

# **Short Trips in European Countries**

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**Summary:**

This report is written as a part of the EU project WALCYNG. The topic is comparing travel behaviour between countries in Europe.

The limit on how far people are willing to walk, whenever walking is seen as transport, is 1-2 km. The willingness to cycle longer distances differs between countries, but is normally about 3-5 km. Walking and cycling are frequently used as transport modes when the trip is the purpose in itself, and on trips for shopping and buying smaller goods. A car is much more a direct means of transport. Many short car trips are for shopping or transporting other people. Women walk more than men, and men are more often than women car drivers. In most countries men cycle as much at women or more. Young people walk or use a bike more than older people.

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**Sammendrag:**

Rapporten er laget i tilknytning til EU-prosjektet WALCYNG og sammenlikner reisevaner i en rekke europeiske land.

Det er grenser for hvor langt folk er villige til å gå og sykle. Grensen ligger på omkring 1-2 km for gange og 3-5 km for sykling. Gang- og sykkelture er mer enn rene framkomstmidler. Turen er ofte et mål i seg selv. Bilen er i langt større grad et rent transportmiddel. Mange korte gang- og sykkelture er fritidsturer eller handleriser. Formålet med korte bilturer er ofte handling eller å hente eller bringe andre. Kvinner går mer enn menn, men i de fleste land sykler menn mer enn kvinner. Menn kjører mer bil enn kvinner. De som er unge går og sykler mer enn eldre.

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# Preface

WALCYNG - How to enhance WALking and CYcliNG instead of shorter car trips, and to make these modes safer - is a project in the programme package Urban Sector, DG VII Transport RTD Programme in EU's Fourth Framework Programme.

The use of and the dependence on cars in everyday life is increasing. Even for short trips, the use of a car is the most usual way to travel. A number of short trips by car can be replaced by modes like walking and cycling. The purpose of WALCYNG is to identify conditions and measures that may be used to encourage the replacement of short car trips with pedestrian and bicycle traffic. WALCYNG applies a Marketing Model. The goal is to show how short car trips could be replaced by walking and cycling with the help of marketing instruments.

WALCYNG is divided into 13 different work packages (WP). Each of the work packages will present the different parts of WALCYNG, such as a description of the conditions for walking and cycling in different countries, the main problems for pedestrians and cyclists, identification of measures and incentives to improve the conditions for walking and cycling, communication strategies and campaigns for implementing these measures, information about the main advantages and the obstacles connected to walking and cycling. WALCYNG will also illustrate the safety problems of pedestrians and cyclists and identify relevant solutions.

Partners from eight different countries are involved in WALCYNG:

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# Summary

## Potential for walking and cycling instead of driving a car

The main questions we try to answer in this report are the following:

- How many trips do people conduct on an average day, by different modes?
- How long are the trips; on foot, bicycle, car?
- What kind of transport mode do people use on different trips, by purpose of the trip?
- Which groups of the population make trips in different purposes and to what extent?

More directly we approach the following topics:

- What is the main role of walking and cycling in daily life of the European population?
- In what situations can we see that people tend towards walking and cycling instead of motorised transport?
- What is the amount of motorised transport (private cars) on short trips and how can we get people to switch from motorised to non-motorised transport on short trips?

## Problems comparing data from different countries

The report is based on data from requests to 16 countries. The comparisons made are not always too simple. In addition to the fact that we did not obtain data from all countries, the reasons for our problems are the following:

- The definition of a trip varies. In this report a trip is defined according to its purpose. Each trip made has a definite purpose.
- In the registration of trips some countries operate with a lower length limit, i.e. only trips longer than a certain length are registered.
- The categorisation of variables varies: trip-lengths, trip-purposes as well as individual characteristics as age, occupation, car-ownership, etc.

Due to these problems, we ended up in dividing the material into three groups:

- Countries where travel surveys have been conducted on a national level and where raw data were available; Norway, Sweden, Denmark, The Netherlands and Great Britain. From these countries we have, in general, been able to get any data we wanted.
- Countries where travel surveys have been conducted on a national level or for specific cities or regions, but where data had to be picked from written reports; Germany, France, Finland, Switzerland and Austria.
- From the remaining EU countries (Belgium, Ireland, Italy, Spain, Greece and Portugal) travel surveys have not been conducted or we have for various reasons not been able to obtain data from them. For Italy we have received data from the Italian census of 1991, which show trips to work and school. The Italian data are not directly comparable to data from travel behaviour surveys, and consequently they are presented in a separate chapter. The lack of data has forced us to exclude the rest of the countries mentioned above in this report.

## **There is a limit on how far people will walk or cycle**

Results from European travel surveys indicate:

- There is a distinct limit on how far people are willing to walk, whenever walking is seen as transport (1-2 km).
- The willingness to cycle for longer distances differs between countries with good amenities and a flat topography (Denmark and The Netherlands) and others. However, in general we should not expect people to use a bike for transport over distances longer than 3-5 km.
- The frequency of the use of a car for shorter distances is amazing. If we consider walking as an alternative, a change from car to walking for trips shorter than 1 km should reduce car driving by 15 per cent in most countries. With a 2 km limit the reduction would be close to 30 per cent. Including cycling and also taking into consideration trips of 3-5 km, the number of car trips could be decreased by half in many European cities.
- The main competitor for cycling, however, seems to be public transport. In The Netherlands and Denmark short trips by public transport seemed to be replaced by cycling and not by using a car.

As an average the population in the European countries in the study make about three trips per person per day. The exact number differs with the highest in The Netherlands and the lowest in Germany and Great Britain. The numbers for France are from two urban areas (Lyon and Grenoble), while Austria is represented with a figure from a federal county (Oberösterreich). These



differences are probably mostly due to differences in methods and do not reflect real differences in the amount of travelling.

If we only consider those who actually travel on an average day, 80-85 per cent of all, the number of trips per person per day is closer to four trips per person per day.

The definition of a walk trip is that the whole trip is done on foot. There are differences in the number of walk trips per person per day in the European countries, but in most countries the average number of walk trips is between 0.5 and 1 trip per person per day. This means that around half of the population make one walking tour per day (tour = trip back and forth). Here it is important to bear in mind that trips on foot are probably grossly underrepresented in travel behaviour surveys.

Most trips on foot are short trips. In the selected countries about 50 to 80 per cent of the walk trips are 1 km or shorter. A minor share is longer than 5 km. It seems to be a distinct limit on how far people are willing to walk, between 1 and 2 km.

The share of cycling trips in Europe is about 5-10 per cent of all trips. Two countries point themselves out with a higher share of trips by bike, The Netherlands (29 per cent) and Denmark (17 per cent), while the share of trips by bike is especially low in Great Britain (2 per cent) and Italy (4 per cent of trips to work). The average length of a bicycle trip is 2 km. In Denmark and in The Netherlands the bicycle trips are longer than in the other European countries. The willingness to cycle over longer distances differs between countries with good amenities and a flat topography (Denmark and The Netherlands) and other countries. However, in general we should not expect people to use a bike for transport on distances longer than 3-5 km.

More or less half of all trips are made by car (as a driver). The use of car for shorter distances is extensive, about half of the trips by car is shorter than 5 km. If we consider walking as an alternative to car on trips shorter than 1 km, this would reduce car driving by 15 per cent in most countries. If we replace car trips shorter than 5 km with walking or cycling, there is a potential for replacing half of all car trips.

## **Walking and cycling are often done as a purpose in itself**

Walking and cycling are frequently used transport modes when the trip is the purpose in itself, and on trips for shopping of smaller goods. A car is much more a direct means of transport. Many short car trips are for shopping or transporting other people. A certain proportion of the car trips are to work and other purposes.

This indicates that there is some resistance in considering walking and cycling as realistic alternatives to car use. However, some short trips by car could probably be replaced by walking and cycling, as seen from The Netherlands and Denmark.

Walking, cycling and car driving on short trips have specific roles as transport modes:

- Walking is a way of travelling used for mainly two purposes; short trips to shops, in all probability with not to much to carry, and leisure trips where the walking in itself most likely is the main purpose.
- Cycling is a way of travelling similar to walking. We use the bike on short trips to shops and for leisure purposes where the bicycle-tour probably is an aim in itself. Walking and cycling, therefore, have limits as transport modes, but in some countries cycling is common for journeys to work. In Denmark almost 60 per cent of short trips (<5 km) to work are bicycle trips.
- Driving a car for shorter distances has one main purpose; shopping. Many of the short car trips are for shopping, may be with a heavy load to carry. In addition, some short car trips are to work and for transporting others, like children to school, kindergarten, etc.

*Table 1 Purpose of trips by mode in Norway. Per cent. Trips shorter than 5 km*

Percentage	On foot	Bicycle	Car as driver
Work	11	20	19
School	3	9	1
In work	1	1	4
Shopping	29	28	36
Caring	3	2	14
Leisure	31	21	9
Visits	15	15	13
Others	8	5	5
Sum	100	100	100

## **Women walk more than men**

Different groups in the population have different travel behaviour. Important differences are found between men and women, young and old, car-owners and people without a car, workers and non-workers, city-dwellers and others.

Women walk more than men, and men are more often than women car drivers. This is the case both for short trips and for trips in general. Women are, however, more often passengers as their husbands hold the wheel.

For cycling it is interesting to notice that in most countries men cycle as much as women or more. In countries where the amount of cycling is high, like The Netherlands and Denmark, the share of trips by bike is especially high among women.

Young people walk or use a bike more than older people. This is the general picture, even though there are differences between the various European countries. Young people under the age of 18 have the highest number of trips on foot and by bicycle per day. The number of trips on foot is also rather high among the oldest (over 65).

Driving a car, even on short distances, is especially usual among adults at the ages 25-50 years.

## **People who work part-time make most trips**

The differences in travel behaviour between men and women, and young and old may reflect their access to a car. Access to a car is usually reflected by age, by income, by gender and by unemployment.

People without a car both cycle and walk more than those with one or more cars in the household. In some countries the differences between those with and without a car are especially high for cycling. Those who walk less are those who both have a license and a car in the household. Simply said; those who have access to a car, do not walk or cycle.

People working part-time make more trips than others. Part-time employed travel almost as much by car as full-time employed. At the same time part-time employed walk and cycle more. Behind these figures we find women working part-time, doing shopping, taking children to school and kindergarten, etc.

Non-workers (under education, wives and husbands who stay at home, unemployed, retired people) make as many trips on foot, but only half as many short trips by car as the part-time employed.

People under education use a bicycle more than others and they almost never use a car, as most of them are under the age of 18.

## **The larger the city, the more people walk**

The larger the city, the more people walk. Those who live in larger cities use more public transport, but these trips are over longer distances.

Driving a car on short distances decreases as the cities expand. The bigger the city, the less people use a car. Car driving on short distances is most frequent outside the largest cities and in small cities.

Using a bike is most usual in central parts of the larger cities. Bicycling in The Netherlands has a somewhat different pattern than in the other countries: People who live in less urbanised areas cycle more than those in the strongest urbanised regions.

In Italy, the percentage of walk trips to work is clearly highest in the smaller cities and lowest in Rome. While people in Rome go to work by public transport, people in smaller cities walk.

## **Trip chains cannot explain the use of car for short trips**

Trip chains are trips with a multiplicity of purposes. Trip chains could explain some of the car use on short trips. Data from Norway indicate that only 25 per cent of the short car trips are parts of a trip chain. Therefore, other reasons seem to be more important for the use of cars on short trips.

