Patterns Trends and Issues Report

Greater Dublin Area
Draft Transport Strategy 2011-2030
2030 vision

Údarás Náisiúnta Iompair
National Transport Authority

Transport Strategy for the Greater Dublin Area 2010 - 2030

Issues Arising from Analysis of Current Patterns and Trends and Policies (TR3)

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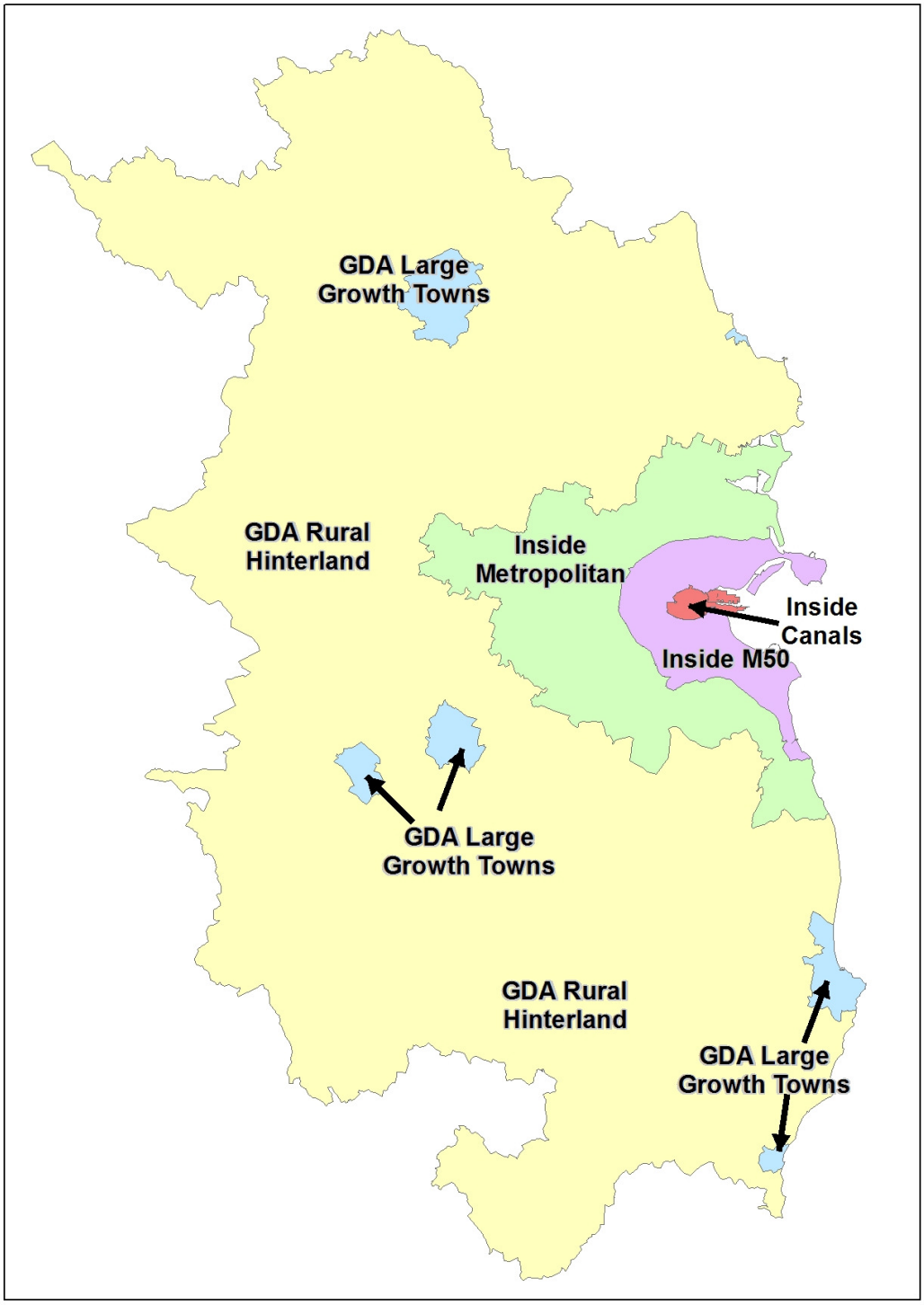
Figure 1.1: GDA Sub Areas used in presenting spatial data in this report



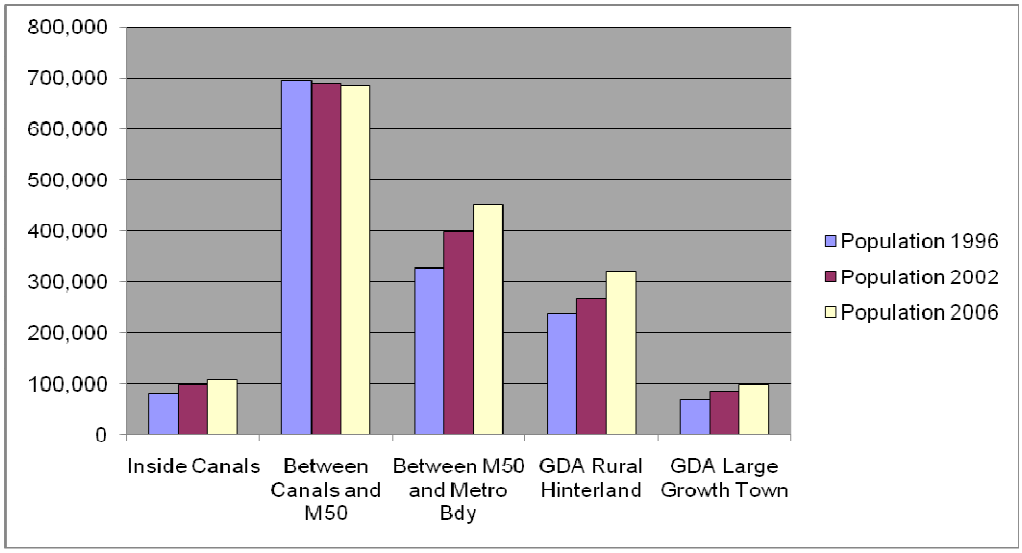
Note: The Metropolitan Area and Hinterland Areas as defined below, and in the Regional Planning Guidelines, do not directly correspond to the Dublin County Region and Mid East Region of the GDA. Also note that the Metropolitan Area boundary shown above is slightly different to that defined by the RPG. It has been altered to agree with DTO zonal definitions (this applies only to some undeveloped areas, and has no significant impact on data analysis)

Executive Summary

Population and Households

The population of the Greater Dublin Area has grown by 18% over the ten year period 1996-2006. The rate of growth in the Mid East (37%) has been three times the rate of growth in the Dublin Region (12%). Similarly, the rate of growth of the Hinterland Area, as defined by the GDA Regional Planning Guidelines, has been three times the rate of growth of the Metropolitan Area. The rate of population growth in the GDA Hinterland away from larger towns has accelerated dramatically in the most recent period 2002-2006.

The structure of this growth reveals families and family forming age groups in particular are moving outside the M50 and into the area outside the M50 and Mid East/Hinterland Area



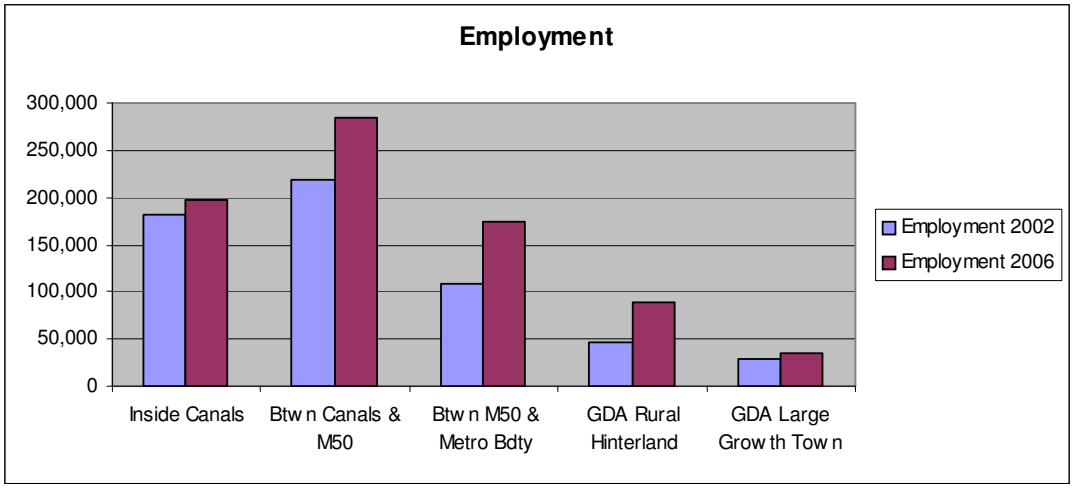
There are significant difficulties in providing high quality public transport services to people living in the dispersed developments that have emerged over the last decade. Those of a family forming age living beyond the reach of public transport, have a very different set of travel patterns to the rest of the GDA, particularly when compared to Metropolitan Dublin.

The rate of growth of households in the GDA (15%) has exceeded the rate of growth of population (8%) over the four year period to 2006, implying a trend towards smaller household sizes. This decline is most apparent in the Hinterland area, which has seen average household size drop by 20%.

Concerns in relation to the outward movement of population to areas with poor public transport were reinforced by public consultation responses.

Employment

The highest growth in jobs is occurring in suburban and outer areas. There has only been a slight increase within the Grand and Royal Canals and in the Large Growth Hinterland Towns. The greatest numbers of jobs are in the area between the M50 and Canals and the proportion here relative to the central area is also increasing. This has major implications for mode choice, as these areas have not been traditionally the focus of the public transport network.



The growth in jobs is primarily in the commerce/market services sector. Many of these jobs are office jobs that, from the point of view of public transport accessibility, would be most appropriately located centrally and at public transport hubs.

Car Ownership

The propensity to own a car is related to a person's place of residence. Within the Canals, where public transport and linkages to services is typically better, a majority of households do not own a car. Car ownership increases with distance of residence from the city centre. This is most apparent in the GDA Rural Hinterland area, where only 11% of the households own a car, while most own two cars or more.

Travel to Work

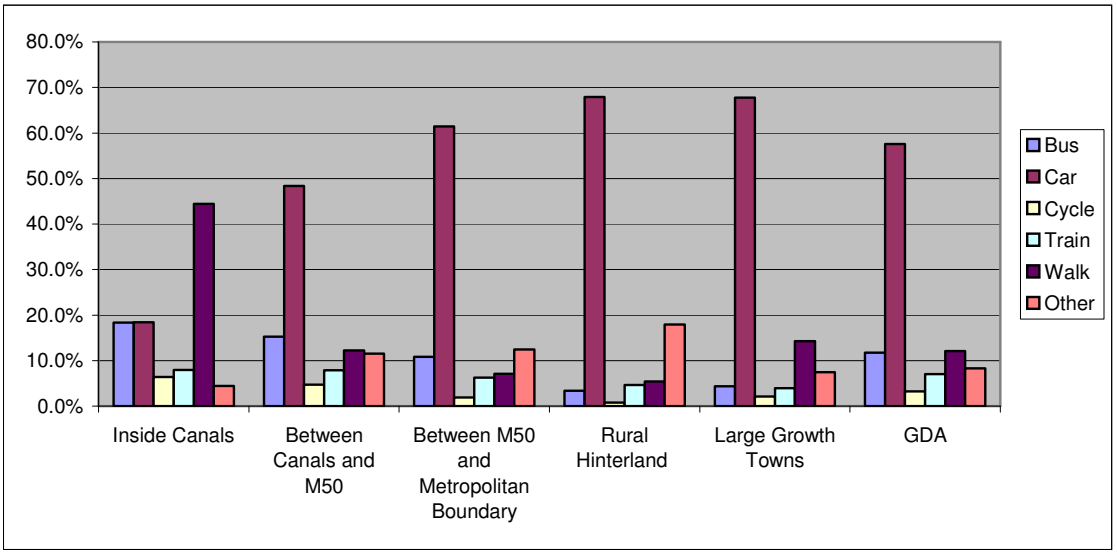
Approximately 724,000 GDA residents travelled to work in 2006. The number of journeys to work grew by 51% over the ten year period 1996-2006, with an 89% growth in the Mid-East and a 40% growth in the Dublin Region.

Distances travelled to work are longer for those living in outer areas, especially in newer areas. The majority of workers living in the Rural Hinterland travel over 15 km to work.

Time taken to travel to work is greater in outer areas. 19% of workers living in the Rural Hinterland travel more than 51 minutes to work. This is close to double the percentage for those living Inside the M50.

- People living in the Hinterland have a greater tendency to leave for work earlier
- Mode share for travel to work is determined primarily by location of home and location of job. The less central either is, the greater is the propensity to travel to work by car. (The Figure overleaf shows travel to work mode from place of residence).

Figure: Travel to work mode share (by place of residence)



- Managerial and professional socio-economic groups are less likely to walk, cycle or use public transport

- For travel to work and education combined, over the ten year period 1996-2006, there has been a significant decline in walking cycling and public transport share, and a corresponding growth in car share. The increase in car share has been most pronounced in smaller towns and rural parts of the Hinterland Area.

- There is considerable long distance (>20km) travel to workplaces, especially to those located in the Hinterland Area.

Table: Distance travelled to workplaces (2006)

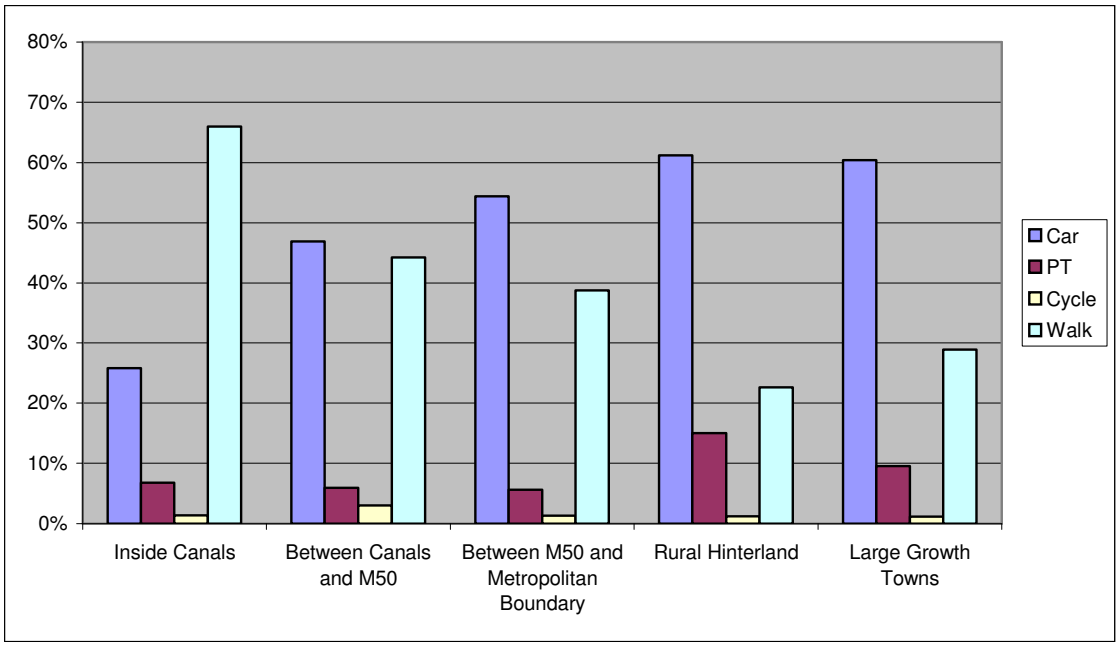
Workplace Sub Area	1-5km	6-10km	11-15km	16-20km	21-30km	31-50km	51-100km	101+km
Inside Canals	38.4%	26.7%	12.9%	7.2%	5.6%	5.8%	3.1%	0.5%
Between Canals and M50	43.9%	23.9%	10.2%	7.2%	5.9%	5.3%	3.2%	0.4%
Between M50 and Metro Bdy	37.9%	21.1%	11.2%	9.4%	8.1%	7.7%	4.2%	0.5%
GDA Rural Hinterland	43.9%	17.2%	9.4%	8.7%	8.7%	8.2%	3.6%	0.3%
Large Growth H'land Towns	46.9%	13.4%	9.2%	9.0%	8.9%	9.1%	3.3%	0.3%
GDA	**41.3%**	**22.8%**	**11.0%**	**7.9%**	**6.7%**	**6.4%**	**3.4%**	**0.4%**

Education

There were approximately 332,000 persons travelling to education in the Greater Dublin Area in 2006. The number of GDA residents travelling to education grew by 12% between 1996 and 2006, with a 21% increase in the Mid East Region and a 9% increase in Dublin.

- Most primary school places are located outside the M50. Secondary school places are mostly located between the Canals and the M50. Third level places are predominantly inside the M50, with a particular focus on the city centre. This imbalance in education places has resulted in longer distance travel to school by secondary school pupils from outside the M50, especially from the Rural Hinterland Sub-Area (which includes smaller Hinterland towns).
- 66% of primary schoolchildren in the city centre walk to school. In the Hinterland area, the figure is below 30%

Figure: Mode share for primary schools (2006)



- Over half of secondary schoolchildren walk to school in the city centre. In the Hinterland Area outside Large Growth Towns, this figure declines to 15%
- Cycling mode share for primary school is negligible, except between the Canals and the M50, where it is 3%
- Cycling mode share for secondary school is 4% or less, except between the Canals and the M50 where it is 9%
- Road Safety is a concern to secondary school students inside the Canals, and in the Hinterland area, deterring them from cycling
- The car mode share for travel to education is particularly high for primary school children, ranging from 26% in the city centre to 60% in outer areas.
- 33% of trips by car to secondary school are less than 2 kilometres

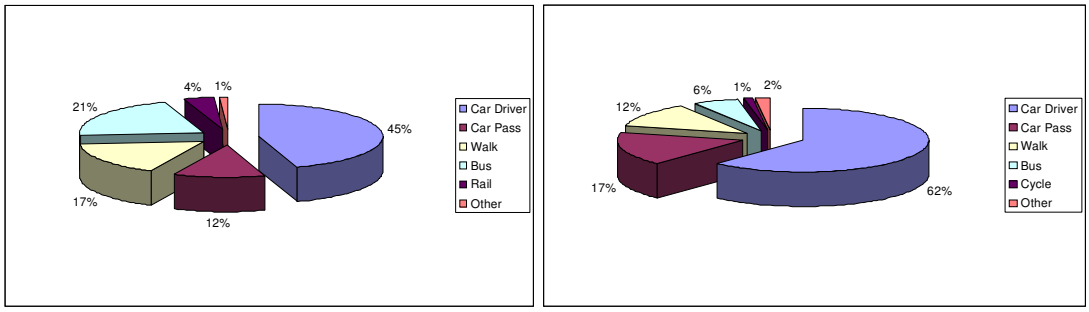
Retail Leisure and Other Community Services

The majority of people use car for shopping trips with a higher proportion in the Mid East using car than in Dublin.

Major centres have been built in the GDA at locations that maximise car accessibility from the wider region, and that are inconvenient for access by bus, walking or cycling.

The quantity of free and accessible car parking associated with large scale retail in the GDA has also acted as a disincentive towards walking, cycling and public transport mode share.

Figure: Mode Split for Shopping Trips (March – May 2006)



DUBLIN MID-EAST

Neighbourhood centres have also often been designed for ease of access by private car Existing major retail centres, and neighbourhood centres are often single use (i.e. retail), which discourages linking of shopping trips with other trip purposes in a manner that reduces the need to travel.

In a similar manner to retail uses, the majority of community services and recreational spaces are also designed with the private car in mind as the dominant mode. In the case of cinema, there has been a move away from smaller scale town centre theatres to large out-of-town multiplexes usually more accessible by car.

Travel and Transport Provision

Walking

Although walking numbers have increased, walking mode share has remained relatively static over the last ten years, in the context of overall growth in travel. 12% of trips to work and 35% of trips to education are made on foot. The share is higher in Dublin than in the Mid East Region.

Walking facilities vary across the GDA – pedestrian crossing provision and wait times at crossings still leave some room for improvement.

Cycling

Overall, cycle mode share is in low single figures and is declining for trips to education and work. However, cycling into the city centre in the morning peak has increased by 44% since 2004, coinciding with restrictions on city centre HGV movements.

The difference in provision of cycle facilities between urban centres in the GDA is marked. The city centre and approaches are relatively well covered, and the cycle mode share for trips to work in the city centre is more than twice that of the GDA Large Growth Hinterlands Towns.

