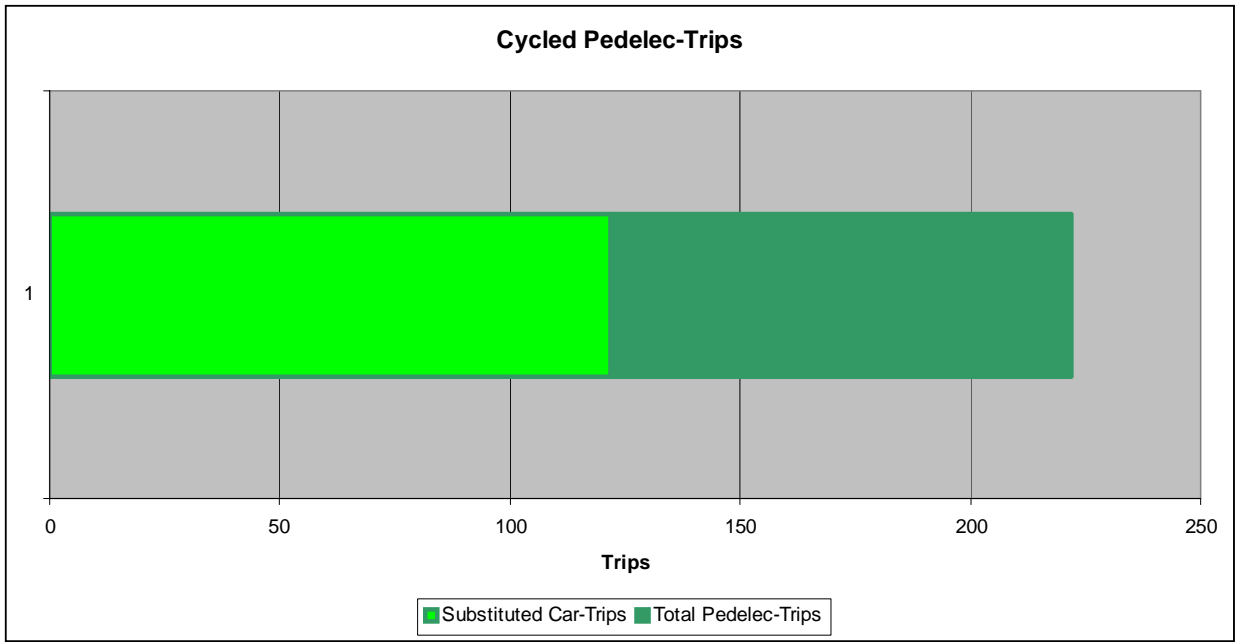
<b>Length of trip</b>	<b>Shopping</b>	<b>Recreation</b>	<b>Other</b>	<b>Aggregated</b>
<b>0,0 - 1 km</b>	8	0	0	8
<b>1,1 - 3 km</b>	19	3	12	34
<b>3,1 - 5 km</b>	10	3	5	18
<b>5,1 - 10 km</b>	8	4	23	35
<b>More than 10 km</b>	2	19	6	27
<b>Aggregated</b>	47	29	46	122

**Chart: spreading of distances of trips cycled by pedelecs in order to substitute car trips classified by goal of trip**

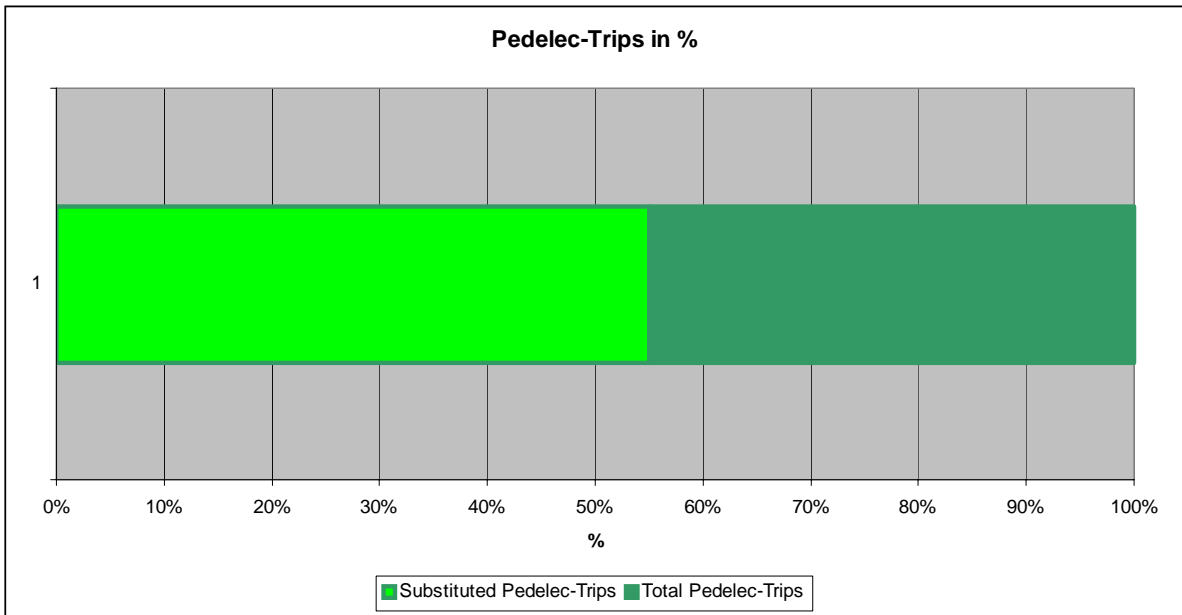
### ***Trips / Substituted car-trips***

Testers cycled 222 trips by pedelec at all. There were 69 shopping-trips and 58 recreation-trips. Altogether testers cycled 222 trips. More than half of that trips were shopping-trips (69) and recreation-trips (58). Remaining trips were predominantly trips to workplace. 122 trips of all 222 trips would have been taken by car.