## **The potential for walking and cycling is considerable**

In general, the potential for more walking and cycling and less car use is considerable, because many trips by car are short. Looking at The Netherlands and Denmark, we notice the effects of a long-term culture and proper amenities.

The trend, however, goes in the opposite direction as more and more people have access to a car.

We also notice that many car trips on shorter distances are for shopping and that many trips on foot and by bicycle are trips where the main purpose is just walking and cycling.

A successful policy for more non-motorised transport must probably be based on various measures:

- To improve conditions for pedestrians and cyclists
- To find leisure activities within shorter distances from the residence.
- Directly to prevent people from using cars.

To make more people to walk and cycle we must consider which groups are the most important. Such target group-thinking can take two directions:

- To follow people who already walk and cycle and see what keeps them from using a car. Under this heading we primarily find young people (i.e. students) and women who work part-time and/or people who live in the inner parts of large cities.

- To consider people who use a car for all purposes. We first of all find middle-aged men who work full time and/or live in suburbs.

To define the measures needed to keep one group from changing to car use and to make the other group leave the car in the garage, lies outside the subject matter for this report, but will be dealt with in other parts of the WALCYNG-project.



**Sammendrag:**

# Korte reiser i europeiske land

## Erstatte korte bilturer med gange eller sykkel

Formålet med EU-prosjektet WALCYNG er å finne fram til forhold og tiltak som gjør det mulig å erstatte korte bilturer med gange eller sykkel. I den sammenheng tar denne rapporten opp følgende spørsmål:

- Hvor mange reiser med ulike transportmidler foretar folk i de europeiske land?
- Hvor lange er reisene, til fots, med sykkel og med bil?
- Hvilke transportmidler brukes på reiser med ulike formål?
- Hvilke grupper av befolkningen foretar ulike typer reiser?

Svarene vi kommer fram til skal brukes til å få bedre kunnskap om sentrale problemstillinger innen WALCYNG:

- Hvilken rolle spiller gang- og sykkelreiser for dagliglivets reiser i de ulike land i Europa?
- Under hvilke forhold velger folk å gå eller sykle i stedet for å kjøre bil?
- Hvor stort er omfanget av bilreiser på korte turer, og hva skal til for å få folk til å erstatte korte bilturer med gange eller sykkel?

## Vanskelig å sammenlikne data fra ulike land

Rapporten er basert på data samlet inn etter henvendelser til 16 europeiske land. Å sammenlikne data mellom ulike land fører med seg flere typer problemer:

- De ulike land bruker forskjellige reisedefinisjoner. I denne rapporten har vi definert reise etter formålet med den. Reisen er avsluttet når man kommer fram til stedet for formålet med reisen.
- Noen land opererer med en nedre reiselengde ved registrering av reiser. Bare reiser over en viss lengde blir registrert.
- Inndelingen av variable varierer fra land til land. Dette gjelder f.eks. variable som reiselengde, reiseformål og individuelle kjennetegn som alder, yrke, tilgang til bil etc.

Landene i Europa kan deles inn i tre grupper etter hvor lett det var å få tilgang til de dataene vi trengte:

1. Land som har foretatt nasjonale reisevaneundersøkelser og hvor rådataene er tilgjengelige. Fra Norge, Sverige, Danmark, Nederland og Storbritannia kunne vi stort sett få alle de opplysninger vi ønsket fra reisevaneundersøkelsene.
2. Land som har foretatt reisevaneundersøkelser, enten på nasjonalt nivå eller for spesielle byer eller regioner, men hvor opplysningene bare finnes i ferdige rapporter; Tyskland, Frankrike, Finland, Sveits og Østerrike.
3. I de resterende EU-land (Belgia, Irland, Italia, Spania, Hellas og Portugal) er det ikke foretatt reisevaneundersøkelser som var tilgjengelige for oss. Fra Italia fikk vi data fra folketellingen 1991 som viser reiser til skole og arbeid. De italienske dataene er derfor ikke direkte sammenliknbare med data fra de europeiske reisevaneundersøkelsene. De er derfor presentert i et eget kapittel. Mangelen på data gjorde det nødvendig å utelate de resterende landene i denne rapporten.

## **Det er grenser for hvor langt folk er villige til å gå eller sykle**

I gjennomsnitt foretar befolkningen i Europa rundt tre reiser pr person pr dag. Befolkningen i Nederland foretar flest reiser, mens befolkningen i Storbritannia og Tyskland reiser minst. For Frankrike har vi tall fra byene Lyon og Grenoble, mens i Østerrike baserer vi oss på tall fra regionen Oberösterreich. Forskjellene mellom landene i antall reiser pr person pr dag skyldes først og fremst metodiske forskjeller og ikke nødvendigvis reelle forskjeller i reisevaner.

Det gjennomsnittlige antall reiser for dem som faktisk hadde foretatt en reise er nærmere fire reiser pr person pr dag.

En gangtur er en tur hvor hele reisen foretas til fots. Befolkningen i de europeiske landene foretar i gjennomsnitt mellom 0,5 og 1 gangturer pr dag. Dette innebærer at ca halvparten av befolkningen foretar en fram- og tilbakereise til fots hver dag. Her må en imidlertid ha in mente at gangturer ofte er underregistrert i reisevaneundersøkelser.

De fleste gangturer er korte. I de fleste land er 50-80 prosent av gangturene 1 km eller kortere. Bare en liten andel er 5 km og lengre. Det ser ut til at grensen for hvor langt folk er villige å gå ligger et sted mellom 1 og 2 km.

Andelen sykkelturer i de europeiske land ligger rundt 5-10 prosent av alle reiser. Nederland og Danmark peker seg ut med en høyere sykkelandel, henholdsvis 29 og 17 prosent. Den laveste sykkelandelen finner vi i Storbritannia (2 prosent) og Italia (4 prosent). Gjennomsnittlig reiselengde for sykkelturer er 2 km. I Nederland og Danmark er sykkelturene lenger enn i andre land. Sykkel er mest brukt på daglige reiser i land med gode forhold for syklistene og hvor landskapet er relativt flatt. Som en tommelfingerregel kan vi ikke forvente at folk er villige til å sykle mer enn 3-5 km pr reise.

Mer enn halvparten av alle reiser foretas som bilfører. Bilbruken på korte reiser har økt. Omtrent halvparten av alle bilreiser er kortere enn 5 km. Hvis alle



bilreiser under 1 km ble erstattet med gange, kunne bilbruken i mange land reduseres med inntil 15 prosent. Hvis bilturene opp til 2 km ble erstattet av gangturer, kunne man oppnå en reduksjon i bilbruken på nærmere 30 prosent. Hvis vi også tenker oss at en del av de 3-5 km lange bilreisene ble erstattet av sykkel, kunne bilbruken bli nesten halvert i enkelte europeiske byer.

## Gang- og sykkelturner er ofte et formål i seg selv

Som transportmidler har gange, sykkel og bilkjøring ulike kvaliteter og roller:

- Gange brukes i hovedsak for to reisemål: Korte handleturer, hvor en ikke kjøper store eller tunge ting, og fritidsturer hvor det å gå en tur er et formål i seg selv.
- Sykling har mange likhetstrekk med gange: Vi sykler på handleturer og i fritida, da selve turen er formålet. Som transportmidler har gange og sykling derfor begrensede muligheter, men i noen land er det vanlig å sykle til arbeidet. I Danmark er nesten 60 prosent av de korte arbeidsreisene (under 5 km) sykkelturner.
- Handling er det mest vanlige formålet for korte bilturer, og særlig ved innkjøp av store eller tunge ting. Mange kjører også bil på korte arbeidsreiser. En stor andel av reisene hvor en følger, henter eller bringer andre, f eks barn til og fra barnehage eller skole, er bilturer.

Tabell 1 Formål med reisen etter transportmiddel. Prosent. Turer under 5 km

Formål	Gange	Sykkel	Bil som fører
Arbeid	11	20	19
Skole	3	9	1
I arbeid	1	1	4
Shopping	29	28	36
Omsorg	3	2	14
Fritid	31	21	9
Besøk	15	15	13
Annet	8	5	5
Sum	100	100	100

## Kvinner går mer enn menn

Ulike grupper av befolkningen har ulike reisevaner. Viktige forskjeller finner vi mellom menn og kvinner, gamle og unge, folk med og uten tilgang til bil, folk som har arbeid og de som ikke har det, folk som bor i byen og på landet.

Kvinner går mer enn menn. Menn kjører mer bil. Dette gjelder både generelt og på korte reiser. Kvinnene er derimot bilpassasjerer.

I de fleste land sykler menn minst like mye som kvinner. I Danmark og Nederland hvor andelen sykkelture er høyere enn i resten av Europa, er det spesielt mange kvinner som sykler.

Generelt sett går og sykler unge mer enn eldre. Ungdom under 18 år foretar aller flest turer til fots eller med sykkel. Eldre (65 år og over) foretar også relativt mange turer til fots.

Voksne i aldersgruppen 25-50 år er de som kjører mest bil, også på korte turer.

### **Deltidsarbeidende foretar flest reiser**

Forskjellene i reisevaner mellom kvinner og menn, unge og gamle, kan i stor grad forklares ut fra tilgangen til bil. Tilgang til bil har sammenheng med folks alder, inntekt, kjønn og tilknytning til arbeidslivet.

De som ikke har bil i husstanden går eller sykler mer enn dem som har tilgang til bil. I noen land ser en særlig store forskjeller i sykkelbruk mellom dem som har tilgang til bil og dem som ikke har det. De som går minst er de som har både førerkort og bil. Eller: De som har tilgang til bil går og sykler mindre enn andre.

Deltidsarbeidende foretar flest reiser pr dag: De kjører nesten like mye bil som heltidsarbeidende, samtidig som de også foretar flere gang- og sykkelture. Bak disse tallene ser vi for oss deltidsarbeidende kvinner som bringer/henter barn til/fra barnehage og handler på veg hjem fra jobben etc.

Folk som ikke er i arbeid (folk under utdanning, hjemmевærende, arbeidsledige, pensjonister) foretar like mange turer til fots, men bare halvparten så mange korte bilturer som deltidsarbeidende.

De som sykler mest er studenter og andre under utdanning. Mange av dem er under 18 år og kjører ikke bil.

### **Jo større byen er, desto mindre kjører folk bil**

Folk som bor i større byer går mer enn de som bor i mindre byer. I storbyer reiser folk mer kollektivt, men kollektivreiser er vanligvis noe lengre enn gang- og sykkelture.

Befolkningen i store byer foretar relativt færre korte bilreiser enn de som bor i små byer: Jo større byen er, desto mindre kjører folk bil på korte turer. Korte bilturer er mest vanlig utenfor storbyene og i mindre byer.

I storbyene er det mest vanlig å sykle blant dem som bor i sentrumsnære områder. Sykkelmønsteret er imidlertid noe annerledes i Nederland enn i andre europeiske land: I Nederland sykler folk mer i mindre byer enn i storbyene.

I Italia er andelen som går til arbeid mindre i små enn i store byer. Lavest er andelen som går til jobben i Roma. Befolkningen i Roma reiser langt oftere kollektivt til arbeid enn de som bor i mindre byer.

## **Reisekjeder forklarer ikke bilbruken på korte reiser**

Reisekjeder er satt sammen av flere reiser med ulike formål. Reisekjeder kan forklare bruken av bil på noen korte bilturer. Reisevanedata fra Norge tyder imidlertid på at bare 25 prosent av de korte bilreisene er del av en reisekjede.