Bus

Bus mode share in the Mid-East is less than one third of the mode share in the Dublin Region (except for trips to education). 15% of Dublin residents use bus to get to work. This falls to less than 5% for Mid East residents

Other bus issues of note include

- Passenger trips to workplaces in the Dublin Region/Metropolitan Area outside the city centre are quite dispersed, and do not in general focus on RPG Metropolitan Centres
- Passenger trips to workplaces outside the Metropolitan Area are confined to the RPG Large Growth Towns, and are low in number
- Services with higher frequencies are generally radial to the city centre. There are fewer orbital bus services in the Metropolitan Area, and those that do exist are usually lower frequency and can be circuitous
- There are no orbital services between towns outside the Metropolitan Area
- Higher frequency bus services to the city centre are present from only certain Hinterland Towns (Naas, Navan, Ashbourne and Drogheda via Balbriggan).
- The level of bus lane priority varies widely by Quality Bus Corridor (QBC). In general corridors with substantial sections of dual carriageway are more likely to have bus lane priority
- QBC bus service journey times and reliability are directly related to the percentage of route with a bus lane.
- There is currently no bus priority on a number of high frequency bus routes
- Bus Lanes have been provided on certain roads where few or no buses currently run in the morning peak period.

Bus service quality issues identified by the public during public consultation include

- Ticketing integration
- Fares information and integration
- Waiting facilities
- Bus travel information, including arrival times – integrated with other public transport travel information

Rail/LUAS

The mode share for rail is highest for trips to work. The mode share for rail is higher in Dublin than in the Mid-East, particularly for the most common trip purposes (work, education and shopping)

The mode share for rail/LUAS crossing the Canals into the city centre in the AM peak period has climbed significantly over the last 10 years, and particularly since 2003, following the introduction of LUAS and improvements to Maynooth, Kildare and outer coastal rail commuter services. Rail/LUAS mode share to work in the city centre in the morning peak is 18%. This contrasts with workplaces in the Hinterland Area, where the rail mode share is 1%.

Journey distances and times by rail are relatively long when compared with other modes. More than 50% the journeys to work by rail are over half an hour in duration.

Train service quality issues identified by the public include

- Ticketing integration
- Fares information and integration
- Rail travel information – integrated with other public transport travel information

Car

The share of trips made by car dominates other modes, for all trip purposes except education in both the Dublin and Mid-East Regions. Typically the mode share is between 50% and 60% in the Dublin Region and between 55% and 80% in the Mid East Region.

The mode share for car (drivers and passengers) crossing the Canals into the city centre in the AM peak period has fallen significantly over the last ten years, following the introduction of QBCs and stricter controls on all-day on-street parking in the late nineties, and again following the introduction of LUAS and improvements to suburban rail commuter services between 2003 and 2005. There was however a 10% increase in cars entering the city centre between 2005 and 2007. The mode share for cars entering city centre declined from 50% to 35% between 1997 and 2007.

The level of car parking at workplaces inside the Canals closely matches the number of cars entering the city centre in the morning peak period.

Taxi

A large increase in taxi numbers has taken place since taxi deregulation.

Freight

Road freight movements dominate. The future role of rail freight is uncertain.

Environment

Between 1990 and 2005, the most significant and sustained increase in national greenhouse gas emissions has been in the transport sector. Over the period, emissions increased by 157%, mainly due to road transport. This is a major issue for the strategy to address at a GDA level.

Noise pollution is a particular issue near major roads and motorways. Air pollution monitoring data currently available does not show it as a major issue. It is expected that more comprehensive environmental data will become available over the coming months, and further issues are likely to be identified as Strategy work progresses.

Economy

Average disposable income in Dublin, in 2005, was 11.6% higher than in the Mid East.

Per capita Gross Value Added (GVA) in Dublin and the Mid East was 22% higher than the national figure.

After a sustained economic boom, GDA unemployment has increased sharply in recent months, and housebuilding and house prices in the GDA have fallen. Nationally, GNP and GDP are declining.

Any long-term change in trends will need to be acknowledged and inform the contents of the Strategy.

Characteristics of Greater Dublin Area – Summary by Sub Area

The population and employment characteristics of the Greater Dublin Area are summarised below

City Centre - within the Canals

This area corresponds with what most people would regard as the traditional inner city. While the Canals provide much of the boundary to this Sub Area, there are parts that cannot be defined in this manner. To the west the Circular Roads and the Phoenix Park provide the boundary while to the East the Sub Area extends to incorporate the Docklands.

The Area within the Canals comprises the highest density of development in the GDA. In 2006 there were 109,411 persons resident in this Sub Area. These are housed in a variety of dwelling types including Local Authority flats complexes, small terraced units, new private apartment blocks, Georgian terraces and some semi detached and detached housing. The dominant house type is flats and apartments, which make up 61% of the housing stock. As a result the gross population density, at 59 persons per hectare and gross housing density, at 23 households per hectare, are the highest in the GDA.

In relation to employment this area contains the highest concentration of jobs in the region. There are 184,866 fixed places of work within the canals. The area contains major nodes of employment such as the South East Quadrant incorporating the Merrion Square and Fitzwilliam Square districts and the emerging office cores in the North and South Docklands. In total there are 99 jobs per hectare within the canals, the highest in the region. The number of jobs per resident is 1.7.

Inside the M50

This Sub Area corresponds with the majority of Dublin suburbs, which developed during the 20th Century. Two “Metropolitan Consolidation Towns” as defined by the RPG (Dundrum and DunLaoghaire) are located in this Sub-Area. It also incorporates places such as Cabra, Inchicore, , Rathfarnham, Finglas and Raheny. The boundary broadly follows the M50 and the route of the N32 on the northside extending as far as the coast road at Baldoyle, while on the southside the limits to the built up area of Bray defined the boundary.

With 689,852 persons, this area is the most populous in the GDA. However the population density is lower than Inside the Canals, at 31 persons per hectare. Associated with this, there are 12 households per hectare.

83% of housing units are in the form of houses or bungalows, with a mix between terracing, semi-detached and detached. The majority of the large Local Authority housing schemes in places such as Coolock and Sallynoggin would be in the form of terraced houses, while the large private suburban housing schemes would be primarily semi-detached and detached. There are also a number of apartments and flats, most notably along transport corridors such as Dart and LUAS.

There are 257,796 jobs Inside the M50, so it contains more jobs than any other Sub Area. The places of work are typically old industrial estates such as those along the Long Mile Road and Finglas East, and newer suburban office parks such as Sandyford and Park West. There are also significant numbers of jobs in retail and retail services serving the local population. However, the employment density is far lower than Inside the Canals, at 12 jobs per hectare and 0.37 jobs per resident.

Inside the Metropolitan Area

This Sub Area includes the area outside the M50 but inside the Metropolitan Area Boundary as defined by the Regional Planning Guidelines. There are 443,466 people living in this Sub Area and 155,147 jobs, giving 0.35 jobs per resident. It includes the “Metropolitan Consolidation Centres” of Tallaght, Lucan/Clondalkin, Blanchardstown and Swords.

As it encompasses a large area of undeveloped land, the number of persons and households per hectare are only 6 and 2 respectively. The housing mix is similar to Inside the M50 with a slightly higher proportion of houses and bungalows, primarily low-density suburban estates. These figures mask concentrations of use in areas such as Lucan, Liffey Valley, City West and Tallaght where there are large housing areas and major employment areas.

The number of jobs per hectare is 2. However there are a number of large employment areas within this Sub Area, most noticeably the Airport, Intel/Hewlitt Packard and employment areas such as City West and Ballycoolin, some distance from the centres of the Metropolitan Consolidation Towns of Blanchardstown and Tallaght.

GDA Large Growth Hinterland Towns

These are the Large Growth Towns and the Hinterland Area as defined by the RPG – Balbriggan, Navan, Naas, Newbridge, Wicklow and Arklow. These are characterised as traditional Irish market towns with a defined central core of retail and services for their local populations, but which have undergone significant changes in recent years associated with their relationship to Dublin. Many newer parts could more accurately be described as commuter suburbs of Dublin.

In 2006 there were 98,870 persons living in these towns (comparable in scale to Inside the Canals). However the number of persons per hectare is far lower at 6. There are 35,598 jobs in this Sub Area giving a job density of 2 per hectare and a ratio of 0.34 jobs per resident. 91% of dwellings are in the form of houses and bungalows. These would range from traditional town centre terraced houses to large suburban style peripheral estates.

GDA Rural Hinterland

This area encompasses the entire area outside the Dublin Metropolitan Area, excluding the Large Growth Towns as classified by the RPG (Balbriggan, Navan, Naas, Newbridge, Wicklow and Arklow). The land area is largely undeveloped but there are a number of larger settlements located here such as Ashbourne, Kells, Athy, Kildare and many smaller towns and villages.

The population of this band is 320,968 but spread over such a large area that there is less than 1 person per hectare. There are 78,456 jobs located here, amounting to 0.13 job per hectare and 0.24 jobs per resident.

92% of dwellings are in the form of houses or bungalows. Many of these are one-off houses, but there are also significant numbers of suburban style semi-detached and terraced units, particularly in urban settlements.

1. Introduction

This report sets out the key issues arising from the review of patterns and trends and policies, which will need to be considered and where possible addressed in the strategy formulation process.

There is a close relationship between land use and travel demand. For this reason it is important to look at wider policies and patterns in the Greater Dublin Area (GDA) particularly as they relate to spatial planning and development, to better understand why people are making trips.

The DTO has analysed patterns and trends corresponding to various social, demographic and travel related topics, which have been observed over the last three censal periods (1996 to 2006) This work will form the basis for much of this report.

An important consideration, which will need to be dealt with during the Strategy development process, is that of integration. Although this draft paper will summarise issues under specific section headings, it must be noted from the outset that there are many interrelationships to be considered during the strategy formulation process.

1.1 Structure of Report

This report sets out key policies of relevance to the GDA that have the potential to influence travel behaviour and the contents of a transport strategy for the region.

The report then presents evidence in various areas, and issues arising that will need to be taken into consideration in the formulation of the new transport strategy. The identified issues were reviewed and amended as necessary following public consultation, which took place in April-June 2008. The areas of consideration are as follows:

- **Population** – issues arising from patterns of residential growth in the GDA.
- **Employment** – issues arising from employment patterns in the GDA
- **Travel To Work** – issues related to trips from home to work.
- **Community Facilities** – the facilities people travel to on a frequent basis, such as **education** and **shopping**.
- **Travel and Transport Provision –** overview of travel attitudes and behaviour and commentary on the supply of transport
- **Environment** – some key environmental considerations.
- **Economy** – Macroeconomic trends and issues, and how they might affect the GDA.

1.2 Data Sources

A number of different data sources were used in the preparation of this paper. The primary sources of statistical data are the CSO Census data, including Small Area Population Statistics (SAPS) and Place of Work Census of Anonymised Records (POWCAR). These data sets are derived directly from the Census records and supply a wide range of statistics related to travel patterns and socio-economic characteristics. For this reason, much of the data are from 2006, the last census year. More recently, there has been a marked change in economic outlook, which will impact on GDA population and travel to work data. During the strategy development process it will be important to review and update with new information as and when it becomes available.

Other sources of information included the following:

- DTO Education Survey 2006
- DTO QBC and road user monitoring annual reports
- DTO Household Survey 2006
- Dublin Bus Network Review 2006
- CSO Quarterly National Household Survey
- ESRI Mid-Term Review
- Irish Rail and Luas annual passenger census
- Dublin City Council annual “Canal cordon” traffic surveys

There are a number of information gaps. The CSO POWCAR data contains sufficient information on trips to work, and the DTO Education Survey on trips to school, but there is no comprehensive source of data on trips to shopping, public amenities, stadiums, concert venues etc.

There is also a shortfall in transport supply data. Although data is available from service providers, the format and definition of the data often makes it difficult to analyse, especially from a spatial perspective.

As the process continues, it is the intention of the DTO, where possible, to address these deficiencies in the data.

2. Policy Overview

In drawing conclusions as to which patterns and trends are of significance for the new strategy, it is important to understand the strategic policies that were devised to influence these patterns. This section sets out a broad synopsis of the key strategic policies included in the Regional Planning Guidelines for the GDA 2004-2016 (a regional representation of National Government spatial policy set out in the National Spatial Strategy) and the current DTO Strategy 'A Platform for Change'.

These two documents set the scene in terms of regional planning and transport policy direction and make it possible, in reviewing current patterns and trends, to identify relevant issues.

2.1 GDA Regional Planning Guidelines (RPG)

Aim of Document

The aim of the RPG is to set out a long-term strategic planning framework for the development of the GDA to 2016.

The RPG works within the overall framework set out in the National Spatial Strategy (NSS), and sets out objectives and guidelines for local authorities to have regard to, in the spatial development of the GDA.

Spatial Policy Objectives

- A more efficient GDA

  That the GDA's vital national role is secured in terms of improved mobility, urban design quality, social mix, international and regional connections.

- Consolidating the GDA

It is an essential element of the NSS that the economy of the Greater Dublin Area and surrounding counties be built upon, so that its success, competitiveness and national role are sustained into the future.

The physical consolidation of Dublin, supported by effective land use policies for the urban area itself, is an essential requirement for a competitive Dublin. Consolidation is also required for the public transport system to function effectively. In turn, investment in public transport will assist in promoting a more efficient and competitive GDA.

In order to achieve this physical consolidation, the existing and proposed new bodies responsible for strategic planning in the region must take the following actions:

- Create an efficient and high quality system of public transport connections within the Dublin area to improve access to employment, education, services and amenities.
- Provide good international access particularly through Dublin Airport and Dublin Port.
- Provide good transport and telecommunications connections with other national gateways.
- Concentrate employment intensive activities close to public transport corridors and road transport intensive activities close to the strategic road network.

- Maintain the distinction between the city and town components within the Greater Dublin Area as envisaged by the earlier Strategic Planning Guidelines for the area, which focus on the metropolitan area, and a number of strategically placed towns as primary or secondary development centres within the hinterland.

Settlement Hierarchy

The RPGs divide the GDA into Metropolitan and Hinterland Regions, with a settlement hierarchy as set out below. The figures in brackets are population ranges for each urban type:

- Metropolitan consolidation towns (40,000-100,000)
- Large Growth Towns I & II (25,000 – 40,000) & (15,000-25,000)
- Moderate Growth Towns (5,000 - 15,000)
- Small Growth Towns (1,000 - 5,000)
- Villages (Up to 1,000)

RPG Strategic Planning Policy for the Metropolitan Area

- Consolidation of the urban centres located within the Metropolitan Area.
- Development of brownfield sites, in urban centres throughout the Metropolitan Area, especially those along public transport corridors.
- Delivery of well designed urban environments enhancing the quality of life for residents and workers alike.
- Provision and facilitation of an integrated public transport system and the achievement of a greater use of sustainable travel modes through the integration of land use and transport planning.
- Clear definition of the boundaries of urban centres to ensure a clear division between rural and urban areas.

RPG Strategic Planning Policy for the Hinterland Area

- Development of selected large and moderate growth centres to be self-sustaining in terms of employment provision, satisfying housing demands and ensuring the delivery of a high level quality of life for the communities' residents.
- Development and growth of each of the selected urban centres to the maximum extent possible, so that they function as the focal points for the development of their rural catchments.
- Development of small growth towns and villages in a more sustainable manner, to ensure that a higher proportion of residents of the towns and villages are employed locally.
- Clear definition of the boundaries of urban centres to ensure a clear division between rural and urban areas.
- The promotion of high-quality urban design that balances the achievement of densities with the provision of high-quality services, the management of public safety and the provision of high quality access and permeable networks.

Anticipated Outcome

Progress in the achievement of the RPG policy objectives should, over time, be manifested in settlement and employment locations in the GDA.

- Greater consolidation into settlement centres instead of sprawl
- Increased access to high quality public transport
- Major employment located close to public transport
- A shift towards sustainable modes of travel
- Discrimination in favour of brownfield site development rather than expansion of the footprints of urban areas
- A clear distinction between urban and rural
- A trend towards greater self sufficiency of selected Hinterland Growth Towns

It is too early for all of the above to be detectable in the data. It would however be an issue if the patterns and trends show a noticeable deviation from the policy guidance.

2.2 A Platform for Change (DTO)

Aim of Document

The aim of this document is to provide the strategic framework for a transport network to provide for the travel needs of the GDA up to the year 2016.

Details of A Platform for Change are provided in Appendix A. For the purposes of this section it is necessary only to outline the two interdependent overarching elements which underpin this strategy namely:

- To increase the supply of transport, including a substantial expansion of the public transport network, some strategic road construction and traffic management; (infrastructure and service improvements) and
- To reduce the growth in travel through the application of complementary land use and other policies while maintaining economic progress. These policies are designed to encourage a transfer of trips, especially at peak periods, from the private car to sustainable modes (such as public transport, cycling and walking). These policies and associated measures are generally referred to as “Demand Management”.

The DTO Strategy dates from 2001, and follows on from the Dublin Transportation Initiative (DTI) which was published in 1994. Although ‘A Platform for Change’ has a prescriptive approach to the supply of transport, the strategy reflects the principles stated in the DTI Strategy. The overriding principles of the increased supply of public transport and managing demand for travel especially by car, as part of the general promotion of more sustainable living have therefore been stated in policy guidance for over 15 years.

In relation to the demand for travel, it may be expected that this strategy, in conjunction with the RPG, would have helped to minimise the need for people in the GDA to travel, especially by car. The land use elements aim to consolidate development along public transport corridors and to focus development at specific transport nodes at appropriate higher densities. Transport measures such as public transport provision, walking and cycling were stated objectives of the strategy, and an implementation programme was set out.

3. Population and Households

3.1 Introduction

This section outlines the key patterns, which have been observed in relation to population and households in the GDA from 1996 to 2006.

Some of the key issues include spatial patterns like household size, car ownership rates and physical distribution of residential development, demographic changes in household structure and the patterns of internal migration within the GDA.

3.2 Population and Settlement- Policy Background

Summary of relevant RPG objectives:

- **Create a rational, efficient settlement/service/economic hierarchy:** this should bring facilities on average as close to the users as possible. (Objective 2.1)
- **Consolidate a compact city and urban centres and avoid urban sprawl between them** Objective 2.4)
- **To integrate the land use pattern with the transport system:** Location of significant origins and destinations should be focused around multimodal interchanges between bus, rail, car, cyclists and pedestrians. Such developments should be in proximity to public transport corridors and ideally close to these interchanges. The phasing and scale of developments with regard to travel demand should reflect their level of accessibility (Objective 5.2)

3.3 Population Growth in the GDA

The GDA population has risen steadily between 1996 and 2006, from 1.405 million to 1.662 million, a growth of 257,000 or 18.6%.

By contrast in the ten year period from 1986 to 1996, the population in the GDA grew from 1.33 million to 1.4 million, a growth of approximately 70,000, or 5.2%.

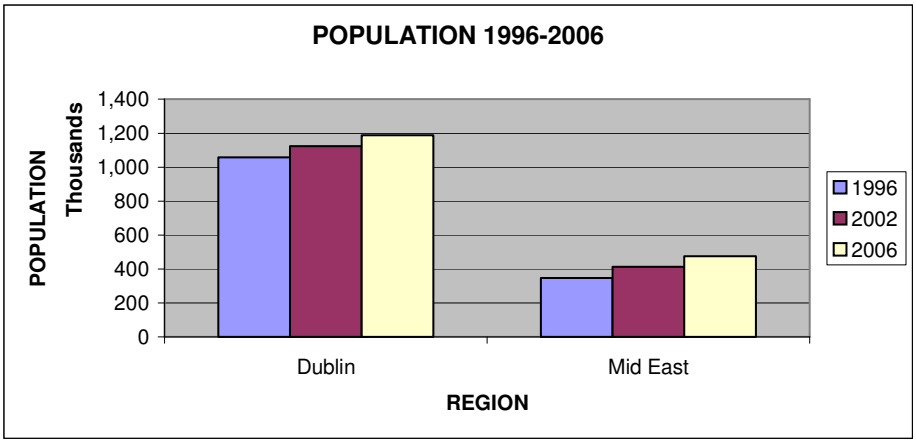
The last decade has seen a GDA population growth rate 3.7 times higher than the previous decade.