Concerning shopping-trips about 68 % of car trips could be substituted by pedelecs. The 5 oldest testers substituted even 77 % of shopping-trips by pedelec instead of car as usually. 27 trips from 28 trips which were longer than 10 km would have been taken by car.



**Figure 4: cycled trips by pedelec and car substituted car trips (own illustration)**



**Figure 5: cycled trips by pedelecs and car substituted car trips (own illustration)**

## Distance

Most of the trips within cycled pedelec-test were from 1 to 3 km long. Nearly half of these trips were shopping-trips. It comes as no surprise that predominant trips which were longer than 5 km were cycled by pedelecs instead of gone by car. Shorter trips were rarely substituted by pedelecs.

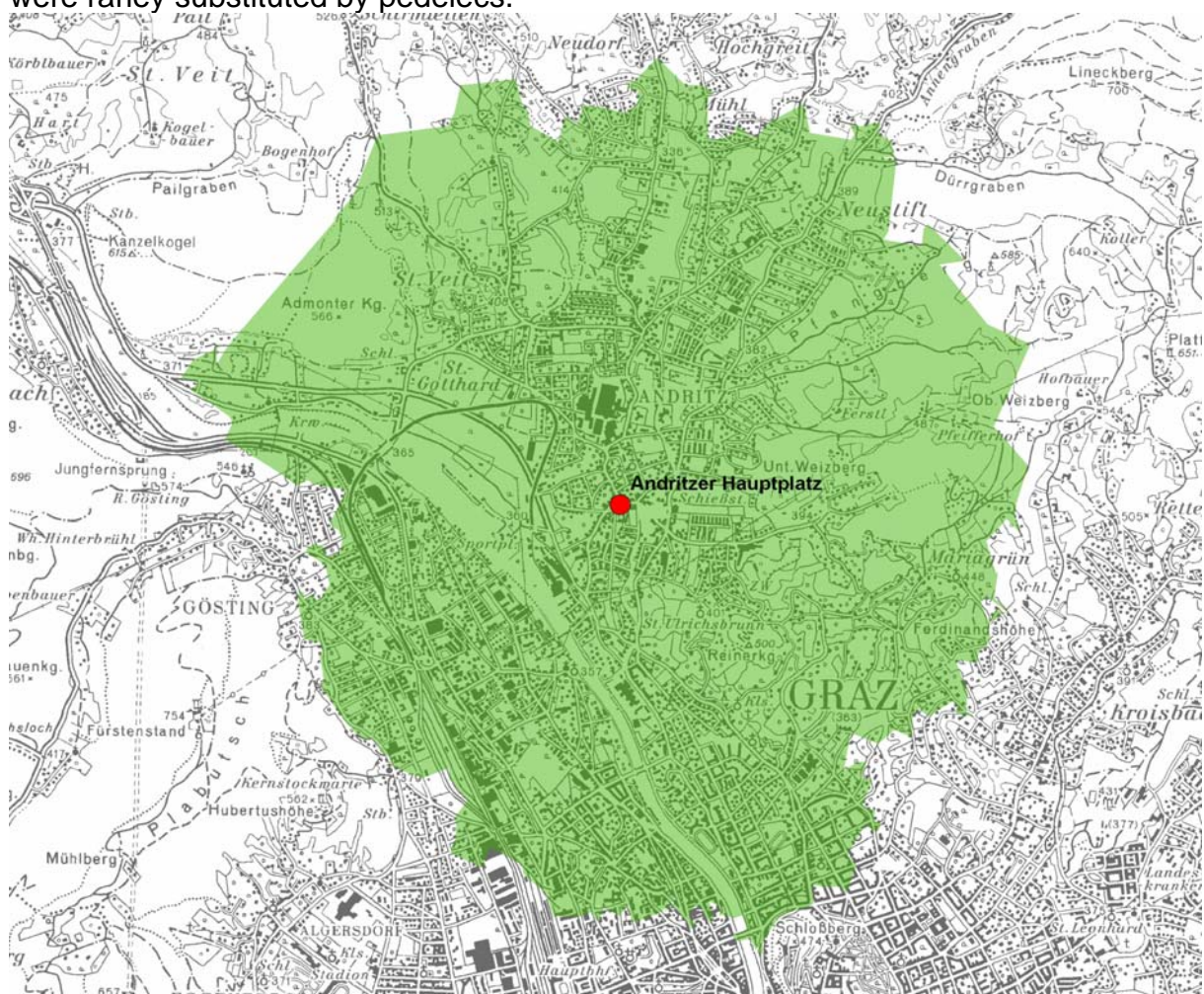


Figure 6: Reachable in 10 Minutes (3,3 km) starting from main-square Andritz by pedelec (own illustration)