## **Et stort potensiale for flere gang- og sykkelture**

Den store mengden korte bilturer i de fleste europeiske land tyder på at det er et potensiale for å erstatte korte bilturer med gange eller sykkel. Omfanget av sykkelture i Nederland og Danmark tyder på at flere vil sykle dersom forholdene legges til rette.

Ettersom stadig flere har fått tilgang til bil, har trenden i praksis gått i motsatt retning.

For å overføre korte bilturer til gange eller sykkel, er det nødvendig å sette i verk en rekke tiltak. Noen av disse kan være:

- Legge forholdene til rette for fotgjengere og syklister.
- Lokalisere fritidsaktiviteter i nærheten av boligområdene.
- Bruke fysiske og økonomiske tiltak for å redusere bilbruken.

Disse temaene behandles innenfor andre deler av WALCYNG-prosjektet.



# 1 Introduction

## 1.1 WALCYNG

This work report is a summary of WP1 in WALCYNG: *Portions of short car trips, and of pedestrians and cyclists in different countries and cities*. The objective of WP1 is to identify groups of existing and potential users for walking and cycling and to evaluate their number in order to adjust strategies and investments.

Partners from five different countries take part in WP1:

- Department of Traffic Planning and Engineering (DTPE), University of Lund, Sweden
- Verkehrs-Consult Karlsruhe (VCK), TransportTechnologie-Consult Karlsruhe GmbH (TTK), Rainer Schneider, Germany
- Franco Gnavi & Associates (FG), Rome, Italy
- Voetgangers Vereniging (VV), The Netherlands
- Institute of Transport Economics (TØI), Oslo, Norway.

Institute of Transport Economics in Norway is the leader of the work package. This work report has been written by Senior Research Sociologist Trygve Solheim and Senior Research Sociologist Ingunn Stangeby, both at the Institute of Transport Economics in Norway.

## 1.2 Methods

To gather individual travel data with special emphasis on short trips (shorter than 5 kilometres), the following participants have been responsible for specified countries:

DTPE, Sweden:	Sweden and Finland
VCK/TTK, Germany:	Germany, Austria, Switzerland and France
Gnavi, Italy:	Italy, Spain, Greece and Portugal

VV, The Netherlands : The Netherlands and Belgium

TØI, Norway: Norway, Denmark, Great Britain and Ireland.

To obtain the purpose of WALCYNG - WP1, the purpose of the collection of data and the presentation below can be summed up in the following way:

- How many trips do people conduct on an average day, by different modes?
- How long are the trips on foot, by bicycle and car?
- What kind of transport mode do people use for different trips, by purpose of the trip?
- Which groups of the population make trips in different purposes and to what extent?

The use of these data can be put down in several points:

- What is the main role of walking and cycling in the daily life of the European population?
- In what situations can we see that people tend towards walking and cycling instead of motorised transport?
- What is the amount of motorised transport (private cars) on short trips and how can we get people to switch from motorised to non-motorised transport on short trips?

To answer the questions above we are collecting data from travel surveys, literature and other statistical surveys in European countries. If nothing else is mentioned in the text or the tables, the following data sources have been used:

Norway:	National Travel Survey 1991/92
Sweden:	National Travel Survey 1994/95
Denmark:	National Travel Survey 1992
Finland:	National Travel Survey 1992
Great Britain:	National Travel Survey 1992/94
The Netherlands:	Onderzoek Verplaatsingsgedrag (OVG) 1994
Germany: (KONTIV)	Kontinuierliche Erhebung zum Verkehrsverhalten 1989
Austria:	Verkehrhebung 1992
Switzerland:	Mirozensus 1989
France:	L'enquête transport 1993-94 and travel survey-data from Lyon 1985 and Grenoble 1992
Italy:	National Official Population Census of 1991

To be able to collect and analyse data and other information we have to define what is meant by a trip and what is meant by a travel survey.

A *trip* is connected to a purpose. We can separate between trip elements (the use of specific modes), trips (separated by a distinct purpose, can include the use of several modes) and main trips that are defined in relation to base places (home, work, school).

The best data on trips (with start and end, time of day, travel time, trip length, transport mode(s) used etc.) is collected through the use of trip diaries in *travel behaviour surveys*. Interviews on public transport, at the road-side or counting traffic or passengers do not register trips in this way, but flows of traffic. We can deduce traffic flows from travel studies, but not the other way round. In traffic planning literature we differentiate between aggregate and disaggregate data. The data assembled by travel behaviour surveys are clearly of the last kind. This is why we mainly use data from travel behaviour surveys in this report.

In our work on data from European countries we have been confronted with the following situations:

- Countries where travel surveys have been conducted on a national level and raw data were available; Norway, Sweden, Denmark, The Netherlands and Great Britain. From these countries we have, in general, been able to get all data we wanted.
- Countries where travel surveys have been conducted on a national level or for specific cities or regions, but where data had to be picked from written reports; Germany, France, Finland, Switzerland and Austria.
- From the remaining countries (Belgium, Ireland, Italy, Spain, Greece and Portugal) travel surveys have not been conducted or for various reasons we have not been able to obtain them. For Italy we have received data from the Italian census of 1991, showing trips to work and to school. The Italian data are not directly comparable to data from travel behaviour surveys and are presented in an own chapter. The lack of data have forced us to exclude the rest of the countries mentioned above in this report.

Due to this variety in the existence of data we had to reduce our ambitions concerning travel behaviour in European cities and countries and to focus on those with good data. As will be seen, the number of countries presented under the headings below differ as fewer and fewer countries follow us through the presentation. Especially, we have had problems in obtaining data on short car trips. For the first two groups of countries we have been able to present data on short car trips, by purpose of the trips and by the amount of such trips for various groups within the population. For the remaining countries we had to include all car trips in the tables. We have, however, made a special effort to obtain data on length of trips by different modes. In this we have had some success.

When presenting data on trips for specific purposes we had to accept the fact that various countries use different categories for trip purposes. This is no problem for trips to work, school or shopping, but it is a main problem for other trips (leisure and visits). We also had problems with variations in how place and purpose are combined. Some countries mix place with purpose as they separate home-based trips from other trips. For grouping variables (age, occupation, car ownership, region) categories differ from one country to another. We just had to use available data and make possible comments on what we can reasonably compare.

A special problem was put forward by VV in The Netherlands: We should be aware of the fact that short trips are not fully represented in any travel study, due to the fact that people tend to forget them or that short trips don't seem important enough, they are grossly neglected. We have no way of correcting such mistakes at present, even though all travel behaviour surveys are trying to find methods to improve people's memories and to stress the importance of all kinds of trips.

The number of trips is by itself a problem. It varies between countries, probably due to real reasons, but mainly due to problems concerning methods. How questions are posed, trips defined etc. have consequences for how many trips we end up registering. A special problem stems from introducing minimum length (200 metres, 300 metres, 500 metres). Minimum length reduces the number of short trips conducted to an amount that cannot be explained by the actual length introduced. In Norway and The Netherlands comparisons have been made and the conclusions are clear: Minimum length also reduce trips on foot etc. over longer distances than the set minimum.

In the report we mainly deal with single trips. Many short trips are parts of trip chains. Mode choice for one part of the chain influences use of transport on the other parts of the chain. Unfortunately, data on trip chains are very difficult to get from most of the European countries. Then we had to concentrate on single trips. However, in chapter 5 there are some calculations on trip chains based on Norwegian travel behaviour data.

Consequently, we should be able to give some comments on how much people travel, the special role of short trips, and of walking and cycling. The special problem of what can be done about short car trips, and among which groups of the population there are potentials for replacing short car trips with walking and cycling.

In the tables and text below we usually start with presenting results from the Northern European countries before the countries in Middle Europe, while data from Italy is presented in an own chapter. This way of presentation is chosen from the quality of the data available, and the fact that the authors of this report have better knowledge about travel behaviour in the Northern European countries than the middle and southern countries. Other ways of presenting the result could be to rank the different countries in alphabetic order or after number of inhabitants. We choose to use a geographical rank from the north to the south to attend cultural similarities in neighbouring countries.



## 2 Types of trips and aspects of trips

### 2.1 The total number of trips

#### 2.1.1 People make 3 trips per day on average

Our first task is to try to establish the number of trips people perform on an average day (of any length), and how these trips are conducted, by which mode of transport. In table 2-1-1 we present such data for a variety of European countries where travel surveys have been conducted.

People in different countries in Europe make about 3 trips per day, but the amount varies somewhat from country to country. A little less than half of the trips are car-trips (1.06 - 1.72 trips a day as driver). The number of trips on foot lies between 0.3 and 1.15 trip per day, while bicycling represents 5-10 per cent of all trips. The number of trips lies between 0.05 and 1.0. Only the people in The Netherlands (1.01) and Denmark (0.5) cycle much more than people in other countries.

*Table 2-1-1 Number of trips per person per day. 10 European countries*

Country	Year*	On foot	Bicycle	Car as driver	Car as passenger	Public transport	All trips
Norway	1991/92	0.66	0.20	1.70	0.39	0.26	3.25
Sweden	1994/95	0.48	0.37	1.25	0.50	0.33	2.93
Finland <sup>1</sup>	1992	0.39	0.22	1.66	0.42	0.25	2.97
Denmark <sup>2</sup>	1992	0.30	0.50	1.40	0.30	0.30	2.90
Great Britain	1992/94	0.84	0.05	1.07	0.63	0.25	2.88
The Netherlands	1994	0.67	1.01	1.28	0.51	0.19	3.74
Germany	1989	0.79	0.34	1.06	0.34	0.28	2.82
Austria (Ober)	1992	0.55	0.18	1.41 <sup>3</sup>		0.37	2.59
Switzerland	1989	0.75	0.33	1.72 <sup>3</sup>		0.46	3.50
France-Grenoble	1992 <sup>4</sup>	0.98	0.16	1.48	0.45	0.48	3.58
France-Lyon	1985 <sup>4</sup>	1.15	0.06	1.23	0.38	0.47	3.31

<sup>1</sup> Trips longer than 200 m

<sup>3</sup> Trips as driver and passenger

\*The sources are mentioned at p. 2 and in References

<sup>2</sup> Trips longer than 300 m

<sup>4</sup> Source: CERTU

In all the countries the total average of trips is about three trips per day. This average is calculated with the total population as a basis and includes people who did not travel on the day when the trip diary was filled in. If we only consider those who actually did travel on a specific day (80-85 per cent of all), the average is closer to four trips per day, e.g. one trip to and from work and one trip to shopping, leisure or visiting, and return. A few people have a lot more trips, up to 14 single trips per day.

### ***2.1.2 Differences in the number of trips per day between countries***

We observe some differences between the countries presented, from 3.74 in The Netherlands and down to 2.59 in Oberösterreich. These differences are probably not due to real differences in the amount of trips conducted by people in the various countries, but rather to probable differences in the way the studies are conducted. From countries with several studies conducted over the years we know that the way questions are posed and the definitions of trips have implications for how many trips we register.

We do know that people who works and/or who have a car travel more than others. However, we have no data that imply that such factors can explain any of the differences in table 2-1-1.