The growth in population in the GDA is set out in Table 3.1 below

Table 3.1: Population Growth in Dublin and Mid East Regions (1996-2006)

Population	1996	2002	2006	Growth 96-06	% Growth 2002-2006	% Growth 1996-2006
Dublin	1,058,264	1,122,825	1,187,175	128,911	6%	12%
Mid East	347,407	412,609	475,361	127,954	15%	37%
Total GDA	1,405,671	1,535,434	1,662,536	256,865	8%	18%

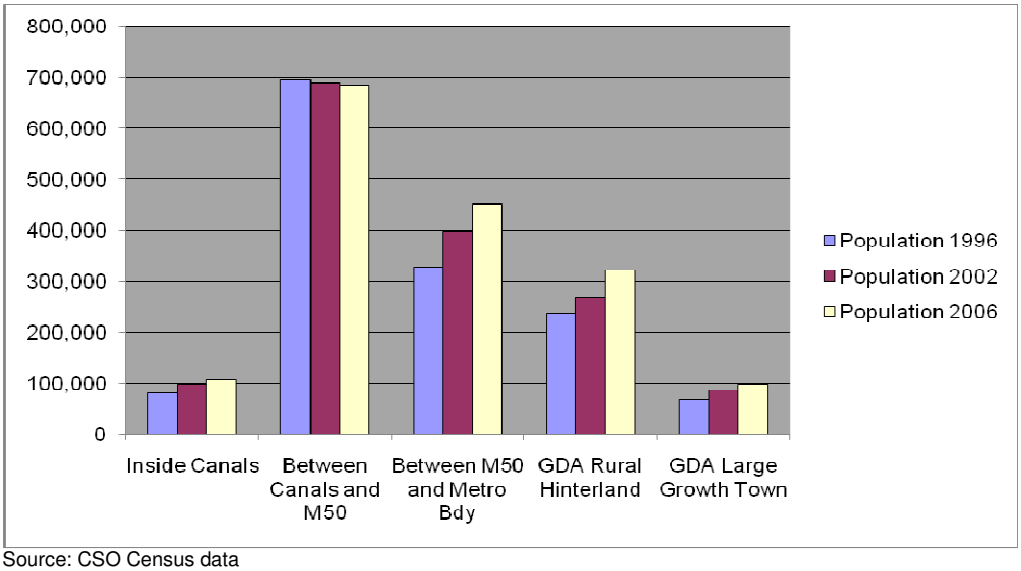
Figure 3.1 – Population Growth in Dublin and Mid East Regions (1996-2006)



Source: CSO Census data

The distribution of population growth is set out by Sub Area in Figure 3.2 giving a more detailed representation of where the population growth is located.

Figure 3.2 Population Growth by GDA Sub Area (1996-2006)



Source: CSO Census data

Table 3.2 and Figure 3.2 set out the growth in population by Sub Area in the ten year period 1996 to 2006. The numerical growth in Metropolitan Area population has been slightly more than the Hinterland Area. However the population of the Hinterland Area has increased at three times the rate of the Metropolitan Area. Population in all areas outside the M50 has grown in excess of 35%. In contrast to this the area between the canals and M50 has actually declined in population. Population within the Canals has increased markedly. The population growth in the GDA Rural Hinterland was

84,685 in the 10 year period 1996-2006, 13% of which were located in new "one off" houses[1]. The rate of population growth in the GDA Rural Hinterland (which includes smaller towns and villages) has accelerated dramatically in the period 2002-2006.

Table 3.2 – Population Growth by GDA Sub Area (1996-2006)

Sub Area	Population 1996	Population 2002	Population 2006	Growth 1996-2006	%Growth 2002-2006	%Growth 1996-2006
Inside Canals *	80,556	97,773	108,020	27,464	10%	34%
Between Canals and M50 *	693,816	687,898	684,326	-9,490	-1%	-1%
Between M50 and Metro Bdy *	327,294	397,221	450,363	123,069	13%	38%
Metropolitan Area Total	**1,101,666**	**1,182,892**	**1,242,709**	**141,043**	**5%**	**13%**
GDA Rural Hinterland	236,283	266,110	320,968	84,685	21%	36%
GDA Large Growth Town	67,722	86,432	98,870	31,148	14%	46%
Hinterland Area Total	**304,005**	**352,542**	**419,838**	**115,833**	**19%**	**38%**
GDA Total	**1,405,671**	**1,535,433**	**1,662,547**	**256,876**	**8%**	**18%**

Source: CSO Census data

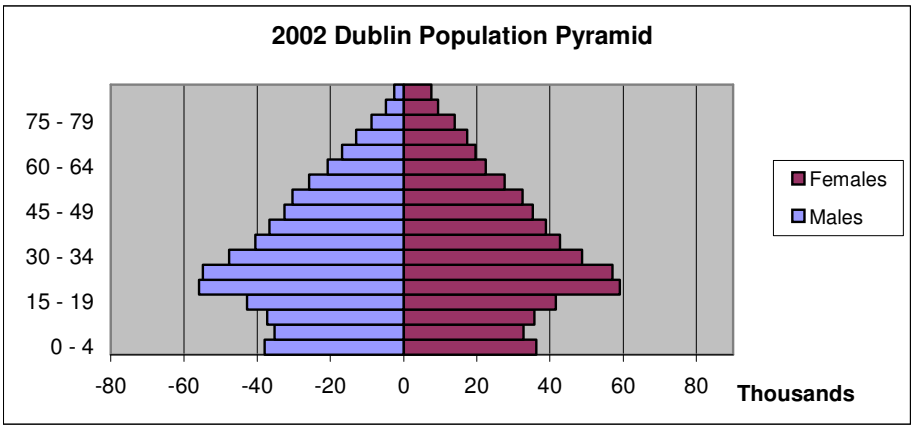
Note: For comparison purposes, Metropolitan Area population figures marked * are based on Electoral District zones and differ slightly from population figures based on DTO zones, which are quoted elsewhere in the report.

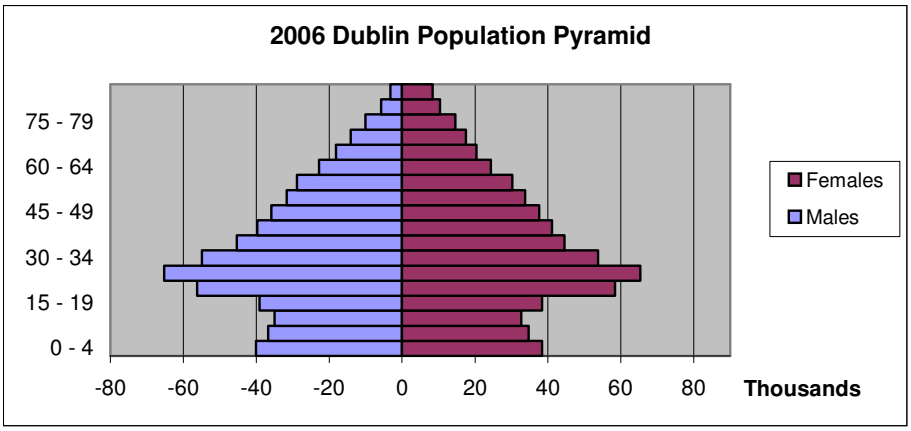
[1] The Census classifies houses by Sewerage Type, the DTO used new dwellings with septic tank as a proxy for one off housing.

3.4 Changing Population Structures

The age distribution of the Dublin and Mid East regions reflect two significantly different profiles. Figure 3.3 shows that in the Dublin area there has been an increase in population within the age bracket of 20-35. This reflects the large influx of population of working age (and noticeably migrant workers) who have moved into Dublin over recent years.

Figure 3.3 – Population Pyramids for Dublin Region (2002 and 2006)

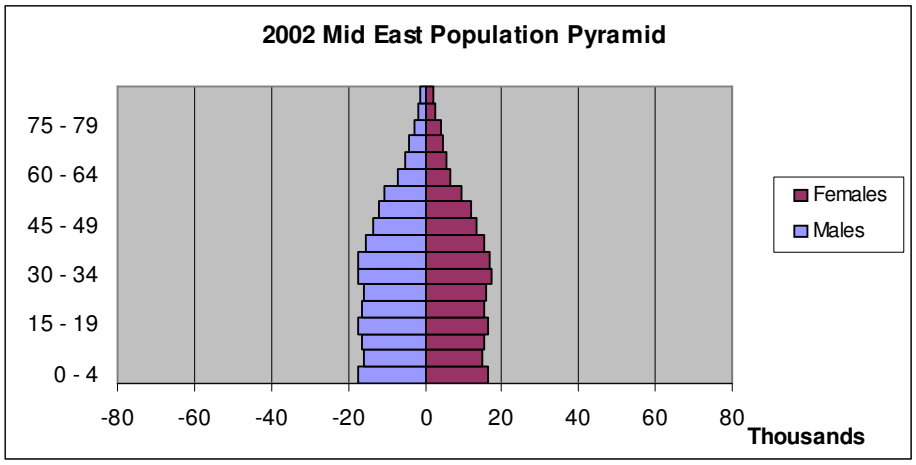




Source: CSO Census data

Figure 3.4 shows that in the Mid East region, although there is also an increase in the population of working age, it is less pronounced. More interestingly in the Mid East region is the relationship between the young working age and the population of young children. This reflects the recent trend of young families moving into starter homes in the Mid East region. This may be due in part to affordability issues.

Figure 3.4 – Population Pyramids for Mid East Region (2002 and 2006)



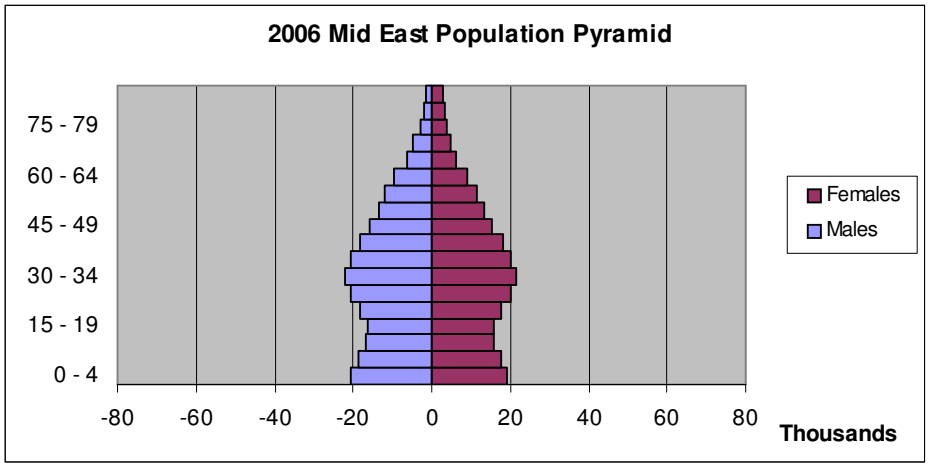
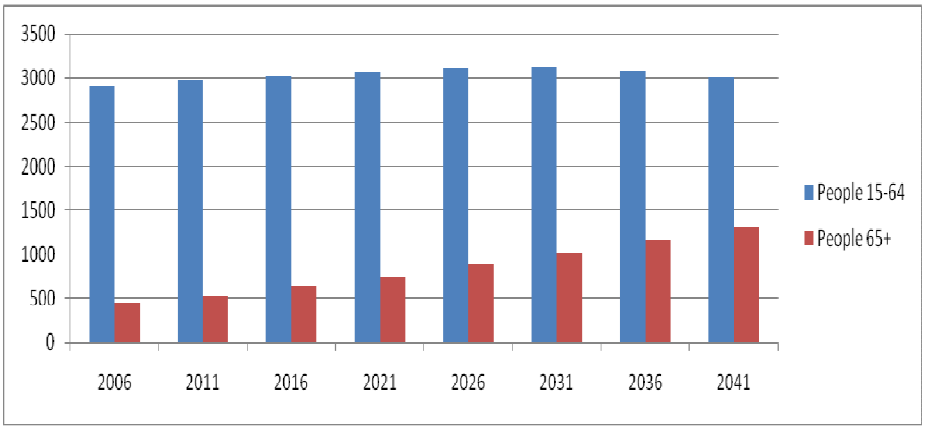


Figure 3.5 – Predicted rate of growth within 15-64 and 65+ age cohorts

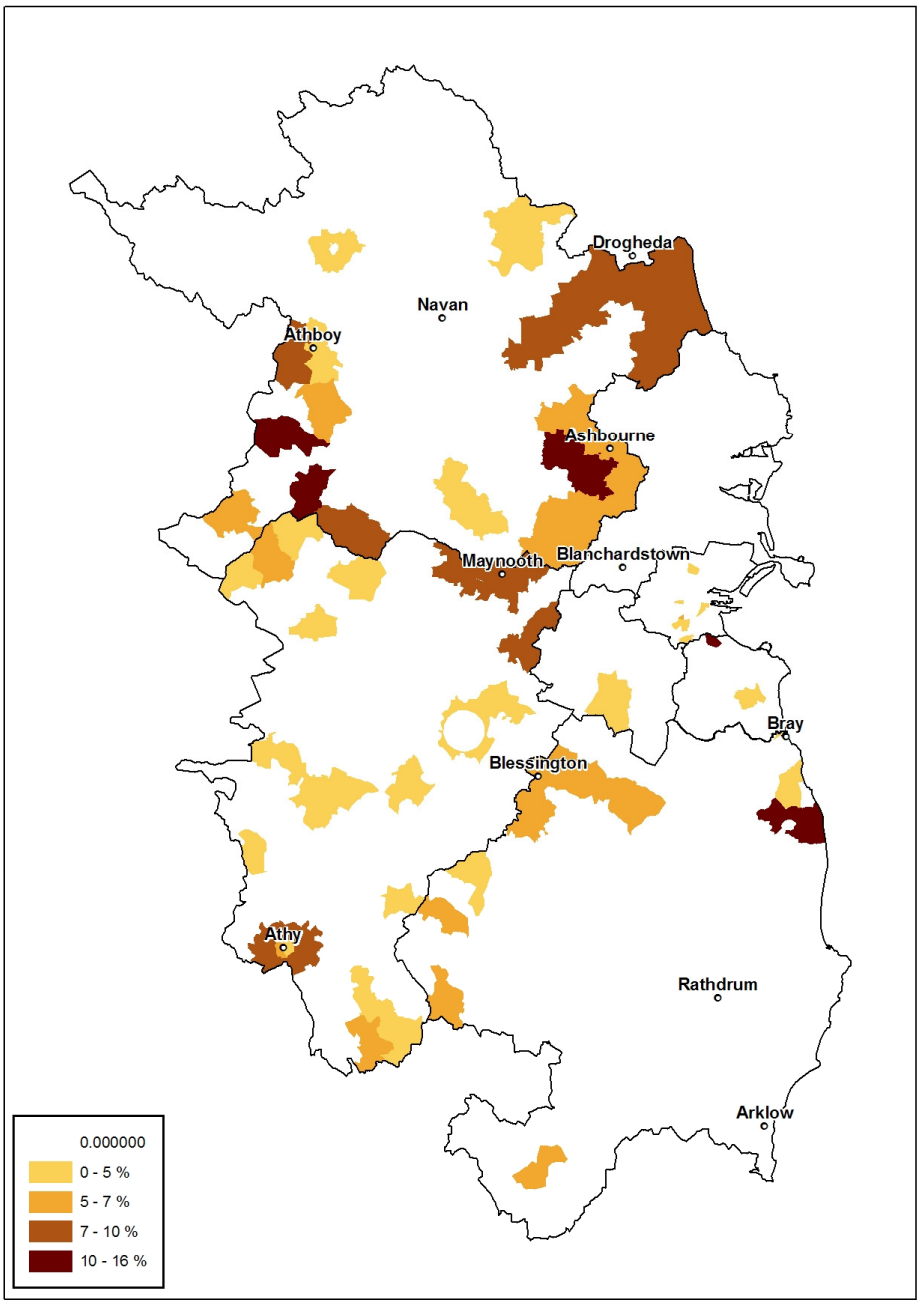


In terms of Irelands aging demographics,Fig. 3.5 illustrates the projected increase in the absolute number of older people from 2011 – 2041. In absolute numbers the older cohort will double by 2031.

Outward movement of Population

Figure 3.5 shows the percentage of the population in each area that moved to that area in the previous year. It highlights the movement of people from the Dublin urban area into the Mid East, and in particular the GDA Rural Hinterland areas outside the major growth towns.

Figure 3.5 – Percentage of people new to each Electoral District over one year (2005-2006)



Note: Excludes those who moved from elsewhere in the same County

Source: Census 2006

3.5 Households

In recent years there has been a substantial growth in the number of new dwellings in the GDA, with almost 70,000 new units constructed between 2002 and 2006. Although more units were built in the Dublin area, proportionally there has been a much higher level of construction in the Mid East, with a 23% increase in the housing stock over a four year period. This growth is illustrated in Table 3.3.

Table 3.3 - Growth in housing in the GDA (2002-2006)

	2002	2006	Growth 2002-2006	% Growth 2002-2006
Dublin	368,534	408,381	39,847	11%
Mid East	125,458	153,720	28,262	23%
GDA	493,992	562,101	68,109	14%

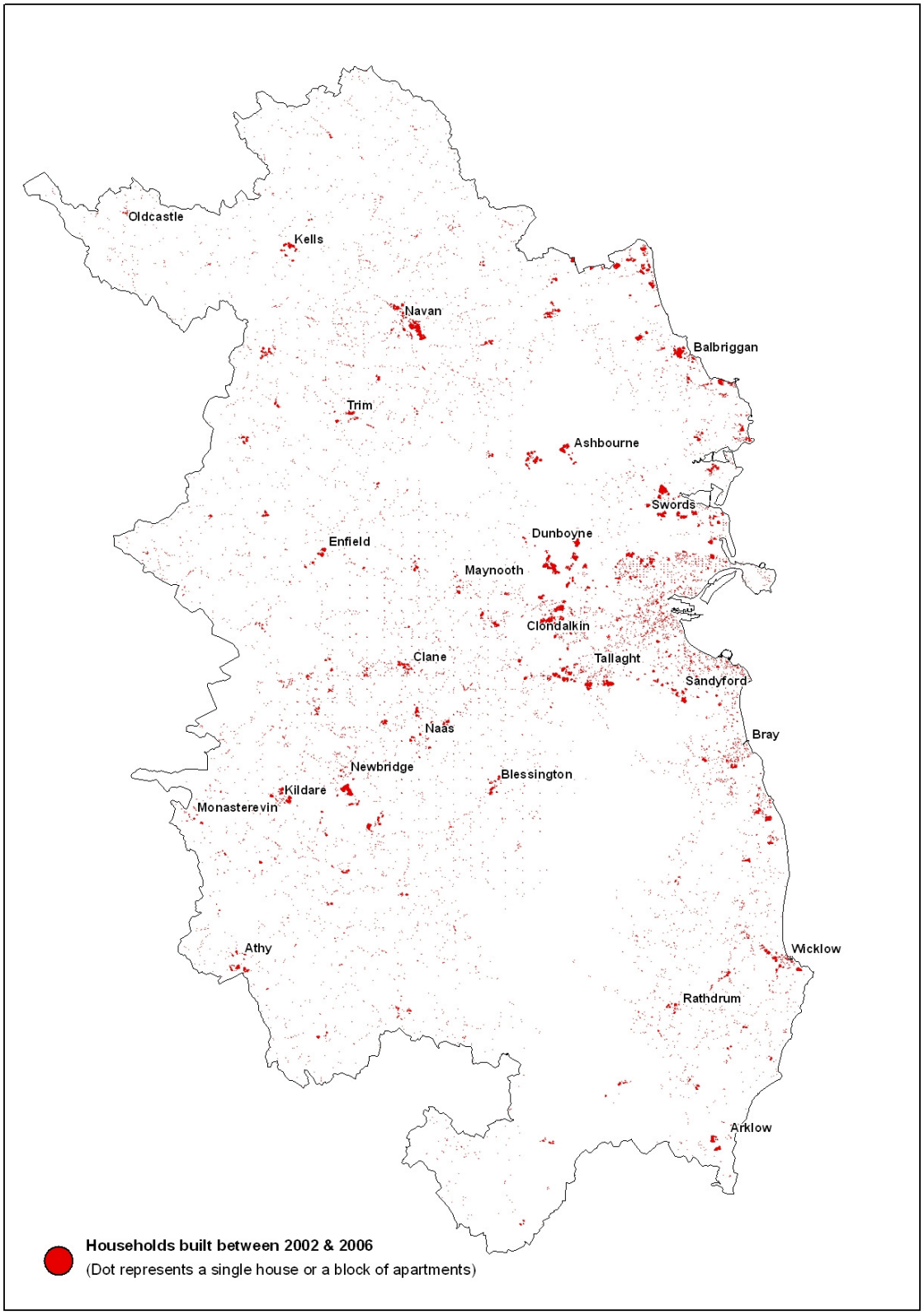
The rate of growth of households exceeds the rate of growth of population (Table 3.1) in both the Dublin and Mid East Regions, implying a trend towards smaller household sizes over the last four years.

3.6 Distribution of Housing Growth

The dispersal in housing can be seen in Figure 3.6, which illustrates the location of new houses from 2002 to 2006 using geo-directory point data[2]. This figure shows the spread of housing development throughout the GDA. Although it shows a degree of consolidation around the metropolitan area and Large Growth towns, there has also been a significant level of sprawl. Even development within the growth towns can be seen to significantly expand the footprint of the urban areas.

[2] The Geo_Directory is a product from An Post, it assigns geographical co-ordinates to every building in the country.