### ***2.1.3 One in two persons has one walk trip per day***

Next, we focus on the amount of walk trips. The definition of a walk trip is that the whole trip is done on foot. Here the differences are greater and may imply some real differences, and not only such that stem from differences in the methods used. Most countries have an average number of walk trips between 0.5 and 1 trip per person per day. This means that about half of the population has one tour on foot per day (trip back and forth), in average. This is not much. Such trips are probably grossly underrepresented in travel behaviour surveys, as mentioned above.

Two countries come out especially low; Denmark and Finland. We assume that the lower length of what is considered as a trip (longer than 200 to 500 m), is the main reason for this result. Moreover: the number from Sweden is also low, but we do not really know why. The (rather short) time-series from Germany and Great Britain may imply that walking is a mode that is diminishing in importance.

### ***2.1.4 People in The Netherlands and Denmark cycle more than people in other countries***

In most countries the number of bicycle trips is about the same as that for public transport (about 5-10 per cent of all trips). Two countries point themselves out: The Netherlands and Denmark. In The Netherlands more than 1 in 4 trips are made by bike. Many factors can explain this; local culture, climate, topography, short distances, special amenities for cyclists. Great Britain turns out especially low and also the city of

Lyon. Here we especially regret the missing data from Southern Europe as we have a strong feeling that bicycling is not so popular as a mode of transport in local culture in these countries as it is in some Northern European countries (we exclude "bicycles with engines"). However, the importance of planning efforts can probably be established by comparing Norway, Finland and Austria with Sweden, or Great Britain with Denmark, The Netherlands, and perhaps Germany.

### *2.1.5 The less urbanised, the more car trips*

The number of car trips and trips by public transport includes trips of all lengths. If we only look at trips with "car as driver" we find the highest amount of driving in Norway, Finland and Switzerland. One reason may here be long distances, low degree of urbanisation etc. However, a problem for Switzerland and Austria has been that the available figures contain drivers and passengers in one category. Great Britain and Germany come out on the lower end. One possible explanation for the British figure is the high amount of trips as passenger in Britain, probably due to a rather low level of car ownership, and especially of two-car families. Germans seem to cycle a lot and that may explain some of the differences.

In all countries the number of trips by public transport is around 10 per cent of all. The share is declining (Norway and Germany), it may help to plan better (Switzerland) and urban people travel more by public transport (Lyon and Grenoble). Trips by public transport are, however, long, and walking or cycling is seldom a realistic alternative, except for The Netherlands and Denmark, where short trips by public transport seemed to be replaced by cycling.

## **2.2 Length of trips**

This chapter offers some very simple conclusions:

- There is a distinct limit to how far people are willing to walk, when walking is seen as transport (1-2 km).
- The willingness to cycle over longer distances differs between countries with good amenities and a flat topography (Denmark and The Netherlands) and others. However, in general we should not expect people to use a bike for transport for distances longer than 3-5 km.
- The portion of car use for shorter distances is amazing. If we consider walking as an alternative, a change from car to walking for trips shorter than 1 km would reduce car driving by 15 per cent in most countries. And with a limit of 2 km the reduction would be close to 30 per cent. Including cycling and taking into consideration 3-5 km we could get rid of half of all car trips.

In the following pages we present information on lengths of trips by different modes in ten European countries. In some places comparisons are difficult to make because of variances in categorisation of length and by the use of *miles* in Great Britain.

### 2.2.1 Trips on foot are short trips

The overall picture is rather simple. Most trips *on foot* are short trips. In the average a walk trip of 1 km takes about 10-15 minutes, 2 km takes 20-30 minutes. A very small share is longer than 5 km, and some of these long trips are probably done for the purpose of just walking.

In Norway, 68 per cent of such trips are shorter than (or equal to) 1 km, and 83 per cent are shorter than (or equal to) 2 km. For the other countries similar figures are 76 per cent under 2 km for Sweden, 82 per cent for Denmark, 82 per cent under 1 mile in Great Britain, 90 per cent under 2.5 km for The Netherlands, 86 per cent under (or equal to) 2 km for Germany and 87 per cent for Switzerland (tables 2-2-1 - 2-2-7).

Averages for Austria and France show a mean length of around 1 km, but most walk trips are shorter than 1 km, though some long ones give a rather high average (table 2-2-8).

The available data for Finland are presented in an other way (table 2-2-9). The data from there show how large a part of trips are done by what mode. Only for trips shorter than 1 km are the non-motorised transport modes (walking or cycling) prevailing. It seems that an acceptable distance for walking is between 1 and 2 km.

*Table 2-2-1 Length of trips by different modes in Norway. Per cent*

Length	On foot	Bicycle	Car as driver	Public transport	All trips
<= 1 km	68	47	16	3	30
1.1 - 2 km	15	19	12	6	13
2.1 - 3 km	10	14	11	11	10
3.1 - 5 km	5	11	15	17	13
> 5 km	2	9	46	63	34
Sum	100	100	100	100	100
Number of trips	3794	1144	9653	1303	15 894

*Table 2-2-2 Length of trips by different modes in Sweden. Per cent*

Length	On foot	Bicycle	Car as driver
< 1 km	53	26	6
1.0 - 1,9 km	23	28	10
2.0 - 2,9 km	11	19	11
3.0 - 4,9 km	8	16	15
>= 5 km	5	11	58
Sum	100	100	100

*Table 2-2-3 Length of trips by different modes in Denmark. Per cent*

Length	On foot	Bicycle	Car as driver	Public transport	All trips
1-2 km	82	57	20	8	32
3-4 km	12	25	16	13	17
5-6 km	4	10	13	13	11
7-10 km	2	7	16	16	13
11 km +	0	1	35	50	26
Sum	100	100	100	100	100

*Table 2-2-4 Length of trips by different modes in Great Britain. Per cent*

Length	On foot	Bicycle	Car as driver	Public transport	All trips
< 1 mile (1,6 km)	82	28	8	4	30
1-1,9 miles (1,6-3,2 km)	14	33	18	18	17
2-4,9 miles (3,2-8 km)	4	33	34	40	26
5 miles (8 km) or more	0	6	40	38	27
Sum	100	100	100	100	100

*Table 2-2-5 Length of trips by different modes in The Netherlands. Per cent*

Length	On foot	Bicycle	Car as driver	Public transport	All trips
<= 1 km	52	18	3	0	16
1.1 - 2.5 km	38	41	18	5	27
2.5 - 3.7 km	5	17	11	5	11
3.7 - 5 km	2	6	7	5	5
> 5 km	3	17	61	85	41
Sum	100	100	100	100	100

*Table 2.2-6 Length of trips by different modes in Germany. Per cent*

Length	On foot	Bicycle	Car as driver	Public transport	All trips
<= 1 km	65	31	8	2	26
1.1 - 2 km	21	28	12	8	16
2.1 - 3 km	7	17	11	12	11
3.1 - 5 km	3	13	15	20	12
> 5 km	4	11	54	58	35
Sum	100	100	100	100	100

*Table 2-2-7: Length of trips by different modes in Switzerland.  
Number of trips per person per day*

Length * (number of trips)	On foot	Bicycle	Car (incl passengers)
<=1 km	65	46	9
1.1-2 km	21	24	11
2.1-3 km	11	18	11
3.1-5 km	3	9	13
>5 km	0	3	56
Sum	100	100	100

\* Includes only workdays

*Table 2-2-8 Length of trips by different modes in Austria and France. Km*

	Mean trip length (km) by mode	
	Austria	France <sup>1</sup>
On foot	1.3	0.8
Bicycle	2.1	2.2
Car	11.0	12.1
Public transport	12.2	-----

<sup>1</sup>Source: INRETS

*Table 2-2-9 Length of trips by different modes in Finland. Percentage after mode of trip*

Length	On foot	Bicycle	Car	Other
< 0,5 km	37	11	3	2
0,5-1 km	23	16	6	3
1-3 km	28	40	22	16
3-6 km	9	21	20	18
6-10 km	3	7	14	17
>10km	0	4	36	44
All trips	100	100	100	100

*Table 2-2-10 Length of trips by different modes in Finland. Percentage after length of trip*

Length	On foot	Bicycle	Car	Other	Sum
< 0,5 km	64	11	20	6	100
0,5-1 km	37	15	39	10	100
1-3 km	16	13	54	17	100
3-6 km	7	9	61	24	100
6-10 km	3	4	62	31	100
All trips	13	7	56	24	100

### **2.2.2 Trips by bicycle are seldom longer than 5 km**

The average length of a *bicycle trip* is 2 km. With a speed of 10-15 km/hour on a bike, this takes around 6-8 minutes.

Looking at Denmark, we see that a little more than half the bicycle trips are shorter than 2 km. As many as 17-18 per cent of the bicycle trips in The Netherlands and Denmark are longer than 5 km. This percentage is around 10 in Norway, Germany and Sweden, and even lower in Switzerland. It is therefore hard to set any upper limit for what should be an acceptable distance on a bicycle, but in most of the countries it is probably between 3 and 5 km.

### **2.2.3 Around half of the trips by car are shorter than 5 km**

A rather high percentage of *car trips* are short. In Norway almost 1 in 3 trips by car is 2 km or shorter and more than 50 per cent are 5 km or shorter. In Sweden 42 per cent are shorter than 5 km and 16 per cent are shorter than 2 km. In The Netherlands 59 per cent are 5 km or shorter and 16 per cent are 1 km or shorter.

In Germany 8 per cent are 1 km or shorter, lower than other countries. It seems as if car trips in Germany and Great Britain are overall longer than in the other countries. Both in Austria and France car trips are in average around 12 km, due to the fact that a few car trips are very long.

The figures for Finland show that more than half of the trips longer than 1 km (1-3 km, 3-6 km, 6-10 km) are done by car.

### **2.2.4 Trips by public transport are longer then trips by other modes**

Trips by *public transport* are mostly long ones. In Great Britain nearly 80 per cent are longer than 2 miles (3,2 km). In Norway 63 per cent are longer than 5 km, in Germany 58 per cent. In The Netherlands and Denmark trips by public transport are longer (80 per cent over 5 km) probably due to the use of bicycle for shorter distances.

## 2.3 Purpose of trips by mode

### 2.3.1 *Most trips on foot or by bicycle are for shopping or leisure*

Walking and cycling are common transport modes when the trip has a purpose in itself, and on trips for shopping of smaller goods. Many short trips are for shopping or transporting other people. A certain proportion of car trips are to work and for other purposes.

Trips are rarely conducted just for the pleasure of taking a ride. Most of the daily travelling is a means to reach a place or take part in specific activities. In the following, we want to look to what purposes short trips - trips shorter than 5 kilometres - are made. We have chosen this limit because this is obviously a range that is within the limit of walking or using a bicycle.

However, only for a limited number of countries (Norway, Denmark, Sweden, The Netherlands and Great Britain) we were able to obtain data for such short trips, separated from the rest. The problem is minor for walking and cycling as most of these trips are shorter than 5 km anyway. As we have seen above, about half of the car trips are longer than 5 km. For other countries than those listed above, we therefore will have to limit our comments to walking and cycling.

Another problem that limits our comments is the way purposes are defined and categorised. We want to point out especially the fact that some countries separate homebased trips from others, that some countries have "homebound" as one category, and that some end up with a large category just termed "others".

The overall picture is, however, rather simple. The three modes have very specific roles, which is important to know when discussing the possibilities of changing modes:

- Walking is a way of travelling used for mainly two purposes; short trips to shops with probably not too much to carry, and leisure trips where the walking in itself is one of the main purposes.
- Cycling is a way of travelling very much alike walking. We use the bike for short trips to shops and for leisure activities when bicycling probably is a goal in itself. In some countries, however, bicycling is also usual for travelling to work.
- Driving a car for short distances has one main purpose; shopping. Many of the short car trips are to shops, often with a heavy load to carry. In addition some short car trips are to work.