Figure 3.6 Distribution of Household growth 2002-2006



Source: An Post Geodirectory data (April 2006)

3.7 Decreasing Average Household Size

There has been a noticeable decline in the average household size, as shown in Table 4.2. In all areas (excluding the area 'inside canals', which has remained static) there has been a sharp decrease in the average occupancy of dwellings. This decline is most apparent in the Hinterland areas, which have seen average household size drop by 20% in four years.

Table 3.3 - Changes in Average Household Size (Refer to Figure 1.1)

Classification	Average HH Size 2002	Average HH Size 2006	% Change
Inside Canals	2.04	2.05	0%
Between Canals and M50	2.67	2.46	-8%
Between M50 and Metro Bdy	3.28	2.81	-14%
GDA Large Growth Hint. Town	3.21	2.58	-20%
GDA Rural Hinterland	3.31	2.72	-18%

3.8 Issues Raised During Public Consultation

Housing sprawl was identified as a key concern. Planning is identified as a problem as it fails to provide adequate solutions particularly in counteracting the sprawl and providing adequate facilities and public transport. While consolidation of development is generally supported in the comments there is a concern raised with both the level of local facilities provided for in high density developments and the provision of adequate public transport services. The cost of housing which forces people to move away from city centre and the consequent dislocation of people from their jobs is a key issue raised. There is a concern that planning and transport provision are not considered together. Design of residential areas, specifically the prevalence of cul-de-sacs is also seen as imposing a need to use the car. The need for better provision of local community services is also highlighted.

The public, during consultation, recognised the problem of housing costs, which has led to the dislocation of people from their jobs and the overall movement out from central and traditional suburban areas. Related to this, the importance of maintaining social and family ties and the provision of services for these communities was also stressed. One of the key issues raised by stakeholders was public transport availability, especially in newly developing areas.

As a counterbalance to this, it was suggested that consolidation of new population growth into the existing built up area of Dublin should occur, in tandem with the provision of employment.

There was a consistent call for the problems associated with current planning practice to be tackled. Issues raised include planning for the long term, the patterns of zonings, lack of integration with transport, coordination of public and private sectors to achieve common goals, the management of high rise development, public services for new residential areas, parking restraint, access to education, employment, retail and other amenities and the need for the overall intensification of development in central areas.

3.9 Conclusion and Issues Arising – Population

The above analysis, reveals a number of key issues. The faster rate of population growth in the Mid-East Area compared to the Dublin Area is of concern as it relates to the issue of urban sprawl, longer travel distances and difficulties in providing high quality public transport services to dispersed developments.

The structure of this growth reveals family forming age cohorts in particular are moving into the Mid East.

The emergence of long distance commuting is clear. Those of a family forming age living beyond the reach of public transport, have a very different set of travel patterns to the rest of the GDA, particularly when compared to Metropolitan Dublin.

Due to the projected doubling of the older cohort (65+) in absolute numbers by 2031 (national figures) the transport system will have to start focusing more closely on understanding their mobility and accessibility needs, so as to ensure that specific requirements of this large segment are not being ignored.

In general older people tend to travel ‘off-peak’. Projections for 2021 illustrate that 15% of the population will be 65+ and therefore there will be a larger demand for public transport services at ‘off-peak’ times. Consequently there may be a blurring of lines between ‘peak’ and off-peak’ demand.

4. Employment

4.1 Introduction

The following section sets out the patterns of employment in the GDA as it relates to overall figures and spatially to trends in employment type and socio-economic groups. The data used in this section are derived from two sets of CSO data, namely Small Area Population Statistics (SAPS) and Place of Work Census of Anonymised Records (POWCAR). The SAPS relate solely to place of residence of respondents, origins, whereas POWCAR provides both place of residence and information on place of work, destinations (although the information is not as detailed as SAPS).

This section will reveal the patterns of employment growth and distribution in the GDA. It will examine the trends toward suburbanisation of employment and the changing nature of these jobs and the consequences for the GDA.

4.2 Employment – Summary of RPG Objectives

- Concentrate employment intensive activities close to public transport corridors and road transport intensive activities close to the strategic road network (Policy Context - Page 13)

- **To maximise the scale of markets for the full range of economic inputs and outputs, with maximum accessibility at minimum travel cost**: Competitiveness in most economic sectors is boosted by having the largest population and economic mass within the shortest travel time or lowest cost (Objective 3.1)

- **To integrate the land use pattern with the transport system:** The propensity to use public transport depends on convenience, and particularly proximity and "total journey quality." Location of significant origins and destinations should be focused around multimodal interchanges between bus, rail, car, cyclists and pedestrians (Objective 5.2)

4.3 GDA Overview

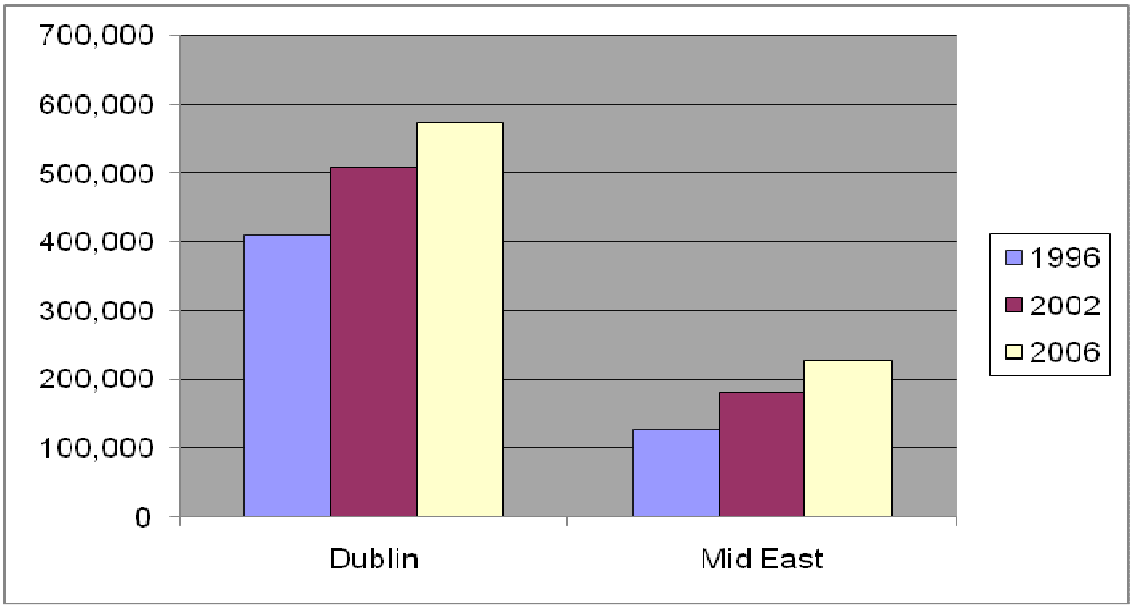
The number of GDA residents at work has grown significantly from 537,350 jobs in 1996 to 800,240[3] in 2006, equating to a growth of 48%. 572,896 or 72% of residents at work are located in the four local authority areas comprising the Dublin region.

Table 4.1 – Employment in the GDA 1996 – 2006 (by place of residence) (Refer to Figure 1.1)

	1996	2002	2006
Dublin	409,153	508,032	572,896
Mid East	128,197	181,120	227,344

[3] CSO Census of Population, 1996 and 2006 Numbers "At Work".

Figure 4.1 - Employment in the GDA 1996 – 2006 (by place of residence)

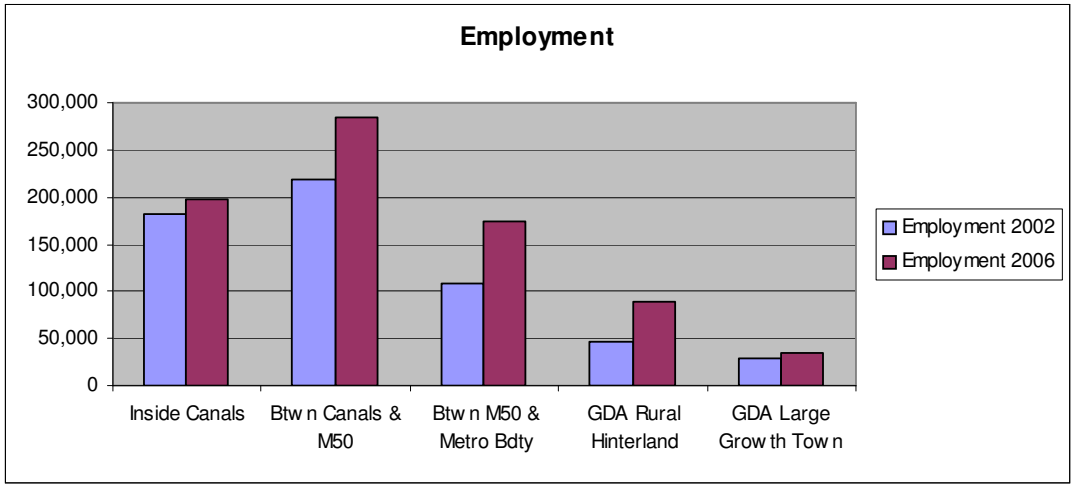


Source: CSO Census

4.4 Employment Distribution

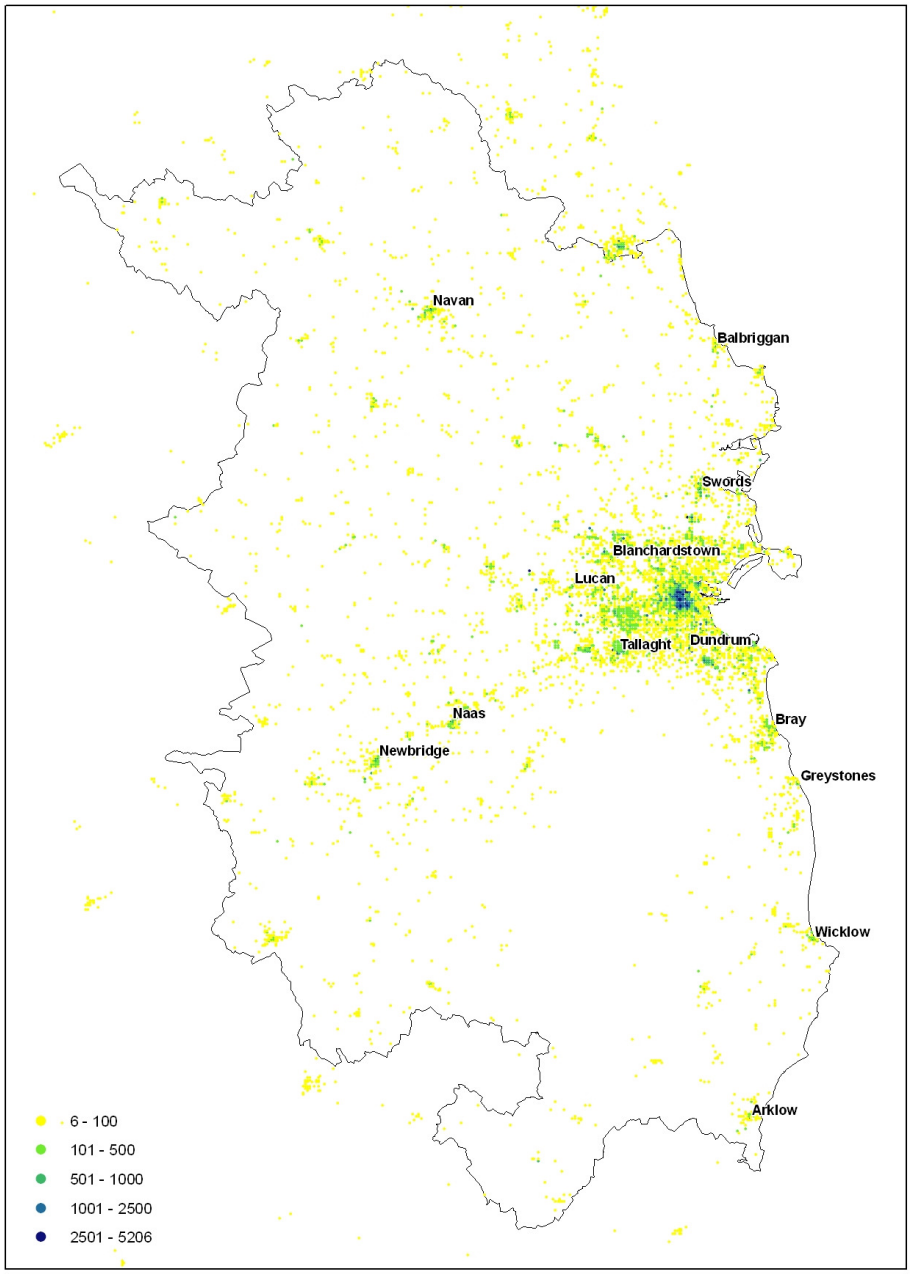
The spatial distribution of jobs is set out in Figure 4.2 and 4.3. They show that the highest growth in jobs is occurring in between the Canals and the Metropolitan Boundary, especially outside the M50. Employment is also growing in the Rural Hinterland (which includes smaller towns and villages). There has only been a slight increase within the canals and in the Large Growth towns. The greatest numbers of jobs are in the area between the M50 and Canals and the proportion here relative to the central area is also increasing. This has major implications for travel behaviour, as these areas have not been traditionally the focus of the public transport network.

Figure 4.2 – Employment by Sub Area Level (at workplace) (2002-2006)



Source: CSO Census 2006, DTO

Figure 4.3 – Distribution of Employment by workplace 2006



4.5 Employment Sectors

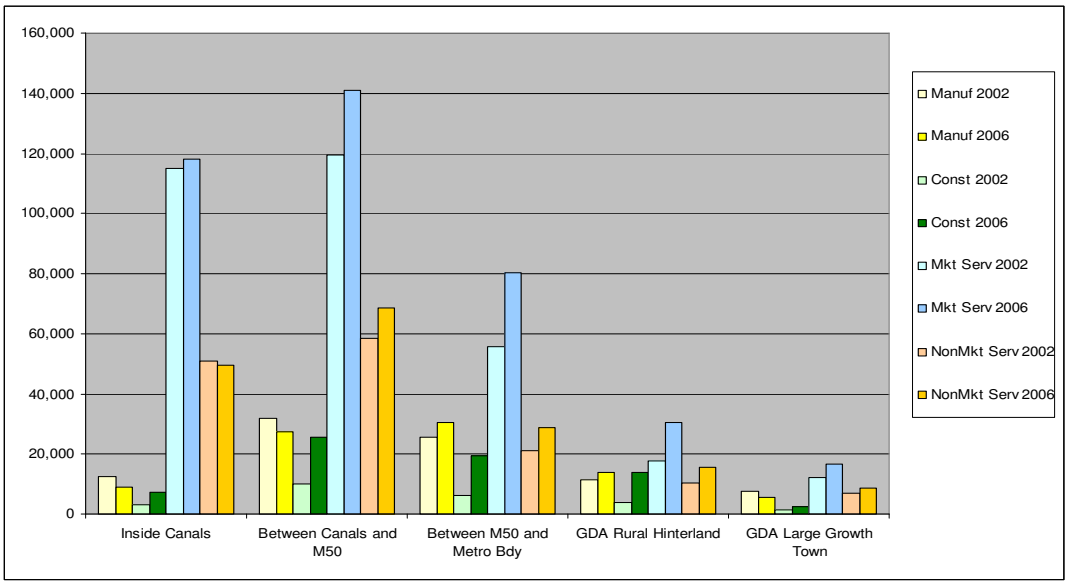
In relation to the sectors of the economy GDA residents are employed in, the following trends have been evident in the most recent inter-censal period:

- Major Growth in Services
- Growth in Construction
- Fall in Manufacturing

However this overview disguises some spatial variances that may have consequences for travel in the GDA. The service sector is strongly growing in the suburban and outer areas of the region while

remaining relatively stagnant in the central area. Manufacturing is in decline in central Dublin, the inner suburbs and major Hinterland towns. Construction increased across the GDA, most notably in the outer suburban and rural areas. Figure 4.4 shows the changes in the various sectors in the GDA between 2002 and 2006.

Figure 4.4 – Changes in Employment Sectors 2002 – 2006



The share of total jobs in Market Services falls off with distance from the city centre and Large Towns. Manufacturing increases to its highest share in the Metropolitan Area and the Rural Hinterland.

The geographical distribution of Market Services has implications for travel and transport in the GDA. These types of jobs generally comprise office and retail jobs where more people per square metre can be accommodated than in a factory or warehouse for example.

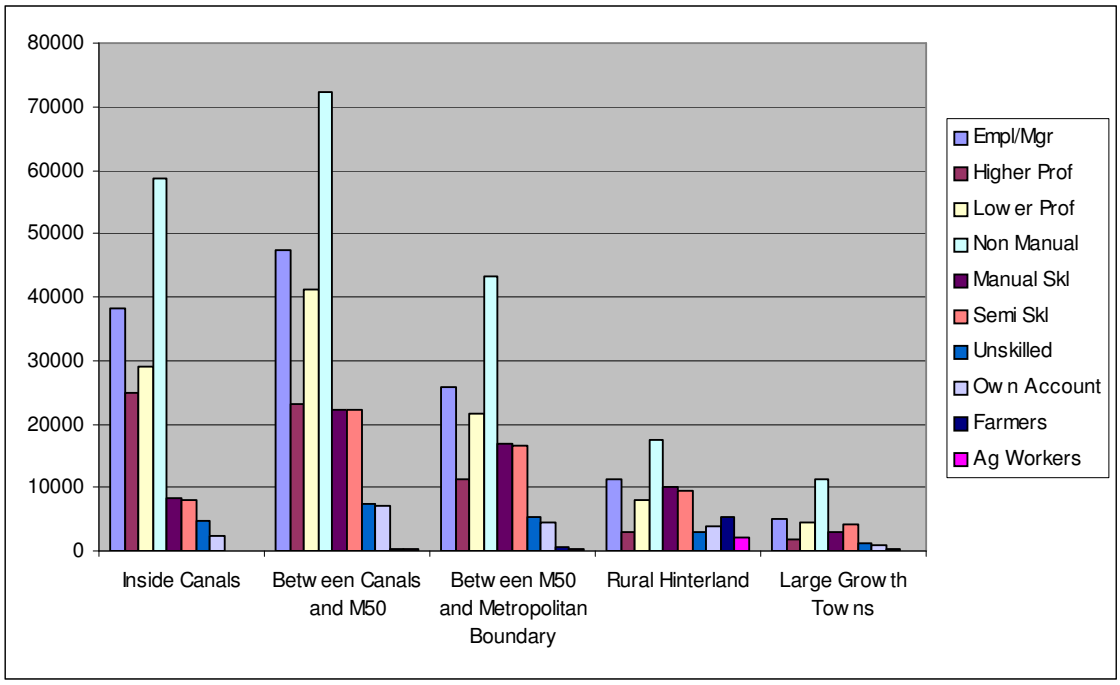
The distribution of Socio-Economic Groups (SEGs) across the City and Region is important, as it is generally believed that those in higher income jobs are more likely to have access to a car. Table 4.2 below shows the number of persons in employment in the GDA by SEG group. Over 70% of workers are in the Managerial, Professional or Non-Manual SEG groups. This reflects the dominance of office and retail work.

Table 4.2 – Socio Economic Groups in the GDA (2006)

Social Economic Group	Absolute	Percentage
Employer / Manager	127,987	18.00%
Higher Professional	64,394	9.10%
Lower Professional	104,456	14.70%
Non Manual	202,790	28.60%
Manual Skilled	60,464	8.50%
Semi Skilled	60,499	8.50%
Unskilled	21,498	3.00%
Own Account Workers	18,447	2.60%
Farmers	6,458	0.90%
Other Workers	2,705	0.40%
Others	40,163	5.70%
Total	709,861	100.00%

Figure 4.5 below shows how these SEGs are distributed in the GDA in relation to place of work. It reveals the dominance of the Managerial, Professional and Non Manual Group across the five Sub Areas (illustrated in Figure 1.1). There is a high proportion of higher professionals in the two Sub Areas inside the M50, tapering off as one moves to more suburban locations. The majority of Manual Skilled and Semi-Skilled employees work inside the Metropolitan Area and Inside the M50, reflecting the presence of traditional industry and trades in these locations.

Figure 4.5 – Socio-Economic Group by Sub Area



4.6 Conclusions and Issues Arising

The highest growth in jobs is occurring in Metropolitan suburban areas and the Rural Hinterland (which includes smaller towns). There has only been a slight increase within the Canals and in the Large Growth Hinterland towns. The greatest numbers of jobs are in the area between the M50 and Canals and the proportion here relative to the central area is also increasing. This has major implications for mode choice, as these areas have not been traditionally the focus of the public transport network.

The growth in jobs is primarily in the commerce/market services sector. Many of these jobs are office jobs that, from the point of view of public transport accessibility, would be most appropriately located centrally and at public transport hubs.

Over 70% of workers are in the Managerial, Professional or Non-Manual SEG groups. This reflects the dominance of office and retail work

The following section on travel to work shows how patterns of employment are impacting on travel behaviour in the region and how pivotal the location of jobs relative to housing is in determining how people travel.

Travel to Work

5.1 Introduction

This section outlines the key issues for the GDA as they relate to travel to places of work.

The Data used in this section is from the Central Statistics Office "Place of Work Census of Anonymised Records 2006" (POWCAR). This data gives information on people's travel to work patterns. It records both the place of residence and place of work. Information about mode choice, Socio-Economic Group, distances travelled and time taken to get to work can be extracted from this data. Only people who either live or work in the GDA are included. Workers who have not given a destination for their workplace (e.g. sales) have been excluded. These make up 8% of respondents.

This section shows the variations in travel patterns across the GDA and examines the main factors driving varying levels of demand, and influencing mode choice. The main thrust of the section is that there is a sharp divide in the region with respect to travel behaviour. The determining factor is the locational relationship between residence and place of work. It shows that there are very different patterns and forms of commuting for those who live or work outside the M50.

CSO census data show that the number of journeys by GDA residents to work grew by 51% over the ten year period 1996-2006, with an 89% growth in the Mid-East Region and a 40% growth in the Dublin Region.

5.2 Jobs to Population Ratio

Table 5.1 shows the ratio of jobs to population by GDA Sub Area based on 2006 census data. On average, the ratio of fixed jobs to population in the GDA is 0.43[4]. A key influence on people's need to travel to work is availability of work in the area in which they live. The data broken down by GDA Sub Areas show that jobs outnumber population in Dublin city centre. This is to be expected, as the city centre is the economic hub of the Greater Dublin Area. Elsewhere the ratio of jobs to population is below the GDA average, particularly so in GDA Rural Hinterland. Long distance travel to work out of these areas to work in more central areas is therefore to be expected.

[4] Mobile jobs are excluded, so overall GDA employment levels are higher than shown.

Table 5.1 Jobs to Population Ratios by Sub Area (2006)[5]

Sub Area	Jobs	Population	Jobs/ Population Ratio
Within Canals	184,866	109,411	1.69
Between Canals and M50	257,796	689,852	0.37
Between M50 and Metro Boundary	155,147	443,466	0.35
Rural Hinterland	78,456	320,968	0.24
Large Growth Hinterland Towns	35,598	98,870	0.36
GDA	711,863	1,662,567	0.43

5.3 Distance Travelled to Work

5.3.1 Overview

The average distance travelled to work in the GDA was 14.61km in 2006, a small increase on the 2002 figure of 14.23km. 65% of people lived within 10km of their place of work.

5.3.2 Distance Travelled to Work (By Place of Residence)

Table 5.2 and Figure 5.1 show that those living in the Hinterland tend to travel longer distances to work than average. The majority of working residents of the Rural Hinterland (including smaller towns) travel over 15 km to work. In the city centre, the corresponding figure is only 6%.

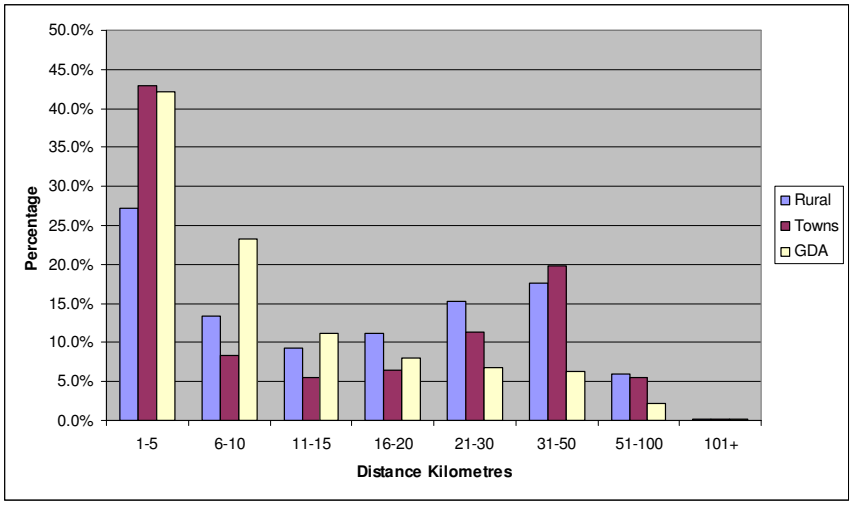
In the Rural Hinterland, far fewer travel short distances to work than in Large Growth Hinterland Towns. For the Large Growth Towns, large proportions travel short distances to work. However large proportions also travel long distances. This pattern reflects the fact that those who are not employed within these towns must travel long distances to work, most likely within the Dublin Metropolitan Area.

[5] Mobile jobs are excluded, so total employment levels are higher than shown.

Table 5.2: Distance travelled to work (by place of residence)

Sub Area	1-5km	6-10km	11-15km	16-20km	21-30km	31-50km	51-100km	101+km
Inside Canals	72.5%	15.5%	6.1%	3.0%	1.6%	0.8%	0.3%	0.1%
Between Canals and M50	50.5%	30.7%	9.5%	4.9%	2.6%	1.2%	0.4%	0.1%
Between M50 and Metro Bdy	33.9%	24.9%	17.8%	12.3%	7.3%	2.9%	0.7%	0.1%
GDA Rural Hinterland	27.2%	13.3%	9.3%	11.1%	15.3%	17.6%	6.0%	0.2%
Large Growth H'land Towns	42.9%	8.4%	5.5%	6.4%	11.3%	19.8%	5.5%	0.2%
GDA	**42.1%**	**23.3%**	**11.2%**	**8.0%**	**6.8%**	**6.2%**	**2.2%**	**0.1%**

Figure 5.1: Distance Travelled to Work By Place of Residence (Selected Sub Areas)



Note "Rural" means Rural Hinterland, and "Towns" means Large Growth Hinterland Towns

Source: CSO Census 2006

5.3.3 Distance Travelled to Work (By Place of Work)

Table 5.3 shows the various distances people travel to places of work by GDA Sub Areas. The primary workplace destinations lie within the Metropolitan Area (86% of all work trips are to these destinations –ref Figure 4.1). There are no major differences in distances people travel to the places of work in the Metropolitan Area, although average trip length to work between the Canals and the M50 is shorter than to other work destinations. The share of long distance trips (>15km) to work is highest to workplaces outside the Metropolitan Area (30%). This suggests that increased employment

in the Hinterland Area, as advocated by the 2004 Regional Planning Guidelines, may not actually succeed in reducing average travel distances to work.

Table 5.3: Distance Travelled to Work (by Place of Work)

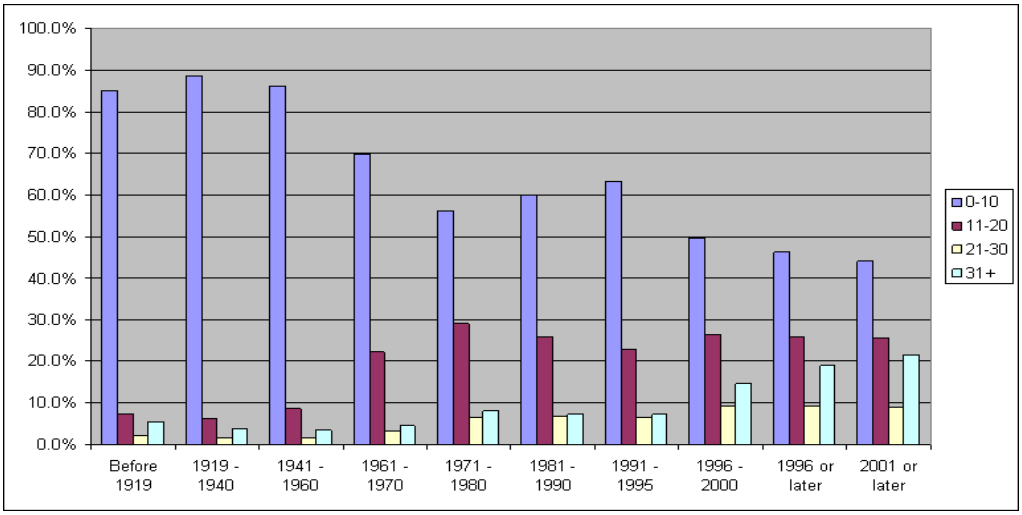
Sub Area	1-5km	6-10km	11-15km	16-20km	21-30km	31-50km	51-100km	101+km
Inside Canals	38.4%	26.7%	12.9%	7.2%	5.6%	5.8%	3.1%	0.5%
Between Canals and M50	43.9%	23.9%	10.2%	7.2%	5.9%	5.3%	3.2%	0.4%
Between M50 and Metro Bdy	37.9%	21.1%	11.2%	9.4%	8.1%	7.7%	4.2%	0.5%
GDA Rural Hinterland	43.9%	17.2%	9.4%	8.7%	8.7%	8.2%	3.6%	0.3%
Large Growth H'land Towns	46.9%	13.4%	9.2%	9.0%	8.9%	9.1%	3.3%	0.3%
GDA	**41.3%**	**22.8%**	**11.0%**	**7.9%**	**6.7%**	**6.4%**	**3.4%**	**0.4%**

5.3.4 Distance Travelled by Year of House Built

The age of houses in the GDA correlated with workers travel patterns, gives a clear picture of the growth of commuting in the region. The evidence strongly indicates that newer houses tend to be built more distant from places of employment.

Figure 5.2 illustrates the relationship between the year that a house was built and the distance travelled to work by occupiers employed within the canals. It shows the scale of the long-distance commuting problem and how it relates to the growth of the city in recent years. Over one-third of those employed within the canals, living in a dwelling built since 1996, travel over 21 kilometres to their place of work. Over one quarter of this group travel more than 31 Kilometres to their Place of Work. The figures are similar for places of work located between the Canals and the M50 and broadly similar among more recent houses for those working Outside the M50 but inside the Metropolitan Area.

Figure 5.2: Distance (km) travelled to place of work inside Canals, by year house built

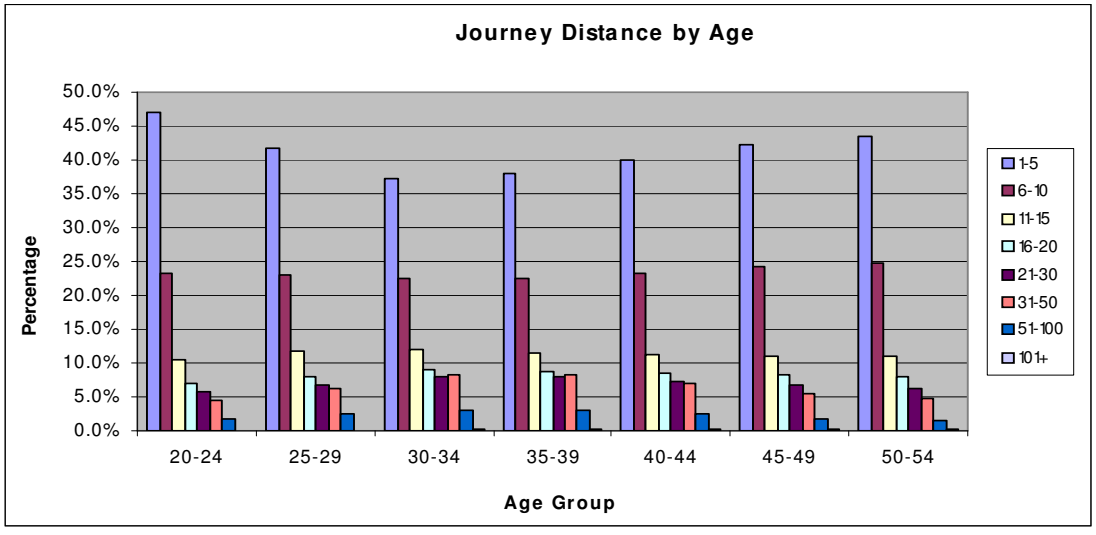


Source: CSO Census 2006

5.3.5 Distance Travelled by Age – A New Generation of Commuters

A comparison of the distance to work by age of worker shows that those in their thirties travel further than those in younger or older age groups. This may reflect a move away from workplaces to larger family homes for this age range.

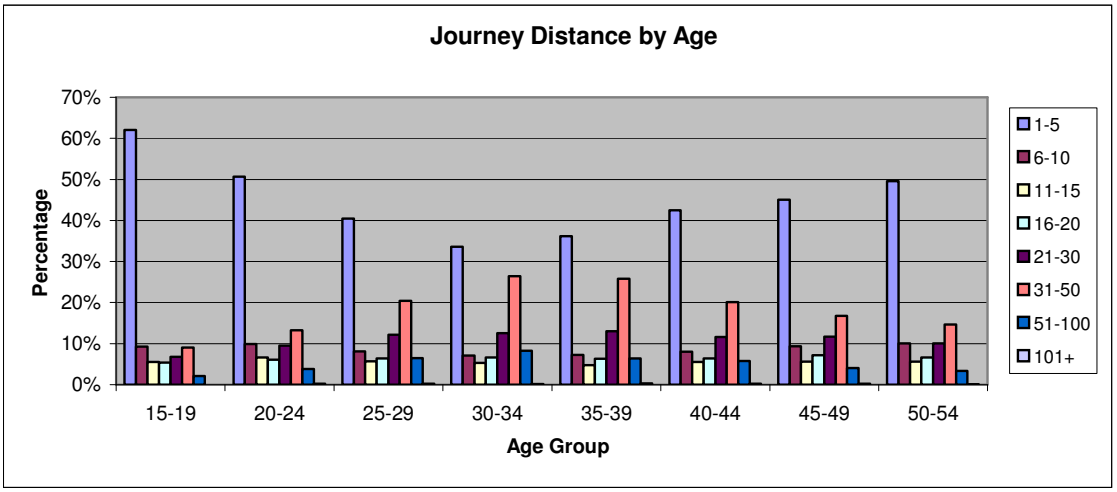
Figure 5.3: Distance Travelled to Place of Work by Age in the GDA (selected age bands)



Source: CSO Census 2006, DTO

This is accentuated when the Hinterland Growth Towns are examined. The 30-39 age group are significantly more likely to travel over 30km to work. This is illustrated in Figure 5.4.

Figure 5.4: Distance to Place of Work by Age (Hinterland Large Growth Towns Residents)



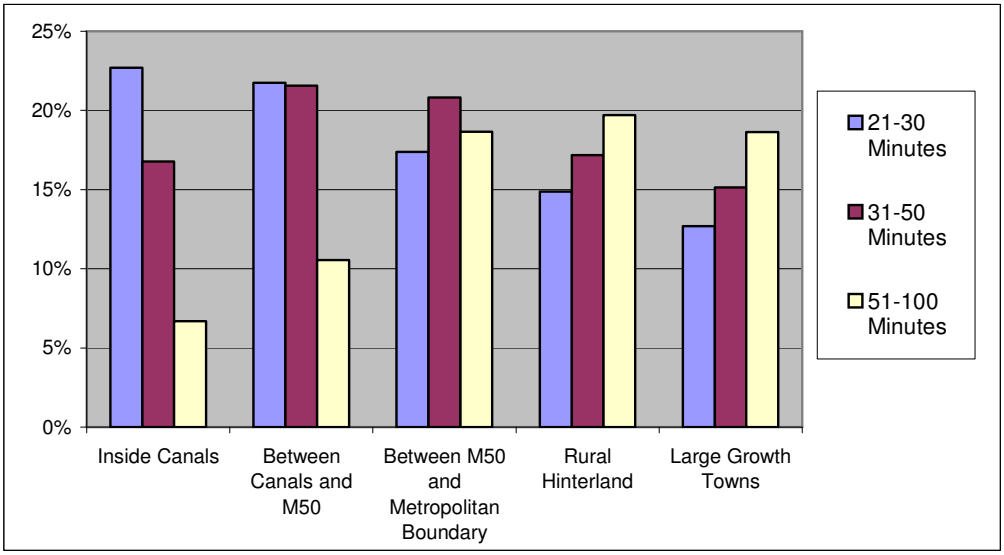
Source: CSO 2006, DTO

5.4 Travel Time

5.4.1 Travel Time to Work Destinations

Figure 5.5 shows the variation in commuting times to work across the 5 Sub Areas of the GDA. The graph shows the percentage of people who travel for more than 20 minutes to work per day. What it reveals is that the further one lives from the city centre the more time one takes to get to work. This is a major feature despite the fact that there are more jobs in outer areas than Inside the Canals. 19% of workers living in the Rural Hinterland travel more than 51 minutes to work. This is close to double the percentage for those living Inside the M50.

Figure 5.5: Time Taken to Travel to Work (by Place of Residence)



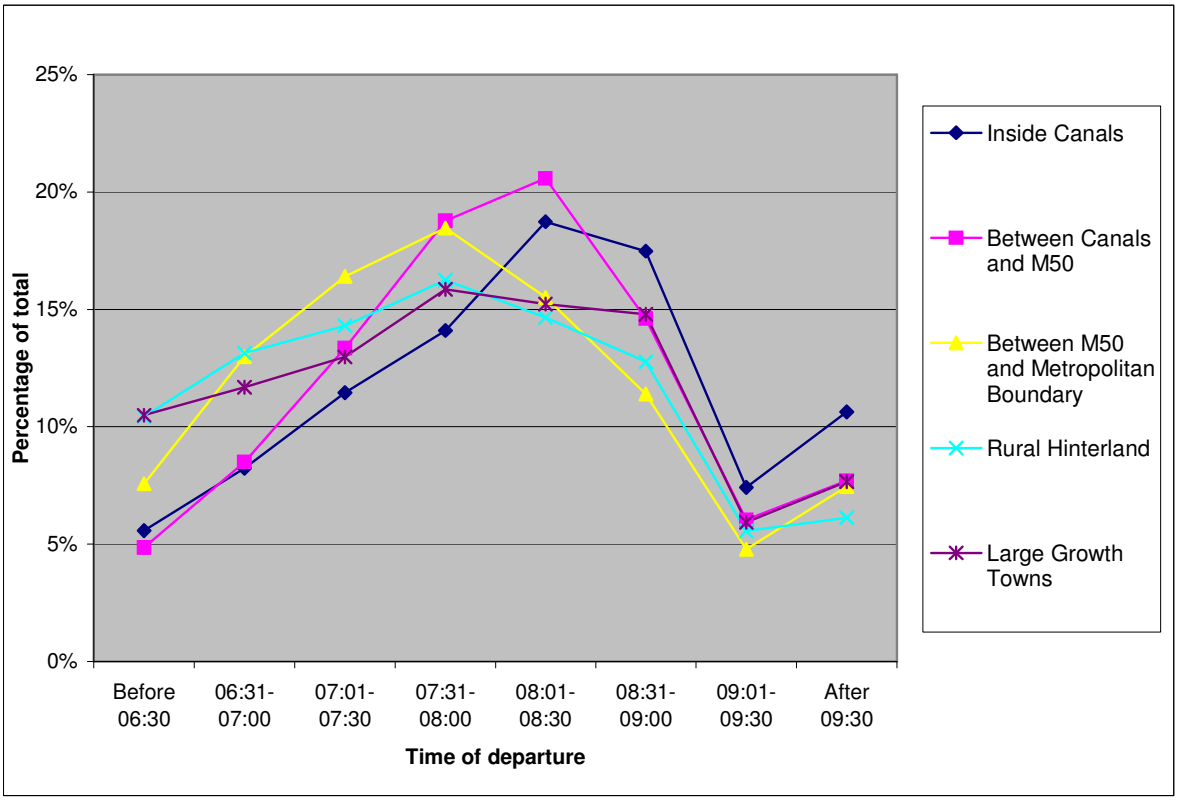
Source: CSO Census 2006, DTO

5.5 Departure Time

5.5.1 Departure time (by Place of Residence)

Figure 5.6 shows how those living in the outer areas, Rural Hinterland and Large Growth Towns, tend to leave for work earlier than the GDA in general. One of the most telling statistics to emerge includes the fact that over 20% of workers living in GDA Hinterland areas ("Rural" and "Towns" in Figure 6.7) leave before 7am. The figure for Inside the M50 is approximately 13%

Figure 5.6: Departure time to work



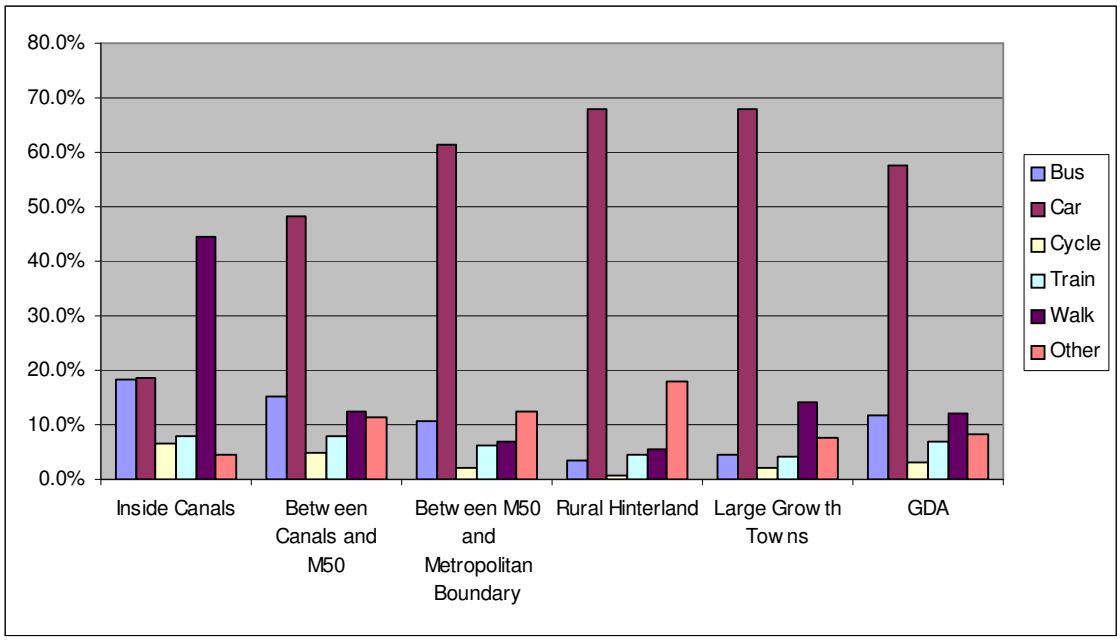
Source: CSO Census 2006, DTO

5.6 Mode Share

5.6.1 Mode Share (from Home)

Figure 5.7 shows that the tendency for people to use the car to get to work is far less in the central area. The presence of alternatives to the private car keeps the car mode share within the M50 to below 50% with walking and bus being the next most popular. For residents within the Canals car share is approximately 20%. For those living outside the M50 however, car is the dominant means of getting to work. In the Hinterland Area, car use dominates (almost 70%).