### 2.3.2 Purpose of trips in Norway, Sweden, Great Britain and The Netherlands

The percentages of walk trips for shopping are 29 in Norway, 31 in Sweden, 20 in Great Britain and 40 in The Netherlands. The percentages of walk trips for leisure purposes are 31 in Norway, 31 in Sweden, 29 in Great Britain and 32 in The Netherlands (table 2-3-1).

The percentages of bicycle trips for shopping are 28 in Norway, 19 in Sweden, 11 in Great Britain and 32 in The Netherlands. For leisure purposes the numbers are 21 in Norway, 25 in Sweden, 16 in Great Britain and 23 per cent in The Netherlands (table 2-3-2).

Most of the short car trips are, as already mentioned for shopping, 36 per cent in Norway, 30 in Sweden, 25 in The Netherlands. Two other important purposes are journeys to work (19 per cent in Norway, 20 in Sweden, 17 in Great Britain, 10 in The Netherlands) and transporting others (14 per cent in Norway, 16 in Sweden, 6 in Great Britain) (table 2-3-3).

Tables 2-3-1 - 2-3-3 are based on figures in tables 2-3-4 - 2-3-7. Only the most important purpose for the different modes are included.

*Table 2-3-1 Trips on foot by purpose in Norway, Sweden, Great Britain and The Netherlands. Per cent. Trips shorter than 5 km*

Purpose	Norway	Sweden	Great Britain	The Netherlands
Shopping	29	31	20	40
Leisure	31	31	29	32
Other	40	38	51	28
Sum	100	100	100	100

*Table 2-3-2 Trips by bike by purpose in Norway, Sweden, Great Britain and The Netherlands. Per cent. Trips shorter than 5 km*

Purpose	Norway	Sweden	Great Britain	The Netherlands
Shopping	28	19	11	32
Leisure	21	25	16	23
Other	51	56	73	45
Sum	100	100	100	100

*Table 2-3-3 Short car trips(less than 5 km) by purpose in Norway, Sweden, Great Britain and The Netherlands. Per cent*

Purpose	Norway	Sweden	Great Britain	The Netherlands
Shopping	36	30		25
Work	19	20	17	10
Caring	14	16	6	
Other	31	34	77	65
Sum	100	100	100	100

*Table 2-3-4 Purpose of trips by mode in Norway. Per cent. Trips shorter than 5 km*

Percentage	On foot	Bicycle	Car as driver
Work	11	20	19
School	3	9	1
In work	1	1	4
Shopping	29	28	36
Caring	3	2	14
Leisure	31	21	9
Visits	15	15	13
Others	8	5	5
Sum	100	100	100

*Table 2-3-5 Purpose of trips by mode in Sweden. Per cent. Trips shorter than 5 km*

Percentage	On foot	Bicycle	Car as driver
Work	10	24	20
School	8	12	1
In work	2	1	7
Shopping	31	19	30
Care-taking	5	3	16
Leisure	31	25	15
Visits	10	14	8
Other	3	2	3
Sum	100	100	100

*Table 2-3-6 Purpose of trips by mode in Great Britain. Per cent. Trips shorter than 5 km*

Percentage	On foot	Bicycle	Car as driver
Work	9	38	17
School	11	10	0
In work	1	2	4
Shopping	20	11	23
Escort children	3	2	6
Personal business	11	7	29
Visits	16	14	15
Leisure*	29	16	6
Sum	100	100	100

\*Includes just walking and other purposes

*Table 2-3-7 Purpose of trips by mode in The Netherlands. Number of trips per person per day. Trips shorter than 5 km*

Purpose	On foot	Bicycle	Car
Work	7	15	13
In work	2	1	4
Visits	14	12	13
Shopping	31	32	33
School	2	7	0
Recreation, sports	10	12	11
Tour-walk, drive	15	1	0
Other	19	20	26
Sum	100	100	100
Number of trips	0.59	0.81	0.47

### **2.3.3 Purpose of trips in Finland and Denmark**

Finland is one of the countries where we only have purpose data for all car trips. In table

2-3-8 the percentages are calculated row-wise which helps us see in another way where walking and cycling dominates. Shopping and leisure comes out in the same way as before, but we also see the high amount of walking and cycling to school. However, even here are more than half of the trips made by car. This could imply a high proportion of university students with access to a car in the sample. We also notice that where the car really dominates is for business trips and trips to work.

*Table 2-3-8 Purpose of trips by mode in Finland\*. Percentage after purpose*

Purpose	On foot	Bicycle	Car as driver	Other modes	Sum	% of trips
Work	10	11	61	18	100	14
In work	4	2	74	20	100	4
School	16	6	53	25	100	4
Shopping	17	6	53	24	100	14
Errands	13	6	58	23	100	5
Leisure	17	7	48	28	100	8
Visits	9	4	57	30	100	9
Cottage	6	2	59	33	100	2
Home	14	8	55	33	100	40
Total	13	7	56	24	100	100

\*All trip lengths

Denmark is one of the countries where the categorisation of purpose differs; home-based trips are separated from other trips. And we do not know the purposes of those other trips. As mentioned before errands and leisure are the dominant purpose for walking (29 and 38 per cent), while errands is the dominant purpose for short car trips (45 per cent) (table 2-3-9).

One interesting aspect of the Danish data is the large proportion of bicycle trips to work (41 per cent), which is the same pattern as in the Dutch data in table 2-3-2 and 2-3-7. Also in Great Britain cycling to work is one main purpose for the use of bike (38 per cent of bicycle trips) (table 2-3-9).

*Table 2-3-9 Purpose of trips by mode in Denmark. Percentage of trips per person per day. Trips shorter than 5 km*

Percentage	On foot	Bicycle	Car as driver
Home - work	18	41	15
Home - errands	29	24	45
Home - leisure	38	24	21
Not homebased	15	11	19
Sum	100	100	100
Number of trips	0.34	0.46	0.47

Both in The Netherlands and Denmark the bicycle has an important role as a mode of transport. In The Netherlands it is in fact the dominant mode with more than 40 per cent of the short trips, against 32 per cent for walking and 25 per cent for cars. In Denmark the comparable figures are 27 per cent for walking, 36 per cent for cycling and 37 per cent for cars. In Norway, by comparison, the figures are 37 per cent for walking, 10 per cent for cycling and 52 per cent for driving a car. Trips as car passenger or with public transport are not included.

*Table 2-3-10 Short trips (less than 5 km) by mode in Denmark, The Netherlands and Norway. Per cent*

Mode	The Netherlands	Denmark	Norway
Walking	32	27	37
Cycling	40	36	10
Car	25	37	52
Other modes	3	0	1
Sum	100	100	100

### 2.3.4 Purpose of trips in Germany, Switzerland, Austria and France

In Germany, a country with an increase in amenities for, and the use of bicycles, walking still dominate the short trips with almost three times as many short trips on foot than by bike (table 2-3-11). This may partly be explained by walking as a leisure activity (41 per cent of all walking).

Cycling in Germany is also very much a leisure activity, but there is a large proportion of such trips (36 per cent) for shopping. 18 per cent of cycling is for schools. It is also interesting to notice the very low proportion of cycling on journeys to work in Germany.

On the other hand, Switzerland has a high proportion of bicycling to work (44 per cent) (table 2-3-12). The differences in cycling to work between Germany and Switzerland may be cultural differences or differences in the locational patterns.

*Table 2-3-11 Purpose of trips by mode in Germany\*. Number of trips per person per day*

Purpose	On foot	Bicycle	Car as driver
Work	10	18	36
Education	4	15	3
In work	1	3	8
Service	3	0	3
Shopping	38	29	22
Leisure	44	35	28
Sum	100	100	100
Number of trips	0.79	0.34	1.06

\* All trip lengths

*Table 2-3-12 Purpose of trips by mode in Switzerland\*. Number of trips per person per day*

	On foot	Bicycle	Car*
Work	31	44	33
Shopping	29	22	22
In work	4	3	13
Leisure	36	31	32
Sum	100	100	100
Number of trips	0.75	0.32	1.70

\* All trip lengths

*Table 2-3-13 Purpose of trips by mode in Austria\*. Per cent*

Purpose	On foot	Bicycle	Car**
Work	9	15	20
School	8	9	3
Shopping	23	18	13
Home-bound	39	43	39
Other	21	15	25
Sum	100	100	100

\* All trip lengths

\*\* Driver and passenger

Table 2-3-14 shows figures for the two cities we have dealt with in this report (figures for urban areas in general are presented in chapter 3). Here again we meet the problem of only having data for all car trips. Moreover, the travel surveys from Grenoble and Lyon have separated home-based from non-home-based trips as well.

An interesting difference between Grenoble and Lyon is the high share of cycling to work in Lyon. More than 40 per cent of cycling in Lyon are journeys work. The differences may be due to area planning and land use.

*Table 2-3-14 Purpose of trips by mode in Grenoble and Lyon in France\*. Per cent*

<b>Grenoble</b>	On foot	Bicycle	Car as driver	All trips
Home-work	8	24	31	19
Home-school	24	22	3	16
Home-shop	17	13	9	12
Home-leisure	19	18	13	17
Other	32	23	44	36
Sum	100	100	100	100

  

<b>Lyon</b>	On foot	Bicycle	Car as driver	All trips
Home-work	11	41	34	23
Home-school	23	13	1	15
Home-shop	24	14	11	15
Home-leisure	15	17	12	15
Other	27	15	42	32
Sum	100	100	100	100

\* All trip lengths

Source: CERTU

## 3 Trips by individual characteristics

In this chapter we will look at the amount of trips conducted by different groups of the population; men and women, young and old, car owners and people without a car, workers and non-workers, city-dwellers and others. The purpose is to locate the potential for more walking and cycling in different groups of the population.

The trips studied are supposed to be shorter than 5 km. Unfortunately, as said in chapter 2, only raw data were available for some of the countries.

### 3.1 Trips by gender

#### 3.1.1 *Women walk more than men*

Men and women show important differences in their travel habits. These differences can be summarised as follows (table 3-1.1):

- Women walk more than men; in Norway 0.66 vs 0.57 trips a day, in Sweden 0.56 vs 0.40, Denmark 0.37 vs 0.28, The Netherlands 0.70 vs 0.48 and so on. In Germany we notice that 40 per cent of women's trips are made on foot, compared to 23 per cent for men (all lengths included). Figures for France show 26 per cent vs. 19. Only in Great Britain men walk as much as women, but here the amount of walking per person per day is lower than in other countries, a fact that may be due to definitions or other methodological aspects.
- Men are more often car drivers than women. This is the fact both for short distances and for trips in general. In Norway, men have 1.03 short car trips a day, respectively 0.72 among women. In Sweden the figures are 0.63 respectively 0.41, in Denmark 0.52 and 0.41, in The Netherlands 0.55 and 0.40 and in Great Britain 0.77 and 0.54. It seems that people in Norway use their cars for short trips more than people in other countries.
- When it comes to cycling, it is interesting to notice that in most countries men cycle as much as women or more. In Norway 0.21 trips vs. 0.14 trips per person per day, in Sweden 0.37 vs. 0.36, in Great Britain, 0.02 vs. 0.05 (very low numbers indeed), 0.34 and 0.31 in Switzerland and 0.16 vs. 0.19 in Austria. As percentages of all trips the figures are 8 vs. 9 per cent in Germany and 2 vs. 4 per cent in France. However, in countries where the amount of cycling is high, like The Netherlands and Denmark, it is especially high among women. It is also higher than in other countries among

men, but not to the same extent (0.50 among women compared to 0.42 among men in Denmark, and 0.97 vs. 0.65 in The Netherlands).