Figure 5.7: Travel to work mode share (by place of residence)

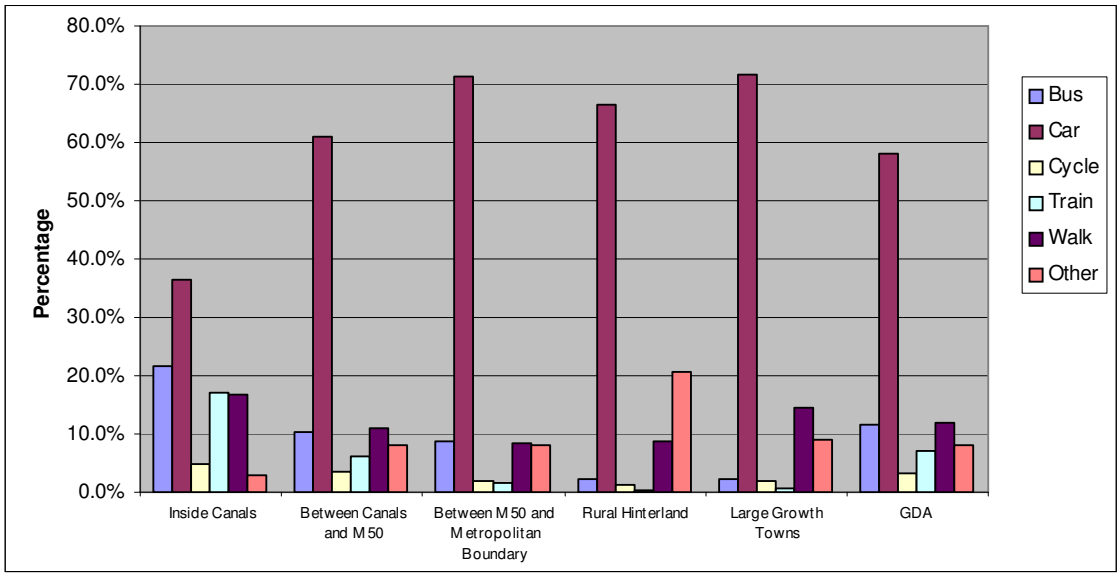


Source: CSO Census 2006, DTO

5.6.2 Mode Share (by Place of Employment)

Car Mode share for travel to workplaces located Inside the Canals is far lower than elsewhere in the GDA. Car mode share to work inside the Canals is approximately half that to workplaces outside the M50. This is illustrated in Figure 5.8 and Table 5.5.

Figure 5.8: Travel to work mode share (at workplace)



Source: CSO Census 2006, DTO

Table 5.4: Car (driver+passenger) share for selected Sub Areas

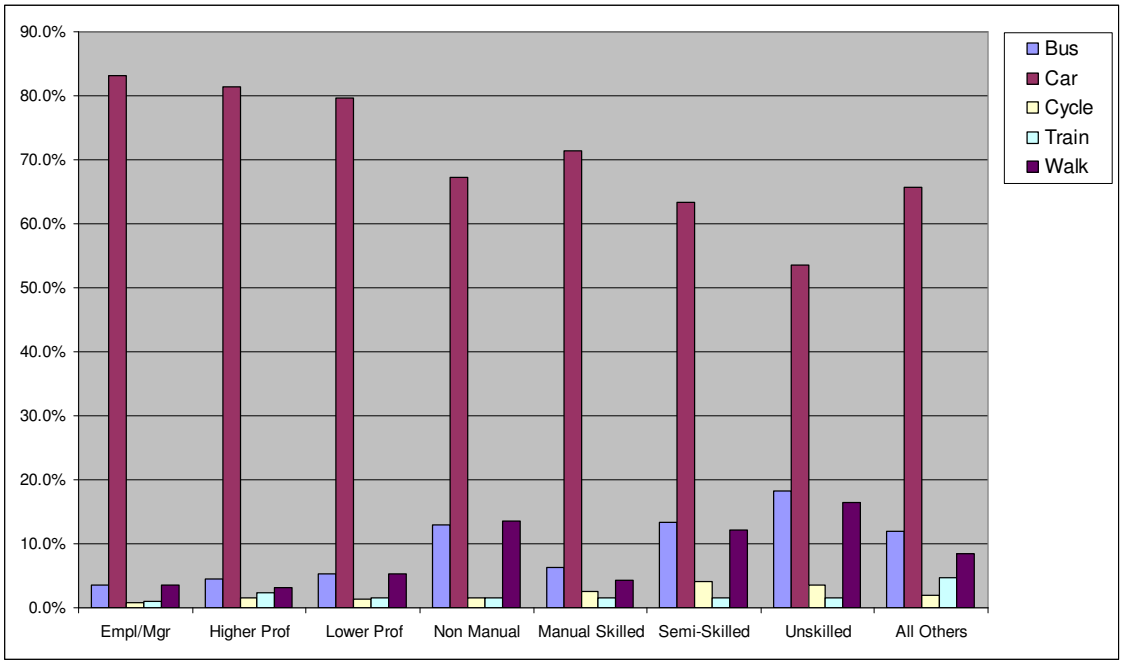
Workplace Sub Area	Car+ Passenger Mode Share
Inside Canals	36.5%
Between Canals and M50	61.0%
Between M50 and Metro Bdy	71.4%
GDA overall	57.6%

The car mode share for travel to jobs located Inside the Canal Cordon is far less than the rest of the urban area (Table 5.4). The contrast with the Metropolitan Area outside the M50 is particularly striking. This can be attributed to number of factors, including the absence of public transport links between employment locations on the periphery and residential areas.

5.6.3 Mode of Travel to Work – Influence of Socio-Economic Group (SEG)

Socio-economic group has some effect on mode choice, generally higher socio-economic groups (professional, managerial groups) are more likely to travel to work by car, and less likely to use public transport or cycle or walk. As an example, Figures 5.9 shows the Mode Split by socio-economic group for the Sub Area between the M50 and Metropolitan boundary.

Figure 5.9: Mode Split by SEG (between M50 and Metropolitan Area boundary)



Note: Excludes travel by "Other" modes (e.g. van, motorbike)

Source: CSO Census 2006

5.7 Trends in Mode Share (Travel to Work and Education Combined)

There has been a general trend towards more car use to work and education between 1996 and 2006, except for city centre residents.

Figures overleaf (Figure 5.10-5.14) illustrate those trends for travel to work and school combined, for the five Sub Areas defined in Figure 1.1.

Within the city centre, an increasing share of residents are cycling, walking or using public transport to get to work or school. Between the city centre and the M50, there has been a slight decline in walking and cycling, a small increase in public transport use and an increase in car drivers. Outside the M50 there has been an increase of between 10 and 15% in car driver mode share. This has mainly been at the expense of walking and bus, with a decline in cycling also evident, from a low base.

Figure 5.10: Mode share trends (travel to work or education) – city centre residents

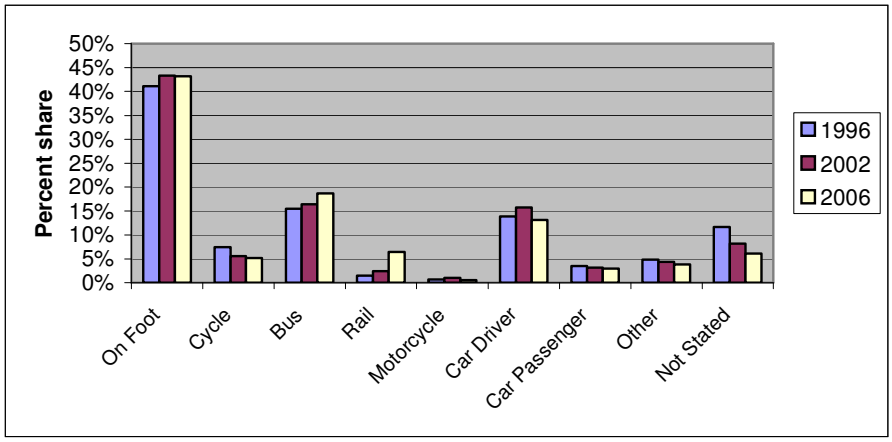


Figure 5.11: Mode share trends (travel to work or education) – residents between city centre and M50

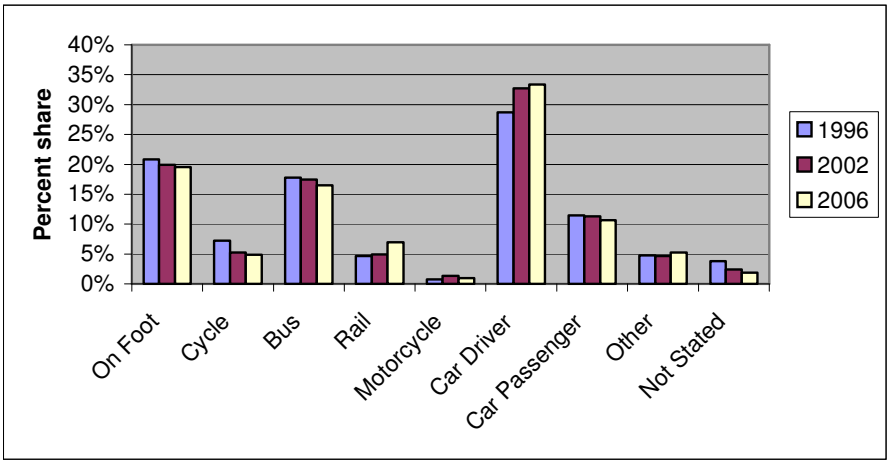


Figure 5.12: Mode share trends (travel to work or education) – residents between M50 and Metropolitan Area boundary

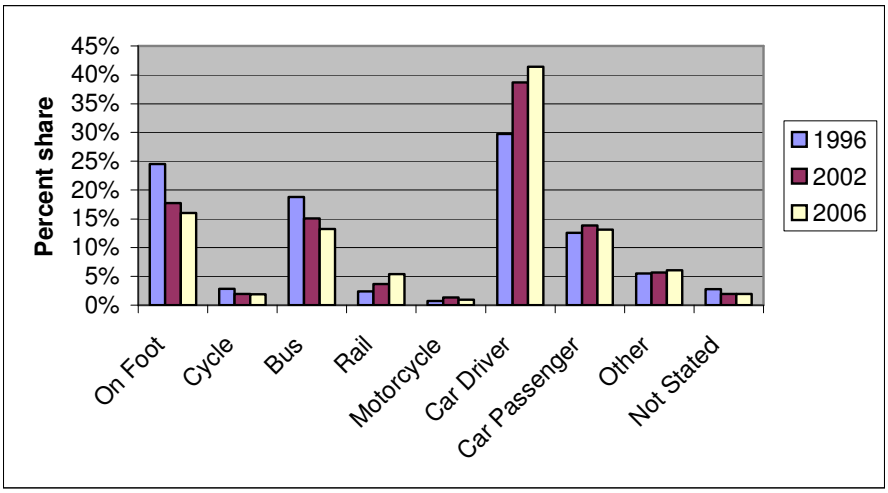


Figure 5.13: Mode share trends (travel to work or education) – Hinterland Area residents (Large Growth Towns)

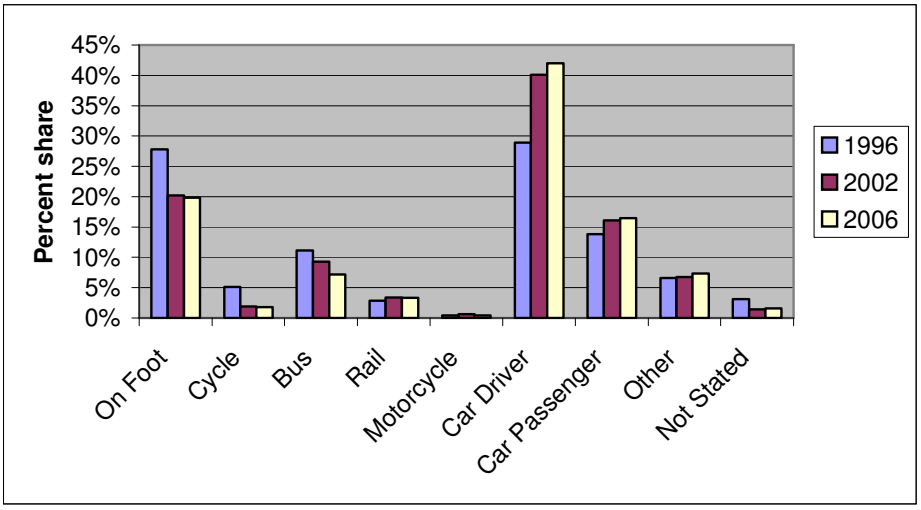
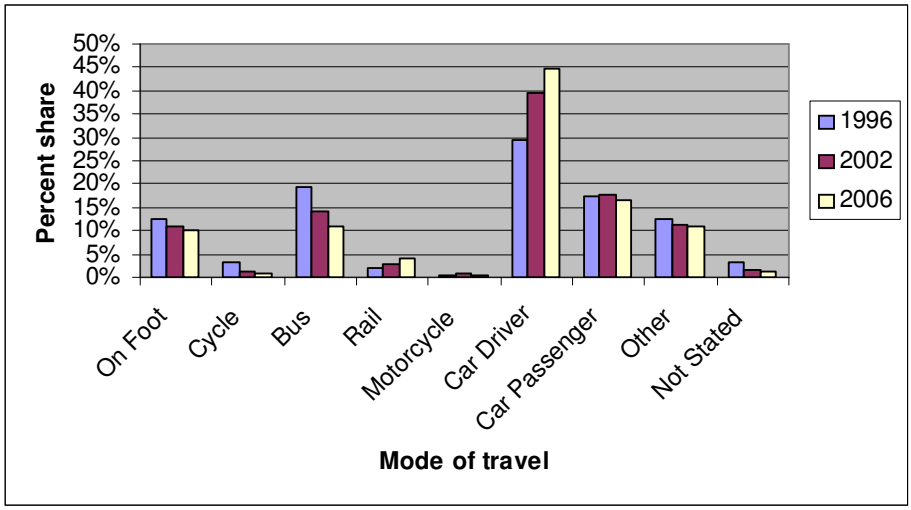


Figure 5.14: Mode share trends (travel to work or education) – Hinterland Area residents (smaller towns and rural areas)



Source: CSO Census data

5.8 Conclusions and Issues Arising

A number of key patterns have emerged from the analysis of CSO Census data, namely:

- Distances travelled to work are longer for those living in outer areas, and in newer houses
- Time taken to travel to work is greater in the Hinterland Area.
- People living in the Rural Hinterland, including many large urban areas, have a greater tendency to leave for work earlier
- Mode choice for travel to work is determined both by location of home and location of job. The less central either is, the more likely it is that car will be used.
- Managerial and professional socio-economic groups are less likely to walk, cycle or use public transport
- For travel to work and education combined, over the ten year period 1996-2006, there has been a significant decline in walking cycling and public transport share, and a corresponding growth in car share. The increase in car share has been most pronounced in smaller towns and rural parts of the Hinterland Area.

6 Education, Retail and Other Community Facilities

6.1 Introduction

This section outlines the main factors influencing travel and the patterns and trends related to community facilities. This broad title refers to land uses such as education, retail, services and recreation.

The data used in the education sub-section of this section is from the DTO Education Survey carried out in 2006. A questionnaire was sent to every school in the GDA, primary, post-primary and third level. Each student was asked a range of questions from how far they travelled to school to why they chose one mode over another. From the responses a picture of the trip patterns to education each day could be created. These are of significance as the time of departure to school coincides with that of employment, adding to congestion and increasing journey times.

In relation to the retail, leisure and other home-based travel, the DTO Household Survey from 2006 has been used as the primary source of data. This surveyed travel behaviour of residents of the GDA and contains data on trips for various purposes.

Overall, the key issue that emerges is the poor level of access to these facilities by sustainable travel modes. This phenomenon ranges from the location of facilities, more convenient location of parking compared to bus stops in large suburban shopping centres to the weight of school bags. They all increase the competitive advantage of the private car compared to more sustainable modes.

6.2 Policy Background

Regional Planning Guidelines

Some of the key objectives of the RPG include the following:

- Improve community facilities and other amenities to enhance social cohesion (Objective 2.6)
- To expand and upgrade the available pool of high skilled labour by improving the accessibility of education opportunities for all: This requires the coordination of educational planning with location and transport policy, so as to enhance the equality of access to educational services in a spatial sense (Objective 3.3)
- To create the conditions for improving equality of life chances, particularly access to education and other critical services – the key objective is to reduce remoteness or isolation of communities by improving universal opportunities to access educational facilities and employment opportunities by improving public transport and by reducing the costs of transport including congestion (Objective 4.3)

Coupled with the overarching policies of the DTO Strategy and RPG as summarised in the Introduction, the outcomes or trends one would expect to emerge from the above would be based around the concept of consolidation of services into coherent urban centres. Education and settlement policy should be working together in order to minimise distances travelled to school and maximise opportunities for sustainable modes.

6.3 Education

6.3.1 Overview

There were approximately 380,000 persons engaged in full-time education in the Greater Dublin Area in 2006..

Table 6.1 shows how education places are distributed across the five Sub Areas.

Some key points are

- The largest number of school places is between the Canals and the M50.
- Third level places are predominantly located inside the M50. There are no third level places in the Hinterland Area
- Less than 4% of the primary and post primary school places in the GDA are located Inside Canals, where the proportion of the overall population is 6.5%.
- Post primary places are lower than might be expected outside the M50, especially in high growth areas, such as the GDA Rural Hinterland

Table 6.1 Number of Education Places by GDA Sub Area, 2006.

Education Places	Primary		Post Primary		Third Level		Total
	Number	%	Number	%	Number	%	%
Inside Canals	5,153	3.0%	5,096	4.1%	37,312	44.1%	12.5%
Between Canals and M50	66,754	38.6%	65,627	53.2%	34,985	41.3%	43.9%
Between M50 and Metro Bdy	49,441	28.6%	26,965	21.9%	12,371	14.6%	23.3%
GDA Rural Hinterland	39,652	22.9%	13,814	11.2%	0	0.0%	14.0%
GDA Large Growth Town	11,979	6.9%	11,763	9.5%	0	0.0%	6.2%
Total	172,979	100%	123,265	100%	84,669	100%	100%

These features broadly accord with the suburbanisation of the region and the growth of commuter towns. Associated with this, the ratio of primary to post-primary (which is 1.4 for the GDA) varies greatly between the five Sub Areas as shown in Table 6.2. As expected there are more primary than secondary pupils in all areas of the GDA (given that the number of years spent at primary level is higher). More importantly, the table reveals the scale of the difference between these areas. In the Rural Hinterland there are almost three times as many primary school places as post-primary, and almost twice as many primary places between the M50 and the Metropolitan Area boundary. This shows an imbalance in supply, which will need to be addressed, as primary school children grow older.