The differences in travel behaviour between men and women could reflect the fact that women have less access to cars than men.

*Table 3-1-1 Number of trips per person per day by gender in Norway, Sweden, Denmark, Great Britain, The Netherlands, Switzerland and Austria. Trips by gender in Germany and France. Per cent of all trips*

Country	On foot		Bicycle		Car as driver	
	Female	Male	Female	Male	Female	Male
Norway	0.66	0.57	0.14	0.21	0.72	1.03
Sweden	0.56	0.40	0.36	0.37	0.41	0.63
Denmark	0.37	0.28	0.50	0.42	0.41	0.52
Great Britain	0.14	0.15	0.02	0.05	0.54	0.77
The Netherlands	0.70	0.48	0.97	0.65	0.40	0.55
Switzerland <sup>1</sup>	0.89	0.63	0.31	0.34	1.38	2.04
Austria <sup>1</sup>	0.68	0.41	0.19	0.16	1.14	1.70
Germany <sup>2</sup>	40	23	9	8	9	49
France <sup>2,3</sup>	26	19	4	2	61	68

<sup>1</sup>Includes all trip lengths

<sup>2</sup>Percentage of all trips by mode

<sup>3</sup>Source: INRETS

## 3.2 Trips by gender and age in France

The available tables from Lyon and Grenoble show modes of transport by a mixture of gender and age. We have chosen to use these data for analytical purposes. In short we can draw the following conclusions from the tables:

- Under the age of 20 both men and women walk more than other age groups. There are no big differences in the amount of walk trips per day between men and women under the age of 20.
- At the age between 20 and 60, men walk much less than women, and both genders walk less than younger people.
- Among people older than 60, men walk more than women, and more than men between 20 and 60.
- The development of walking over the ages seems to be an L-shaped curve for women, while men have a U-shaped curve.
- In general, men use a bike more than women. The exception is at the ages between 20 and 29, where the number of trips per day is the same for the two genders. Men have a top between 16 and 19, while women have a top under 15 and between 20 and 29.



- The data show clear similarities in travel patterns between the two cities, but the inhabitants in Lyon cycle less than people in Grenoble.
- The numbers for car use seem to include both trips as a driver and as a passenger. This makes comparisons to other countries difficult.

*Table 3-2-1 Number of trips per person per day by mode, age and gender. Grenoble, France. 1992\**

	6-15 years		16-19 years		20-29 years		30-59 years		60-74 years		>74 years	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Walk	2.17	2.04	1.41	1.32	0.97	0.69	1.07	0.60	0.92	1.15	0.87	0.99
Bicycle	0.15	0.34	0.04	0.59	0.23	0.25	0.07	0.27	0.08	0.28	0.01	0.14
Car	1.31	1.31	0.62	0.76	2.22	2.58	2.74	2.89	0.98	1.85	0.36	0.84
TCU	0.39	0.24	1.72	1.36	0.84	0.59	0.36	0.18	0.48	0.29	0.53	0.61
Others	0.07	0.10	0.06	1.36	0.03	0.08	0.03	0.12	0.05	0.05	0.00	0.00
Total	3.95	3.99	3.76	4.05	4.03	4.19	4.22	4.05	2.51	3.66	1.87	2.57

\* All trip lengths

*Table 3-2-2 Number of trips per person per day by mode, age and gender. Lyon, France. 1985\**

	6-15 years		16-19 years		20-29 years		30-59 years		60-74 years		>74 years	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Walk	2.11	2.05	1.22	1.12	1.23	0.78	1.27	0.69	1.33	1.36	0.44	1.02
Bicycle	0.02	0.09	0.02	0.23	0.03	0.14	0.04	0.10	0.02	0.07	0.00	0.00
Car	0.94	0.83	0.61	0.64	2.05	2.57	1.96	2.70	0.46	1.09	0.09	0.31
TCU	0.32	0.34	1.45	1.30	0.78	0.42	0.38	0.27	0.45	0.38	0.32	0.45
Total	3.51	3.43	3.39	3.37	4.10	3.98	3.68	3.88	2.27	2.94	0.89	1.79

\* All trip lengths

Source: CERTU

## 3.3 Trips by age

### 3.3.1 Young people walk or use a bicycle more than older people

Young people walk or bicycle more than older people. This is the general picture even though there are differences between the various countries presented below. People under 18 years of age have the largest number of trips on foot and bicycling per day. The number of trips on foot is also rather high among the oldest (over 65).

Driving a car, even on short distances, is especially usual among adults and the middle-aged (25-50 years).

At this stage in the report we really are confronted with data problems, since we only have data for seven countries. For two of these (Austria and France) the number of car

trips reflects all trips however long they are. We also have problems with variations in age groups, as two countries (France and Great Britain) mix people under and over 18 years in the statistics available.

### ***3.3.2 In the Scandinavian countries there is a sharp distinction as to walking and cycling between people over 18 years and those under***

In Norway we find the sharpest distinction between those under and over the age of 18. Those under the age of 18 do 1,20 walk trips per day as an average, while people older than 18 years do half the amount of trips on foot as an overall picture. We find the same radical change for cycling with number of trips dropping from 0,71 among those under the age of 18 to 0,1-0,2 for the rest of the population. The amount of short car trips is especially high in Norway with 1,23 per person per day among persons aged 25-44.

The differences in walking and cycling between the age-groups under and over the age of 18 are less dramatic in the data from the other countries. In Sweden, the number of trips for those under 18 are much smaller than in Norway. The differences in the number of bicycle trips are also less dramatic as it gradually decreases in Sweden with growing age of the informant. With a lower number of short car trips this can mean that Swedes cycle more than Norwegians even when they have a car available.

The picture for Denmark is very similar to that of Sweden, the only difference is an overall lower number of trips on foot and by car and a higher number of trips by bicycle. However, the differences between age groups show the same patterns as in Sweden and less dramatic than in Norway.

The low number of trips on foot in Denmark can be explained by the limited set for trips to be registered.

Looking at car trips, we should mention another difference between Sweden and Denmark on one side, and Norway on the other. In Norway we find a rather high number of short car trips among people between 18 and 24, with a low number of cycle trips and trips on foot. It seems as if young Norwegians start to use a car earlier than those in the two other Scandinavian countries.

*Table 3-3-1 Number of trips per person per day by mode and age in Norway. Trips shorter than 5 km*

Age	On foot	Bicycle	Car as driver
-17	1.20	0.71	0.02
18-24	0.59	0.22	1.02
25-44	0.60	0.16	1.23
45-64	0.53	0.11	0.84
65+	0.61	0.08	0.39

*Table 3-3-2 Number of trips by mode and age in Sweden. Trips shorter than 5 km*

Age	On foot	Bicycle	Car as driver
-17	0.62	0.66	0.00
18-24	0.54	0.50	0.44
25-44	0.48	0.34	0.82
45-64	0.40	0.30	0.67
65+	0.47	0.18	0.31

*Table 3-3-3 Number of trips per person per day by mode and age in Denmark. Trips shorter than 5 km*

Age	On foot	Bicycle	Car as driver
16-17	0.47	1.06	0.00
18-24	0.43	0.75	0.30
25-44	0.32	0.48	0.60
45-64	0.27	0.33	0.60
65+	0.35	0.21	0.29

### **3.3.3 In all of Europe young people travel more on foot or bicycle**

People in Great Britain seem to walk and cycle less than others. This may be due to differences in counting methods.

As far as we understand, the travel survey in Great Britain is conducted over one week registering all trips by mechanical means (bicycles included). Only walk trips longer than 1 mile are registered during the week. For the last day all walks are registered. This 1 mile limit for most days probably gives the low number for trips by walking and cycling. The number of car trips in Great Britain is as high as in Denmark and Sweden. The table for Great Britain shows the problem with grouping together those under and over the age of 18.

In The Netherlands we find very much the same picture for walking as in Denmark and Sweden, but a different one for cycling. Moreover, the level of walk trips shows almost no differences for different age groups. In all age groups the level of bicycle trips per day is much higher than in the other European countries. Also in The Netherlands we

find a significant drop in number of bicycle trips between people under and over the age of 18, like we found in Norway. Because of the great number of bicycle trips the number of short trips by car is lower than in other countries.

*Table 3-3-4 Number of trips per person per day by mode and age in Great Britain. Trips shorter than 5 km*

Age	On foot	Bicycle	Car as driver
16-29	0.18	0.06	0.54
30-59	0.13	0.04	0.87
60+	0.14	0.02	0.38

*Table 3-3-5 Number of trips per person per day by mode and age in The Netherlands. Trips shorter than 5 km*

Age	On foot	Bicycle	Car as driver
12-17	0.56	1.58	0
18-24	0.50	0.96	0.24
25-49	0.64	0.83	0.66
50-64	0.55	0.64	0.47
65+	0.56	0.45	0.23

*Table 3-3-6 Number of trips per person per day by mode and age in Austria\**

Age	On foot	Bicycle	Car as driver
0-19	0.62	0.25	0.56
20-24	0.33	0.09	1.83
25-44	0.50	0.15	2.08
45-64	0.55	0.20	1.54
65+	0.71	0.15	0.56

\* All trip lengths

*Table 3-3-7 Trips by mode and age in France.\* Percentage of all trips*

Age	On foot	Bicycle	Car as driver	Other modes	Sum
<25	30	5	47	18	100
25-34	18	1	73	8	100
35-49	14	2	77	7	100
50-64	20	3	71	6	100
65+	35	3	55	7	100

\* All trip lengths

Source: INRETS

In Austria and France the data do not separate people under and over the age of 18, and the number of trips reflects all trips, however long they are. This makes it difficult to compare the Austrian and French data with other countries.

Anyway, the patterns seem to be similar to other European countries: The young people are those who travel most on foot and by bicycle.

## **3.4 Trips by car ownership**

### ***3.4.1 People who have a driver's license and a car walk and use a bicycle less than others***

From earlier analyses of travel behaviour, we know that a major variable is the availability of a car. Access to a car is limited by age, by income, by gender and by unemployment. Most travel models use access to a car to explain differences in travel patterns and travel behaviour.

We have not included such a model in this report, as time and available data prevent us from conducting a full-scale multivariate analysis. We do, however, look at differences between car holders and others concerning walking, cycling and driving a car.

The definition of access to car is problematic and varies in different studies and countries. In some tables below access to a car is the existence of one or more cars in the household (Denmark, The Netherlands and Grenoble/Lyon in France). Other definitions try to include the individual as the one having access. The strongest definition is taking the actual day of travelling into account (as in Norway) or defining a main driver (as in Great Britain).

It is, however, obvious that you need a car to be able to drive, but it is not so obvious what you do if you do not have a car.

### ***3.4.2 Trips by car ownership in Scandinavia***

The data from Norway have the advantage of tying the access to a car to the day of travelling: There are clear differences in travel behaviour between those who have a car and a license, but did not necessarily have the possibility to use it on that particular day, and those who could use the car all day.

Both in Norway and Sweden these people who have a license, but no car, are those who walk most. People who walk less are those who both have a car and a license. Simply put; those who can use a car, does neither walk nor use a bike.

The groups that cycle most have either a license but no car, or they have a car (in the household), but no license. These are mostly young people from 18 years of age.

The data from Denmark show the effect of having a car in the household. People without cars both cycle and walk more than those with one or more cars in the household. The differences are especially high for cycling.

*Table 3-4-1 Number of trips per person per day by mode and car ownership in Norway. Trips shorter than 5 km*

Car ownership	On foot	Bicycle	Car as driver
No car, no license	0.85	0.17	0.00
License, no car	1.29	0.34	0.16
Car, no license	0.85	0.37	0.02
Car, not yesterday	0.75	0.26	0.66
Car yesterday	0.78	0.11	1.28

*Table 3-4-2 Number of trips per person per day by mode and car ownership in Sweden. Trips shorter than 5 km*

Car ownership	On foot	Bicycle	Car as driver
No car, no license	0.65	0.31	0.00
License, no car	0.85	0.61	0.14
Car, no license	0.59	0.56	0.00
Car and license	0.37	0.28	0.85

*Table 3-4-3 Number of trips per person per day by mode and car ownership in Denmark. Trips shorter than 5 km*

Car ownership	On foot	Bicycle	Car as driver
One car	0.27	0.36	0.57
Two cars	0.14	0.18	0.70
No car	0.60	0.89	0.05

### 3.4.3 Trips by car ownership in Europe

An interesting fact about Great Britain is the lack of differences in cycling between those who have access to a car and those who have not. As mentioned before, the registered number of trips on foot and by bike per person per day is rather small in Great Britain.

It is interesting to notice that for The Netherlands the differences in terms of walking and cycling between car owners and those without a car seem to be smaller than in other countries for which we have similar data, e.g. Denmark.

*Table 3-4-4 Number of trips per person per day by mode and car ownership in Great Britain. Trips shorter than 5 km*

Car ownership	On foot	Bicycle	Car as driver
No car	0.22	0.04	0.02
Car, non-driver	0.16	0.04	0.01
Car, other driver	0.15	0.06	0.52
Car, main driver	0.09	0.02	1.20

*Table 3-4-5 Number of trips per person per day by mode and car ownership in The Netherlands. Trips shorter than 5 km*

Car ownership	On foot	Bicycle	Car as driver
Car	0.43	0.31	0.87
No car	0.62	0.54	0.18

*Table 3-4-6 Trips by mode and car ownership in Germany.\* Per cent of all trips*

Car ownership	On foot		Bicycle		Car as driver		Other modes		Sum
	Female	Male	Female	Male	Female	Male	Female	Male	Both sexes
No car, no license	47	42	9	16	0	0	44	42	100
License, no car	46	42	11	14	1	5	42	39	100
License, car, but not personally	33	23	10	10	9	38	48	29	100
Car for own use	24	17	6	5	46	66	24	12	100

\* All trip lengths

*Table 3-4-7 Number of trips per person per day by mode and car ownership in France\**

Car ownership	On foot		Bicycle		Car as driver	
	Grenoble	Lyon	Grenoble	Lyon	Grenoble	Lyon
No car	1.25	1.03	0.16	0.06	0.35	0.12
One car	1.10	1.34	0.15	0.06	1.79	1.40
Two or more cars	0.71	1.07	0.17	0.05	2.76	3.19

\*All trip lengths

Source: INRETS

For Germany and France all car trips are included in the available data. We will therefore only mention that the share of trips by walking in Germany is smaller the better access to a car people have, from 42 to 17 per cent among men and from 47 to 24 per cent among women. We can notice that women walk a little more than men, even when they have a car available. As for cycling the share of trips on foot are lowest for those with personal use of a car, both for men and women. Men with no car and no license cycle more than women in the same situation.

For Grenoble and Lyon we notice that the number of cars in the household does not influence on the use of bicycles as much as in other countries. The pattern of more walk trips for people with no cars goes for Grenoble, but not for Lyon.

## 3.5 Trips by profession

### 3.5.1 *People who work part time have more trips than others*

Looking at trips by profession the main findings are:

- People working part-time have more short trips than others, including walking, cycling and driving a car over short distances.
- Unemployed and housewives/-husbands walk more than others.
- Young people under education use a bicycle more than others.

In this chapter, as in the others, we have problems with different categorisation in the explanatory variable and with the fact that some countries have not presented data for short car trips (Austria, Switzerland). For other countries (Germany, France) we do not have data at all concerning travel habits by different kinds of occupation status.

Looking at the data from the different countries we find, a little unexpectedly, that people who work part-time are those who make most trips. We have no data for this group from all the countries, but for the three countries Norway, The Netherlands and Austria part-time employed travel almost as much by car as the full-time employed. In Great Britain people who work part-time make even more short car trips per day than those who work full-time. At the same time part-time employed travel more by walking and cycling. Behind these figures we see women who work part-time, do shopping and bring children to school and kindergarten, etc.

Non-workers (under education, wives and husbands staying at home, unemployed, retired people) do as many trips on foot, but only half as many short trips by car as the part-time employed.

The Netherlands has presented the best data for travel patterns by employment status. Table 3-5-3 shows that those who make most walk trips per day are unemployed people and housewives and -husbands. Part-time workers also have a high amount of trips on foot, as well as cycling and driving a car. People who cycle most are the young ones, under education. However, we also see that part-time workers, unemployed and people who work in the household cycle more than full-time employed and the retired.

Except for Great Britain, people who are full-time employed drive a car more than others, also for short trips, in all the European countries.



*Table 3-5-1 Number of trips per person per day by mode and profession in Norway.  
Trips shorter than 5 km*

Occupation	On foot	Bicycle	Car as driver
Full time	0.52	0.14	1.13
Part time	0.74	0.25	1.03
Non-working	0.70	0.19	0.50

*Table 3-5-2 Number of trips per person per day by mode and profession in Great Britain.  
Trips shorter than 5 km*

Occupation	On foot	Bicycle	Car as driver
Full-time	0.40	0.04	0.83
Part-time	0.75	0.06	0.91
Education	0.75	0.08	0.34
Non-work	0.66	0.04	0.42

*Table 3-5-3 Number of trips per person per day by mode and profession in The Netherlands.  
Trips shorter than 5 km*

Occupation	On foot	Bicycle	Car as driver
Full-time	0.47	0.56	0.68
Part-time	0.68	1.06	0.61
Education	0.58	1.41	0.07
Unemployed	0.79	0.97	0.46
Housewife	0.74	1.01	0.40
Retired	0.61	0.48	0.37

*Table 3-5-4 Number of trips per person per day by mode and profession in Austria\**

Occupation	On foot	Bicycle	Car as driver
Full-time	0.36	0.12	2.21
Part-time	0.72	0.31	2.02
Unemployed	0.64	0.12	1.38
Education	0.62	0.26	0.55
Retired	0.68	0.17	0.78
Housewife	0.79	0.22	1.17

\* All trip lengths

For Sweden we comment on the data for people under education. This group uses a bicycle more than others and they almost never use a car. This is natural, as most of them are under the age of 18.

This picture is even more clear for Denmark, as those under education have more than twice as many bicycle trips per day compared to the rest. We also see that they walk more than the others.

In Switzerland, there are even greater differences in the amount of trips by bike between the employed population and those under education than in Sweden and Denmark.

*Table 3-5-5 Number of trips per person per day by mode and profession in Sweden. Trips shorter than 5 km*

Occupation	On foot	Bicycle	Car as driver
Work	0.44	0.33	0.77
Education	0.64	0.68	0.14
Non-work	0.47	0.21	0.37

*Table 3-5-6 Number of trips per person per day by mode and profession in Denmark. Trips shorter than 5 km*

Occupation	On foot	Bicycle	Car as driver
Work	0.27	0.43	0.59
Education	0.48	1.00	0.18
Non-work	0.38	0.28	0.32

*Table 3-5-7 Number of trips per person per day by mode and profession in Switzerland\**

Occupation	On foot	Bicycle	Car as driver
Working	0.68	0.26	2.11
Education	0.86	0.81	0.77
Housewife/-man	0.96	0.25	1.36
Retired	0.94	0.12	0.85

\* All trip lengths

## 3.6 Trips by region

### 3.6.1 The larger the city, the more people tend to walk

The last difference we look at connects travel habits to the size of the city where people live. As the data we use are from a national level, we also include people who live in sparsely populated areas or in small towns. Also in this section we have problems with different categories in different countries. Categories like small, medium and large refer to different sizes in different countries. Mostly we therefore look at changes in travel patterns when we move from sparsely to densely populated areas.

Generally, the picture is similar in the countries for which we have data available:

- The larger the city, the more people walk. This is most clear in The Netherlands, where the number of walk trips increases from 0.45 per person per day to 0.82 when we move from rural to strongly urbanised areas. In Norway we can see a similar difference between Oslo, Bergen (>100 000) and other towns, in Sweden between Stockholm and the two other urban regions, in Denmark between urban Copenhagen and other regions, in Great Britain between London and less urbanised regions.
- For cycling the picture is not that clear. We comment upon this under each country.
- For car driving on short distances the picture is also clear: The bigger the city, the less frequently people use a car. People in the larger cities walk more on short trips and they use more often public transport, but this last pattern is on trips over longer distances.

For Sweden we have data only from the three largest urban regions, but walking is most usual in the largest urban region and smaller in the two others. Driving a car on shorter distances is most usual in the smallest region.

The high level of bicycle trips in the region of Malmö can be explained both by climate and topography and possibly by special arrangements similar to those in The Netherlands and Denmark.

In Denmark there are two important facts;

- car-driving on short distances is most usual outside the largest city and in small cities
- the use of bike is most usual in central parts of the largest city, Copenhagen, and less so in suburbs and the very small towns or in rural areas.

Great Britain shows the same patterns, but the inhabitants in Great Britain hardly seem to use a bicycle at all.

*Table 3-6-1 Number of trips per person per day by mode and region in Norway. Trips shorter than 5 km*

Urban region	On foot	Bicycle	Car as driver
Oslo (>500,000)	0.70	0.15	0.67
Over 100,000	0.67	0.13	0.86
36-100,000	0.55	0.20	0.95
Smaller cities	0.60	0.19	0.99
Rest of country	0.58	0.19	0.91

*Table 3-6-2 Number of trips per person per day by mode and region in Sweden. Trips shorter than 5 km*

Urban region	On foot	Bicycle	Car as driver
Stockholm	0.76	0.18	0.27
Göteborg (-500t)	0.58	0.23	0.31
Malmö (-250t)	0.65	0.51	0.41

*Table 3-6-3 Number of trips per person per day by mode and region in Denmark. Trips shorter than 5 km*

Urban region	On foot	Bicycle	Car as driver
Copenhagen (Cph)	0.52	0.72	0.25
Cph-suburbs	0.38	0.50	0.47
100,000+	0.46	0.69	0.41
10,000-99,000	0.38	0.61	0.62
Smaller cities	0.28	0.34	0.49
Rural	0.09	0.12	0.41

*Table 3-6-4 Number of trips per person per day by mode and region in Great Britain. Trips shorter than 5 km*

Urban region	On foot	Bicycle	Car as driver
London	0.69	0.03	0.44
Other 250,000+	0.60	0.04	0.47
100,000-250,000	0.58	0.05	0.58
Less than 100,000	0.55	0.05	0.57
Rural	0.46	0.04	0.47

Bicycling in The Netherlands shows a pattern somewhat different from the other countries: People who live in the less urbanised areas use a bike more than those who live in the strongest urbanised regions. This could be due to the fact that The Netherlands is a densely populated and flat country. But these travel behaviour patterns also differ from those in Denmark.