Table 6.2 Ratio of Primary to Post-Primary School Places

GDA Sub Area	Primary/Post Primary Places
Inside Canals	1.01
Between Canals and M50	1.02
Between M50 and Metropolitan Bdy	1.83
GDA Rural Hinterland	2.87
GDA Large Growth Town	1.02
GDA Total	1.4

Source: CSO 2006, DTO

According to the CSO census, approximately 332,000 GDA residents usually travel to education. The number of GDA residents travelling to education grew by 12% between 1996 and 2006, with a 21% increase in the Mid East Region and a 9% increase in Dublin.

6.3.2 Distance Travelled to School

One of the key issues in education is distance travelled to school. This relates mostly to trips to post-primary schools as older children are more mobile than younger.

Table 6.3 shows the percentages of post-primary students who travel various distances to school and reveals a sharp divide between urban and rural areas of the GDA. It should be noted that the Rural Hinterland contains many large towns with significant concentrations of population. Despite this, the majority are over 5km and one-third of all trips to post-primary education in this area are more than 8 Kilometres, clearly indicating a lack of post primary school places in these areas.

Table 6.3 Percentage of Post Primary trips by distance bands (at place of education)

Sub Area/Distance	1 Km	2 - 4 Km	5-8 Km	> 8 Km
Inside Canals	51.3%	30.2%	13.2%	5.4%
Between Canals and M50	37.7%	38.1%	16.8%	7.4%
Between M50 and Metro Bdy	39.1%	30.6%	16.7%	13.6%
GDA Rural Hinterland	20.3%	19.0%	27.6%	33.0%
GDA Large Growth Town	37.4%	39.0%	11.8%	11.7%

This contrasts with the journey lengths for students living in urban areas, where a far greater proportion travels shorter distances. However, even for students living in these areas, where there is the greatest concentration of education places, there is a significant proportion travelling outside their local area to post-primary schools. Over 30% of students living between the M50 and the Metropolitan Area boundary travel over 5 km to school.

6.3.3 Mode Share for Trips to School

A break down of trips by education level highlights some important distinctions. Figures 6.1 and 6.2 below show the mode shares for travel to primary and post primary education in the GDA. Although the mode share by car is generally lower than for trips to work, car is still a significant mode, especially for primary school.

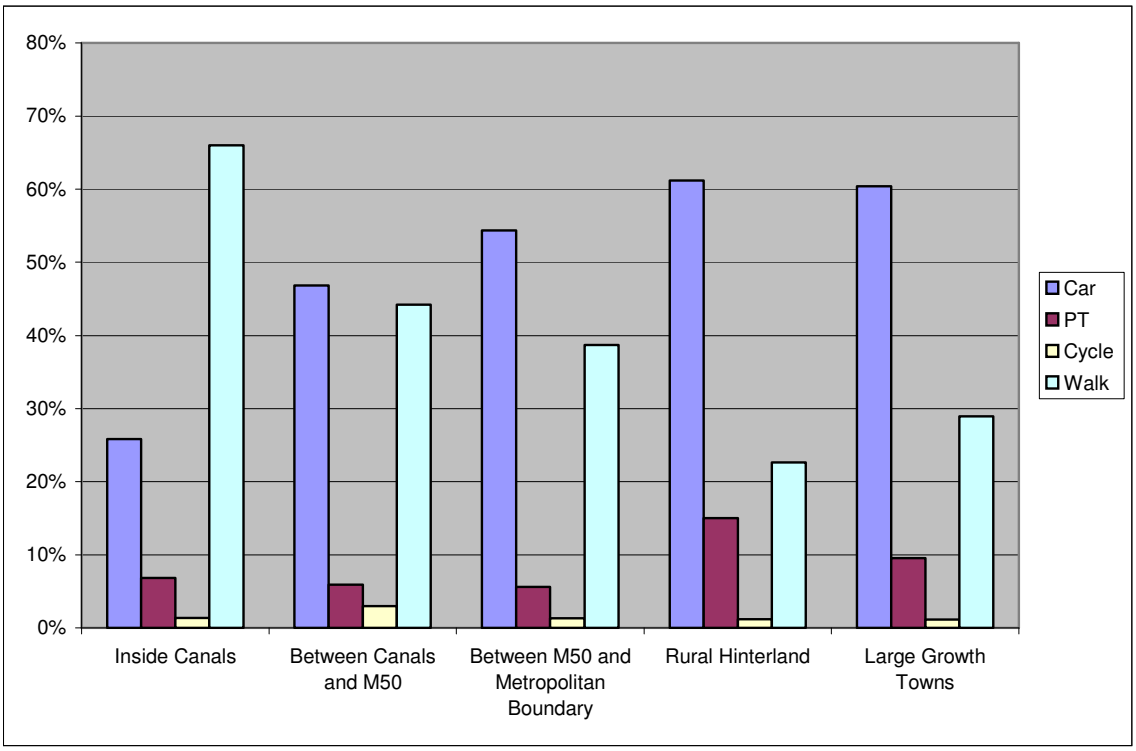
6.3.4 Primary School Travel

For primary school travel, the dominant modes are car and walking (as illustrated in Figure 6.1). However the relative dominance of each mode is dependant on where children live. Inside the canals, 66% of children walk to primary school. This figures drops sharply as one moves to the area between Canals and M50 (to 44.2%) and drops further (to less than 40%) outside the M50. There are greater numbers of primary schoolchildren living in these outer urban areas compared to the city centre (101,252 vs. 5,722).

Corresponding with reducing walk mode share, the car mode share increases as one moves outwards from the city centre. Inside the canals, 25.8% of children travel to primary school by car. This figure rises to 46.9% between the Canals and M50 and between 54.4%and 61% beyond the M50.

Cycling is negligible across all Sub Areas for primary school travel. Its highest mode share is 3.0% for those living between the Canals and the M50. Public transport has a more significant mode share than cycling with those living in the Rural Hinterland having the highest mode share at 15%. Within Metropolitan Area, it is approximately 6 to 7 per cent. These figures are presented in Figure 6.1 and set out in Table 6.4.

Figure 6.1 – Mode Split for Primary Schools



Source: DTO Education Survey 2006

Note: “PT” means public transport

Table 6.4: Mode share for travel to primary schools

	Car	Public Transport	Cycle	Walk
Inside Canals	26%	7%	1%	66%
Between Canals and M50	47%	6%	3%	44%
Between M50 and Metro Bdy	54%	6%	1%	39%
GDA Rural Hinterland	61%	15%	1%	23%
GDA Large Growth Town	60%	10%	1%	29%

Source: DTO Education Survey 2006

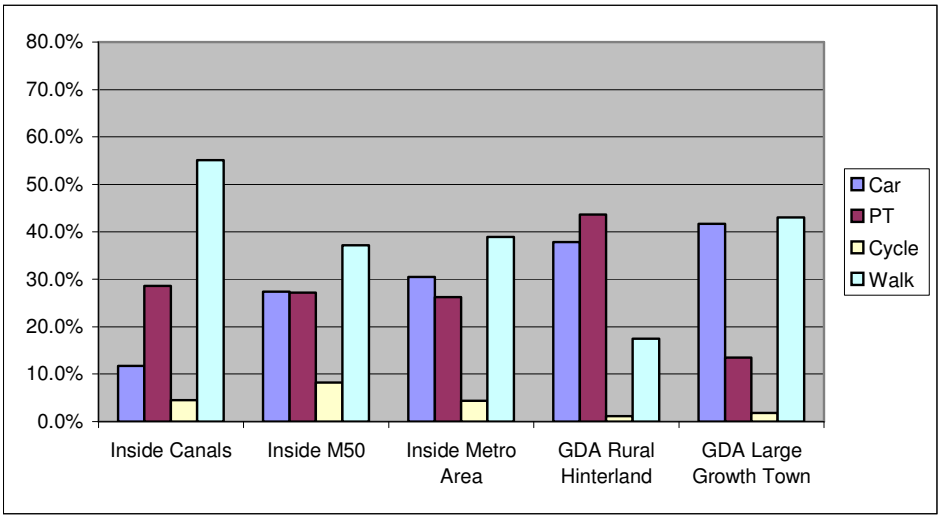
36% of trips to primary schools under 5km in length are made by car.

6.3.5 Post Primary School Travel

Figure 6.2 shows the level of car use for post-primary students and how it changes depending on location. The mode share for car increases from 11.8% for those living inside the canals to 41.7% for those living in Large Growth Towns in the Hinterland. Large numbers of students in the Rural Hinterland use bus to get to school.

An examination of Sub Areas shows the greatest number of students is living between the Canals and Metropolitan Area Boundary. The mode share for car in this area is 28.6% and 9% cycle. In the Hinterland Area cycling to school is negligible. These mode share figures are set out in Table 6.5.

Figure 6.2 – Mode Share for Post - Primary Schools



Source: DTO Education Survey 2006

Table 6.5: Mode Share for Post Primary Schools

	Car	Bus	Train	Walking	Cycling
Inside Canals	14%	29%	4%	52%	2%
Between Canals and M50	27%	21%	5%	38%	9%
Between M50 and Metro Bdy	31%	24%	3%	39%	4%
GDA Rural Hinterland	39%	44%	1%	15%	1%
GDA Large Growth Town	39%	12%	1%	46%	2%

Source: DTO Education Survey 2006

A number of related issues emerged at public consultation. The poor quality of public transport provision to schools and the local conditions for walking and cycling were cited as contributory factors to the high car mode share. Another major concern was the lack of provision of schools themselves in areas of high population.

6.3.6 Mode Share for Short Distances – Post Primary School

Tables 6.6 below shows how distance relates to travel to post primary school by car. They reveal that over one-third of all car trips to post primary school in the GDA are under 2 kilometres (a 30 minute walk or an 8 minute cycle).

Table 6.6: Distance Travelled by Car to School

Sub Area /Distance	Up to 2 Km	3-6 Km	7 Km+
Inside Canals	14.3%	43.2%	42.5%
Between Canals and M50	33.2%	44.7%	22.1%
Between M50 and Metro Bdy	37.5%	38.4%	24.1%
GDA Rural Hinterland	33.7%	37.3%	29.0%
GDA Large Growth Town	31.6%	38.2%	30.2%
GDA	33.6%	41.1%	25.4%

Source: DTO Education Survey 2006

Table 6.7 looks at all trips to post-primary schools of 2 kilometres and under. It reveals that of all these short trips, over one-fifth of them are by private car compared to only 6.5% by cycling. For these trips, walking is the most popular mode at 65.2%. However the dominance of car over cycling by a factor of more than three is the main issue in this regard.

Table 6.7: Mode Choice for Post Primary Trips to School under 2 Kilometres

Mode	Number	Percentage
Car	11,443	20.9%
Public Transport	4,031	7.4%
Walk	35,660	65.2%
Cycle	3,553	6.5%
Total	54,686	100%

Source: DTO Education Survey 2006

6.3.7 Factors Influencing Mode Choice – Post Primary Schools

For post primary education the primary modes of travel to school are car (passenger) (31%), walking (35%) and public transport (29%), the weakest mode is cycling, which achieves only 5% mode share in the GDA.

In the DTO Education Survey, carried out in 2006, distance was the prime reason given for those not cycling to post primary schools (25.2%). This ties into the general trends observed above. Table 6.8 shows the percentages of students who gave this answer in each Sub Area

Table 6.8: Percentage of Post Primary Students Answering "Too Far" as a Reason to Not Cycle

Sub Area	Percentage
Inside Canals	10.9%
Between Canals and M50	14.6%
Between M50 and Metro Bdy	23.1%
GDA Rural Hinterland	54.4%
GDA Large Growth Town	18.5%
GDA Average	25.2%

Source: DTO Education Survey 2006

With further analysis of the Education Survey, and the removal of students who "Prefer to Walk" and state "Too Far", it was possible to isolate those students who were driven or took public transport despite being close enough to cycle. This is set out in Table 6.10. This shows that personal preferences under "Don't Like It" are generally important and may relate to the image of cycling as a whole compared to being driven or using the bus.

Equally significant was the issue of having "too much to carry", this is especially the case in the area between the Canals and M50. It is also noteworthy that in the Sub Areas 'Inside the Canals' and the 'GDA Rural Hinterland', road safety was seen as a more significant concern (25%) compared with the more suburban Sub Areas.

Table 6.10 – Reasons for not Cycling to Post Primary School

	Don't Like It	No Facilities	Personal Safety	Road safety	Too much to carry	Weather
Inside Canals	32.70%	5.00%	5.40%	25.10%	19.50%	12.30%
Between Canals and M50	29.20%	5.70%	4.60%	16.80%	34.40%	9.30%
Between M50 and Metro Bdy	32.10%	7.50%	3.70%	16.60%	28.80%	11.40%
GDA Rural Hinterland	24.20%	8.60%	4.20%	25.80%	29.30%	7.90%
GDA Large Growth Town	32.60%	11.50%	4.20%	18.50%	24.90%	8.30%

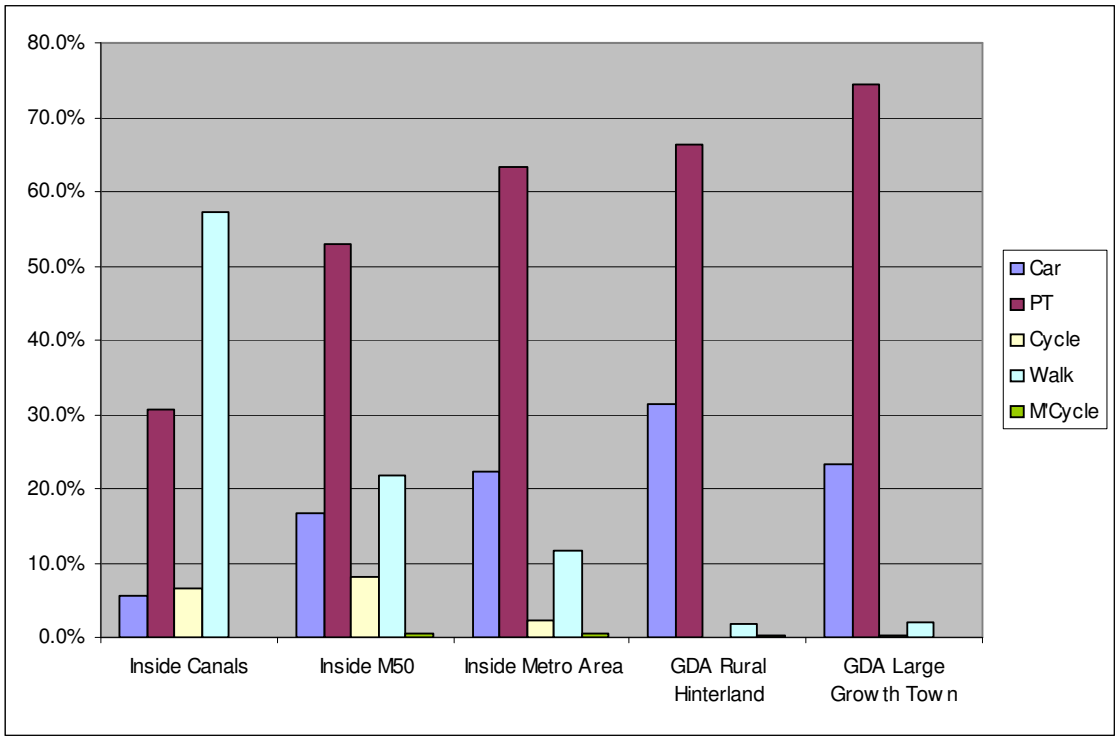
Source: DTO Education Survey 2006

6.3.8 Third Level Travel to Education

Figure 6.3 shows the mode share for third level students living in the five Sub Areas of the GDA. What it reveals is that walking decreases as the distance from the city centre increases, while public transport and car share both increase. Walking is the most popular mode for those living inside the canals. This probably reflects the location of TCD and DIT and other third level institutions in central areas close to where students live.

This is linked also to the transient nature of the student population who will generally choose accommodation based on proximity to college. Public transport is the next most popular with car and cycling very low.

Figure 6.3 – Mode Split for Third Level by place of residence



Source: DTO Education Survey 2006

Moving away from the city centre, public transport has more of an influence, reaching 74.4% for those travelling to third level education from Large Growth towns.

However, the key Sub Areas to examine are Inside the M50 and Inside the Metropolitan Area where 79% of GDA third Level students live. Table 6.11 below shows the combined mode share for these locations.

Table 6.11: Mode Share for third Level Students living in Dublin suburbs (Canals to Metropolitan Area boundary)

Mode	Car	PT	Cycle	Walk	Total
Numbers	7,708	23,515	2,680	7,951	41,854
Percentage	18.40%	56.20%	6.40%	19.00%	100.00%

Source: DTO Education Survey 2006

This reveals a high proportion of car users, with almost one in five students driving (or being driven) to college. Although this is significantly lower than the car mode share for travel to work, considering the high level of connectivity to the major third level institutions by rail or bus and the potential for walking and cycling, the level of car use is quite significant The poor performance of cycling is a key issue, the data reveal that car use is almost three times as high as cycling for those living in suburban Dublin.

6.3.9 Location Issues

In many cases busy roads, major junctions and roundabouts sever students and parents who might wish to walk to education. Many schools are now located far from the residential areas they serve which compromises the ability of pupils of all levels to access them by cycling and walking.

6.3.10 Design Issues

School designs have often catered for ease of car access and egress, especially in the recent past. This can mean those walking or cycling to school need to access the school building through a car park, or car drop-off area. In addition, impromptu on-street (or on-footpath) parking frequently takes place outside school premises, with inadequate parking controls or enforcement to act as a deterrent. There is generally an absence of clearly defined safe cycle routes to schools from the local area. All these factors lead to a more hostile environment for those on foot or cycle.

6.3.11 Conclusion and Issues Arising -Education

A number of key issues arise from the analysis of travel to education data; these are summarised below:

- Most primary school places are located outside the M50. Secondary school places are mostly located between the Canals and the M50. Third level places are predominantly inside the M50, with a particular focus on the city centre. (Table 6.1 and 6.2)
- 66% of primary schoolchildren in the city centre walk to school. In the Hinterland area, the figure is below 30% (Table 6.4)
- Over half of secondary schoolchildren walk to school in the city centre. In the Hinterland Area outside Large Growth Towns, this figure declines to 15% (Table 6.5)
- Cycling mode share for primary school is negligible, except between the Canals and the M50, where it is 3% (Table 6.4)
- Cycling mode share for secondary school is 4% or less, except between the Canals and the M50 where it is 9% (Table 6.5)
- Road Safety is a concern to secondary school students inside the Canals, and in the Hinterland area, deterring them from cycling (Table 6.10)
- The car mode share for travel to education is particularly high for primary school children, ranging from 26% in the city centre to 60% in outer areas.
- 33% of trips by car to secondary school are less than two kilometres (Table 6.6)

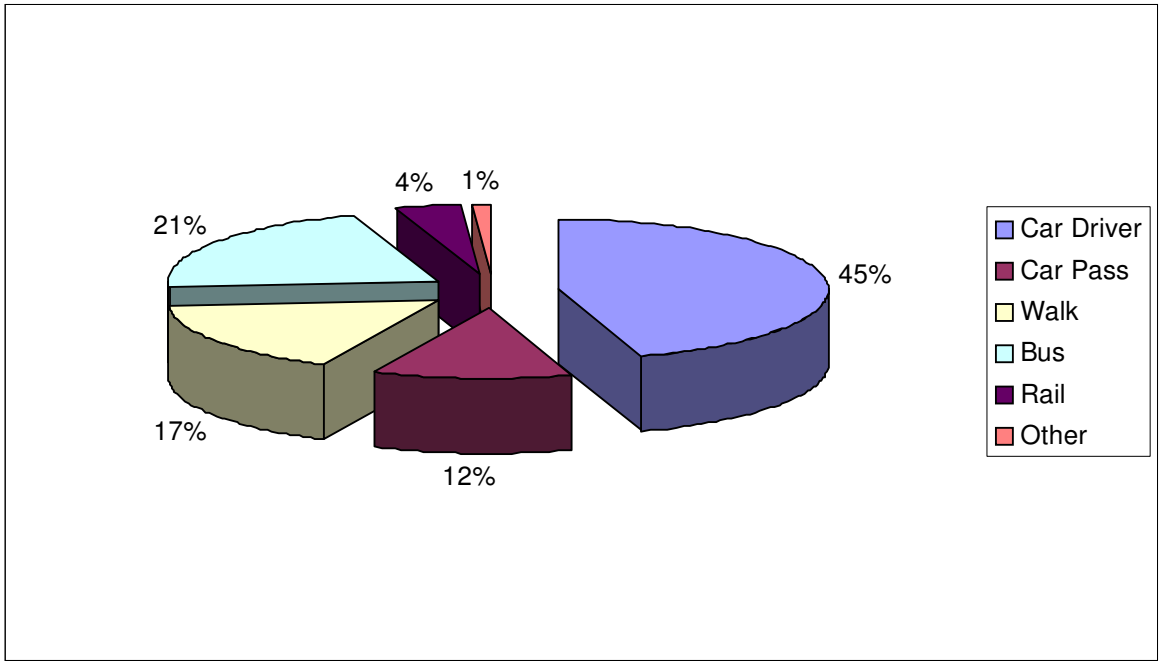
6.4 Retail

6.4.1 Travel Data

The DTO Household Survey from 2006 revealed that shopping accounted for between 16% and 18% of all trips in the GDA depending on time of year, with the slightly higher figure relating to June and July. As such, it is a significant generator of travel demand in the region and an important issue in relation to the formulation of the new DTO Strategy.