In Germany data are presented as shares of all trips and all lengths. Looking at walking as a percentage of all trips, the largest share is found in mid-sized cities, around or smaller than 100,000 inhabitants. Differences in the use of bicycles are very small. Like in other countries, the share of trips by car decreases with growing size of the city. Even if people walk more in large cities, these trips amount to a smaller share of all trips, as people in large cities travel a little more than people in smaller cities, and they travel more often with public transport. Travelling as a car passenger is replaced by travelling by public transport, as the cities grow bigger.

*Table 3-6-5 Number of trips per person per day by mode and region in The Netherlands. Trips shorter than 5 km*

Urban region	On foot	Bicycle	Car as driver
Very strong	0.82	0.70	0.35
Strong	0.62	0.83	0.48
Medium	0.56	0.85	0.55
Little	0.50	0.92	0.52
Not urban	0.45	0.74	0.44

*Table 3-6-6 Trips by mode and region in Germany.\* Percentage after urban region*

Urban region	On foot	Bicycle	Car as driver	Other modes	Sum
500,000+	25	12	35	28	100
200-500,000	29	11	35	25	100
100-200,000	27	10	41	22	100
20-100,000	30	12	39	19	100
5-20,000	23	12	43	22	100
2-5,000	24	11	44	21	100
-2,000	26	6	47	21	100

\*All trip lengths - percentage of all trips

A general conclusion is, however, that living in a city, especially in the central parts, produces a more environmentally friendly pattern of travelling than living in more sparsely populated areas. This stems from less use of a car and more walking, cycling and use of public transport on daily trips.

## 4 Journeys to work and school in Italy

### 4.1 People in big cities travel more to work by public transport, while people in smaller cities walk more

For Italy we have received data from the Italian census of 1991, showing how Italians travel to work and school. These data are not directly comparable to what we have presented earlier in this report. Consequently, we decided to include them in a separate chapter. Previously we have seen that walking and cycling are not the most important modes for trips to school and work.

The data from Italy show the percentage for each mode. In addition, we have received data that show the length in time for trips by various modes. Table 4-1 shows that the average percentage of walking to work is 16 per cent, while only 4 per cent use a bicycle. The percentage of walking is clearly highest in the smallest city and lowest in Rome. Around 60 per cent use a car for work (as driver or passenger) and this percentage does not vary much with the size of the city. However, the lot who goes by public transport shows a reverse pattern to the one seen for walking. It is highest in Rome and lowest in Bari, with an average for the whole country of 13 per cent. While people in big cities travel to work by public transport, people in the smaller cities walk. The percentage who use scooters or motorbikes is high in Italy, 4 per cent (especially in Rome), perhaps as a substitute for bicycles in other countries.

*Table 4-1 Modal split. Workers for job. Per cent after city. Italy*

City	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Sum
Rome	10	0	54	5	27	4	0	100
Torino	13	2	57	5	21	1	0	100
Bari	24	1	53	8	11	3	0	100
Italy	16	4	58	6	13	4	1	100

*Table 4-2 Modal split. Students for school. Percentage after city. Italy*

City	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Sum
Rome	31	0	6	18	41	5	0	100
Torino	35	1	6	19	39	1	0	100
Bari	60	0	3	13	23	1	0	100
Italy	35	3	4	18	36	3	0	100

Students (table 4-2) naturally walk much more, partly because they have no access to a car and partly because the shorter distances they travel. The average for Italy is 35 per cent, and it is higher the smaller the city. The use of bicycle is low and especially in the three cities presented above. The share for Italy as a whole is only 3 per cent. Many Italian students or school children are escorted by car to work (18 per cent) or they use public transport (36 per cent and highest in Rome).

## 4.2 Trips to work on foot or by bicycle take less than 15 minutes

Tables 4-3 to 4-6 show the willingness to walk or cycle for different lengths in time for Rome and Italy as a whole. Most walking is for less than 15 minutes, a distance of around 1 km. Around 90 per cent of all walking to work or to school fall in this category. The percentage is a little higher for students and school children (91 against 90 for workers). If we include trips up to 30 minutes, we take care of 99 per cent of all trips to school or work. Willingness to walk disappears more or less when the trip exceeds 2 km.

In Rome (tables 4-3 and 4-4) trips less than 15 minutes take more than 60 per cent of bicycle trips. The length of these trips can be estimated to around 2 km. If we include trips up to 30 minutes, we include around 90 per cent of all trips. The figures are very similar when we compare workers and students. This means that the maximum lengths of bicycle trips to work or school in Rome are about 4 km.

The numbers for whole Italy show a higher percentage of short bicycle trips. 90 per cent of such trips take less than 15 minutes (workers and students alike). This should imply that the willingness to use a bike for longer distances is higher in Rome than in smaller cities.

Car trips to work show a higher percentage of trips that take less than 15 minutes (54 per cent) in whole Italy, compared to Rome (28 per cent take less than 15 minutes). However, this is probably more due to differences in speed than to differences in trip lengths (in km) or possibly due to both slower speed and longer trips. A 15 minutes car trip in a city in rush hours should be equal to anything between 4 and 12 km, depending

on the average speed. Therefore, it is impossible to draw any conclusions from these data as to whether these trips could be replaced by walking or bicycling.

*Table 4-3 Distribution of trips for length of time. Workers for job. Rome, Italy. Per cent*

Minutes	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Total
≤ 15 min.	90	61	28	27	6	28	24	28
16 - 30 min.	9	29	37	35	26	56	30	32
31-60 min.	1	7	28	29	43	14	27	29
≥ 60 min.	0	3	8	9	26	1	19	12
Sum	100	100	100	100	100	100	100	100

*Table 4-4 Distribution of trips for length of time. Students for school. Rome, Italy. Per cent*

Minutes	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Total
≤ 15 min.	91	62	18	66	19	44	56	51
16 - 30 min.	9	28	36	23	35	41	19	25
31-60 min.	0	8	37	9	31	14	13	17
≥ 60 min.	0	2	10	2	15	2	13	7
Sum	100	100	100	100	100	100	100	100

*Table 4-5 Distribution of trips for length of time. Workers for job. Italy. Per cent*

Minutes	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Total
≤ 15 min.	93	90	54	50	12	73	36	57
16 - 30 min.	7	9	33	33	35	24	31	28
31-60 min.	1	1	11	12	34	3	18	12
≥ 60 min.	0	0	3	4	19	0	14	4
Sum	100	100	100	100	100	100	100	100

*Table 4-6 Distribution of trips for length of time. Students for school. Italy*

Minutes	On foot	Bicycle	Car as driver	Car as passenger	Public transport	Moto+ scooter	Others	Total
≤ 15 min.	92	90	38	81	31	68	23	65
16 - 30 min.	7	9	38	16	37	27	28	21
31-60 min.	0	1	19	3	23	4	27	10
≥ 60 min.	0	0	5	1	10	1	23	4
Sum	100	100	100	100	100	100	100	100



## 5 Some data on trip chains

### 5.1 Around 25 per cent of short car trips are parts of a chain consisting of more than one trip

Trip chains are defined as trips with a multiplicity of purposes. This means that we link several errands; we bring children to school or to kindergarten on our trip to work, do shopping on our way home, visit various kinds of shops or services on one trip etc. Trip chains may explain some of the use of cars on short trips.

As we have already stated more than half of all car trips (in Norway and other countries) are 5 km or shorter. With a car a 5 km trip lasts less than 10 minutes, about one hour on foot or around 20 minutes by bicycle, depending on up or down hills. As we also have noticed many car trips are shorter than 5 km; 16 per cent under 1 km, 28 per cent under 2 km and 39 per cent under 3 km (Norwegian figures).

The question we should look into is how many of these short trips are part of a chain, which makes it hard to replace the car with other means of transport. This is not an easy question to answer, as the trip-data are difficult to analyse. We operate with at least four levels of research objects; individuals, main trips, trips and trip elements. In a special study based on Norwegian travel survey data we have approached the problem in two ways to be able to easily identify trip chains.

Firstly, we looked at the length of car trips when the traveller made only one or two car trips a day. With only one or two trips a day, there can be no trip chains. Of the total sample of car trips 25 per cent belonged to a person who made only one or two trips by car a day. Looking at these car trips, we can easily assume that they are not part of a trip chain.

*Table 5-2-1 Trip length of car trips by number of car trips per person*

Trip length	Percentage of all	Percentage of 1-2 car trips per day
1 km or shorter	16	11
1.1 to 2 km	12	10
2.1 to 3 km	11	8
3.1 to 5 km	15	15
5.1 to 10 km	19	18
Longer than 10 km	27	38
Sum	100	100
Number of trips	9653	2397

Table 5-2-1 shows the length-distribution of trips for a person with one or two trips a day, compared to all car trips. As we can see, the trips which cannot be part of a chain, are longer than the average for all car trips. This means that the argument concerning trip chains have some bearing, that we use cars on some short trips because they are part of a chain. 11 per cent of car trips being part of a one- or two-trip day are 1 km or shorter, against 16 per cent for all car trips. 19 per cent of these "no-chain-trips" are 3 km or shorter, against 39 per cent for all car trips. While 54 per cent of all trips are 5 km or shorter, the same goes for 44 per cent of car trips which are parts of a one- or two-trip day. However, still more than 20 per cent of these car trips (which not in any way are parts of a chain) are 2 km or shorter. We can therefore make the implication that trip chains explain some of the car use for shorter trips, but in no way do they explain all of it.

## **5.2 Trip-chains explain only some of the car use on shorter trips**

The second way of approaching the question of trip chains is looking at car trips that do not go direct from home to work and back, or trips that do not end or begin at home. These are most likely parts of a trip chain. Doing this, we find that less than 1 out of 4 of all car trips shorter than 2 km falls in this category, a hint that 25 per cent of these short trips belong to a trip chain.

From these two facts we therefore can conclude that trip chains surely do not explain all car use on short trips. 25 per cent of all car trips are parts of a "trip day" where no chains are involved. And many of these are short. Furthermore, around 75 per cent of short car trips (here < 2 km) go directly from home to work and back or start or end at home, an indication that they are not part of a trip chain. We can therefore say that for the rest (only 25 per cent) of the short car trips the argument of trip chains is a valid one.

In the table below (5-2-2) we have included all car trips 5 km or shorter. We shall try to deduce from where trips start and end to whether they belong to a trip chain.

*Table 5-2-2 Start point by end point for car trips 5 km or shorter. Total percentage.*

Start	End		
	Home	Work	Other
Home	0	9	31
Work	7	0	5
Other	33	3	13
Sum	100		

Of all this trips 13 per cent start and end somewhere outside of home or work. This is a clear indication on that the trip is a part of a chain. 16 per cent go from home to work and back and are definitely not part of a chain. 64 per cent are trips from home to "other places", not a trip chain, but probably shopping trips, which again shows us that the main reason for the use of a car is probably shopping and not that it is part of a trip chain. 8 per cent go from work to "other places" or the opposite. This could an indication on that the trip is part of a tour which starts at home and ends at work, but not the direct way.

The conclusion is that about 20 per cent of short car trips are parts of a trip chain. There are probably other arguments which are more important for the use of cars on shorter distances.

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