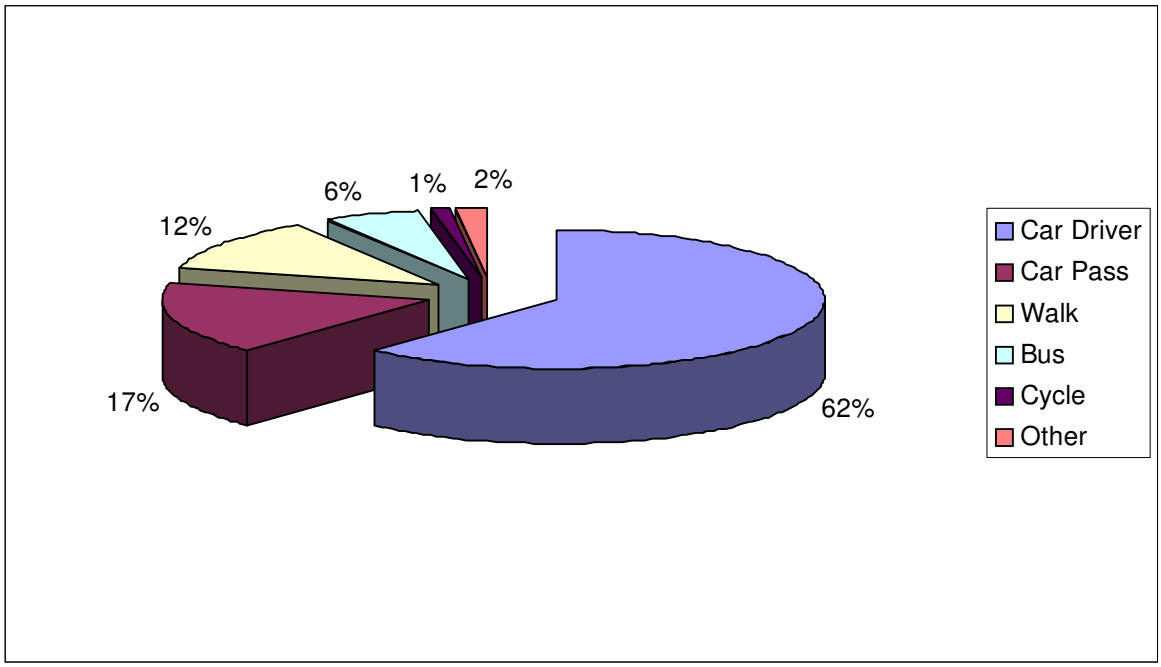
The majority of respondents to the Household Survey used car (as driver or passenger) for shopping trips with a higher proportion in the Mid East using car than in Dublin. Figures 6.4 and 6.5 show the mode share for shopping trips in the two regions based on the survey period of March to May.

Figure 6.4: Mode Share for Shopping Trips in Dublin (March – May 2006)



Source: DTO Household Survey 2006

Figure 6.5: Mode Split for Shopping Trips in the Mid East (March – May 2006)



Source: DTO Household Survey 2006

6.4.2 Location and design of retail

Major centres have been built in the GDA at locations that maximise car accessibility from the wider region, and that are inconvenient for access by bus, walking or cycling.

The quantity of free and accessible car parking associated with large scale retail in the GDA has also acted as a disincentive towards walking, cycling and public transport mode share.

There is an everyday requirement for retail and other services (such as doctor, dentist, launderette), for which it is not necessary to go to major higher order retail centres. Neighbourhood centres, where these services are located, have often been designed for ease of access by private car, without sufficient consideration for walking and cycling access from the immediate area. Existing major retail centres, and neighbourhood centres, tend to be single use (i.e. retail), which discourages the linking of shopping trips with other trip purposes in a manner that reduces the need to travel. It also creates less liveable communities, especially at night where these retail units are shut.

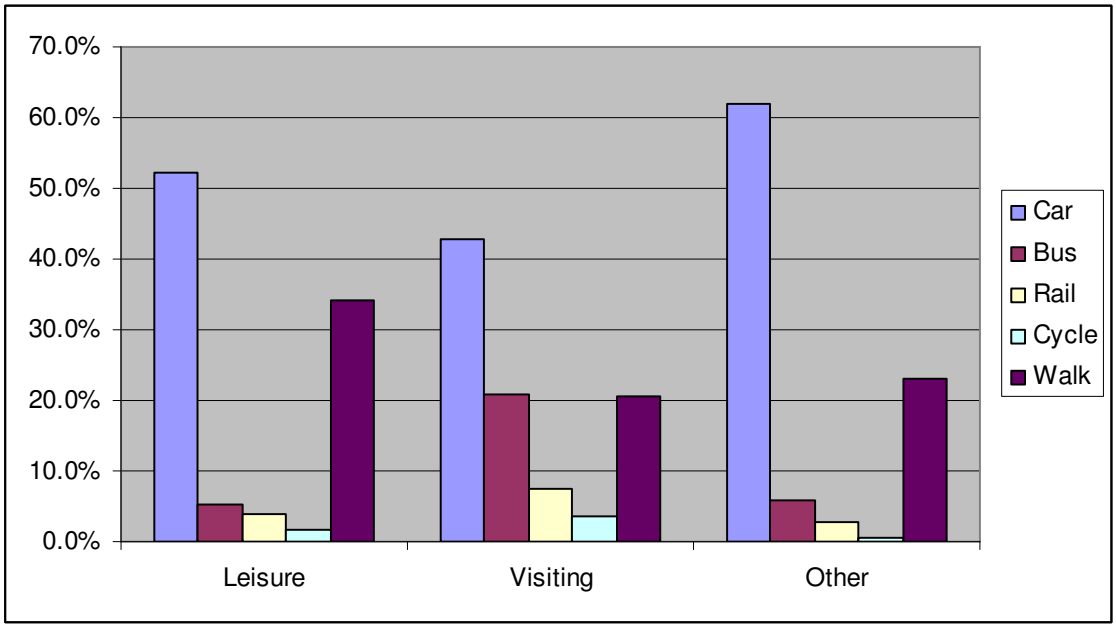
6.5 Leisure and other activities

6.5.1 Travel data

The DTO Household Survey revealed that 36% of all trips are for purposes other than work, retail or education. These generally relate to social and community uses encompassing trips to hospital appointments, religious services, parks and leisure, as well as trips to visit family and friends. Figures 6.6 and 6.7 below show the mode share for these uses for weekday and weekend trips.

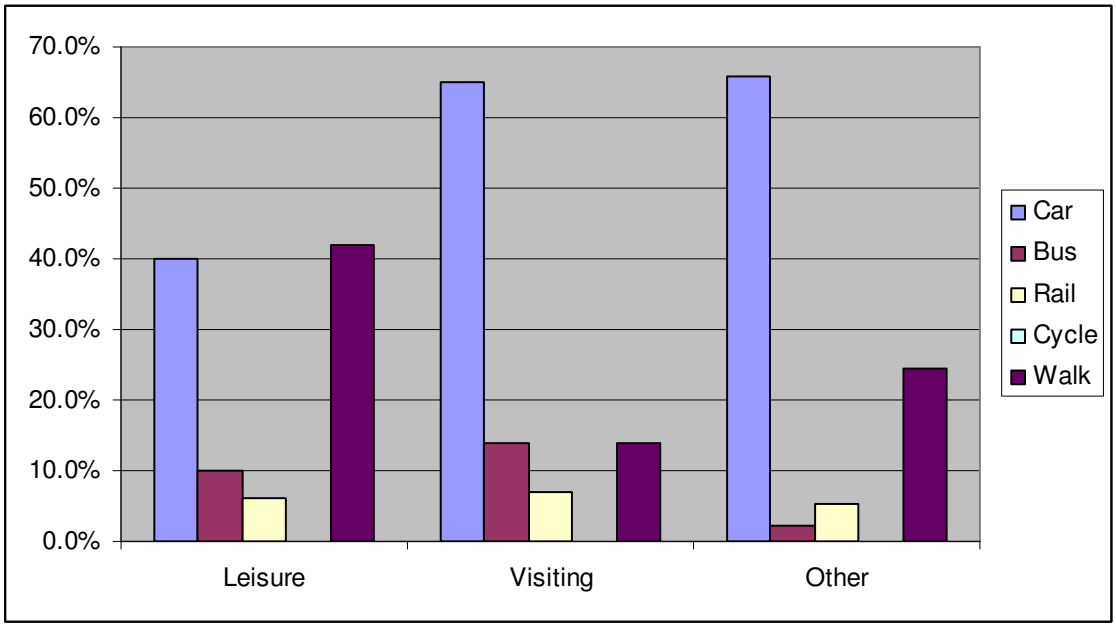
The data reveal that car is the dominant mode for all these uses. Public transport and cycling are very low for leisure and other trips, but they do feature in trips to visit friends and family. Walking is high in relation to leisure, with over 40% of the mode split of weekend trips. This reflects the localised nature of these trips where walking is a feasible option.

Figure 6.6: Mode Split for Main Leisure Activities (Weekday)



Source: DTO Household Survey 2006

Figure 6.7: Mode Split for Main Leisure Activities (Weekend)



Source: DTO Household Survey 2006

These trips are more prevalent at weekends (and in the off peak). The dominance of the car is evident. Off peak trips are also causes of localised congestion and parking problems, such as around a GP surgery, cinemas and around churches on Sundays.

6.5.2 Location and design of leisure and other community faciliites

In a similar manner to retail uses, the majority of community and recreational services are designed with the private car in mind as the dominant mode. A good example of this would be churches. There are several examples in the GDA of churches, which are surrounded by large car parks.

In relation to entertainment such as the cinema, recent development trends have seen a shift away from smaller scale town centre theatres to large out-of-town multiplexes, usually part of a major shopping centre development. These developments are primarily accessed by car and tend to be inaccessible by walking or cycling, especially at night.

Hospitals, which tend to be large trip attractors, both in terms of staff, and visitors, also tend to have a high level of dependence on the private car (although there is a requirement for some car parking at hospitals, given the unsocial working hours required of many hospital staff). They are often not located in town centres or where access by public transport is good.

Many newer recreational facilities (such as the National Aquatic Centre) are not well served by public transport, and are generally accessed by car.

6.6 Conclusions and issues arising – retail, leisure and other community facilities

A number of key issues should be noted

For retail and leisure, the car is the primary mode of transport. This can be related primarily to the location of the services relative to where people live, their level of accessibility by a choice of modes of travel at both a strategic and local level, the times that people engage in these activities (e.g. at evening and weekends when public transport services are less frequent) and corresponding design issues, which can compound these factors.

7 Travel and Transport Provision

7.1 Overview

This section provides an overview of travel attitudes and behaviour to various travel modes and provision of transport under the following headings

- Walking
- Cycling
- Bus
- Rail/LUAS
- Taxi
- Freight

7.1.1 Attitudes and use - overview

Figure 7.1 and Figure 7.1a show public perceptions of various modes of travel, taken from the DTO Household Survey 2006.

The survey showed that some travel modes suffer from poor brand image. For example, while people acknowledged that walking was good for the environment and healthy, and that buses were good value for money, they were not happy for their friends to see them walking or taking the bus. The car was much more likely to named as a mode of transport that people would be happy for their friends to see them using, even though it is seen as expensive and bad for the environment. However, public transport methods – the LUAS and train/DART in particular – outstrip the car in terms of safety and also have an edge on speed.

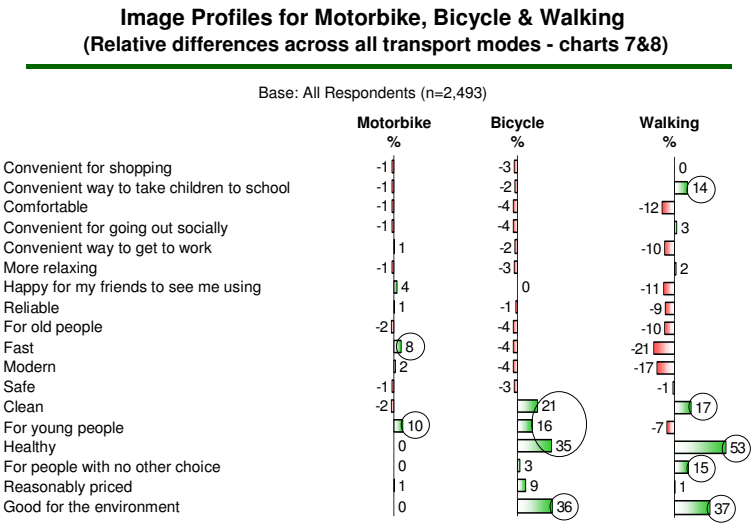
Focusing on the LUAS, strong positive attributes relative to other travel modes were its modernity, cleanliness, safety and speed.

The strong positive attitudes to LUAS are reinforced by a LUAS Before and After Study[6] carried out by the DTO (DTO 2005). LUAS was shown to effect modal transfer from both car and bus, and to generate additional off-peak trips that did not take place prior to LUAS.

The study also demonstrated a positive reaction to the introduction of LUAS amongst employers and retailers.[7] Satisfaction with access to and from the city centre improved significantly following its introduction. The positive impact of LUAS on ease of travel around Dublin was acknowledged. It was however not seen to have succeeded in reducing congestion

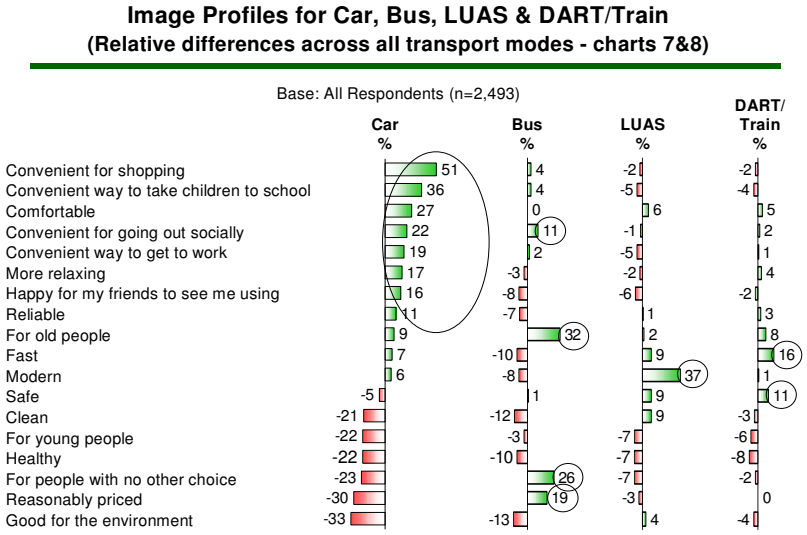
[6] http://www.dto.ie/luasafter_household.pdf
[7] http://www.dto.ie/luasafter.pdf

Figure 7.1: Image Profiles for Motorbike, Cycle and Walking



Source: DTO Household Survey 2006

Figure 7.1a: Image Profiles for Car, Bus, LUAS and Train/DART Source: DTO Household Survey 2006

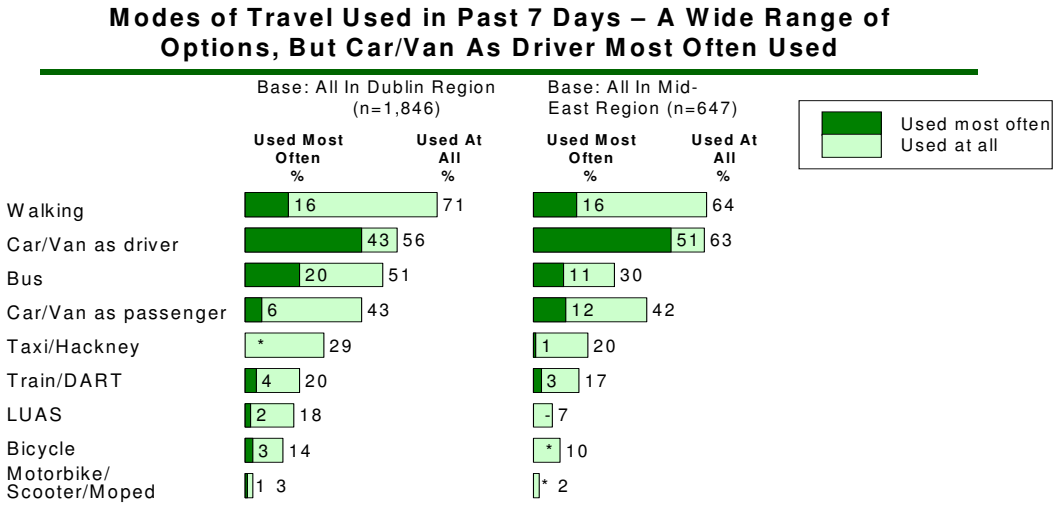


Source: DTO Household Survey 2006

Figure 7.2 shows the travel modes used by people in the past seven days. The attitudes to the various travel modes translate through to choice of mode.

Car, which scored much higher for convenience and comfort than all other modes, is used most often. Car is particularly used in the Mid East.

Figure 7.2: Modes of travel used in past 7 days



Source: DTO Household Survey 2006

Note: * indicates small sample-treat with caution

7.1.2 Travel by Trip Purpose

Approximately 50% of trips to or from home are for work or education purposes.

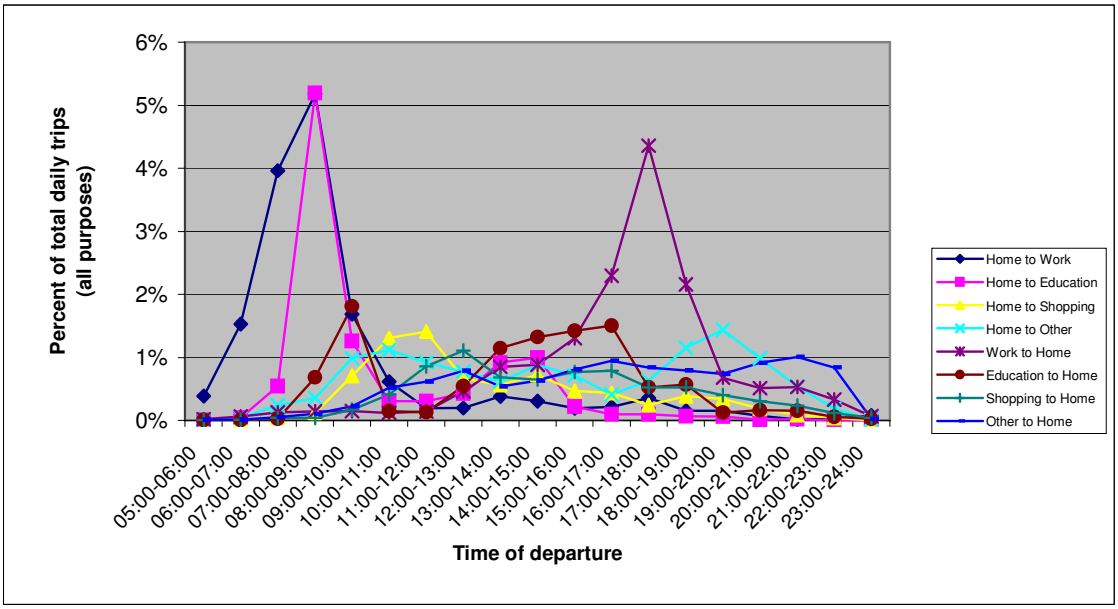
Table 7.1: Percentage of trips by purpose (home-based trips only)

Work	31.4%
Education	21.0%
Shopping	15.4%
Business	1.3%
Other	23.0%

Source: DTO Household Survey 2006

The travel to work and education peak is more pronounced in the morning than in the evening. The trips made for these purposes dominate travel up to 10am. Thereafter shopping and trips for other purposes play a more significant role. There is a significant level of education related trips from 1pm to 5pm (with a mini peak of home to education and education to home trips between 1pm and 3pm). Work trips to home climb gradually from 1pm, peak from 4pm to 7pm and tail off thereafter.

Figure 7.3: Daily profile of travel by trip purpose



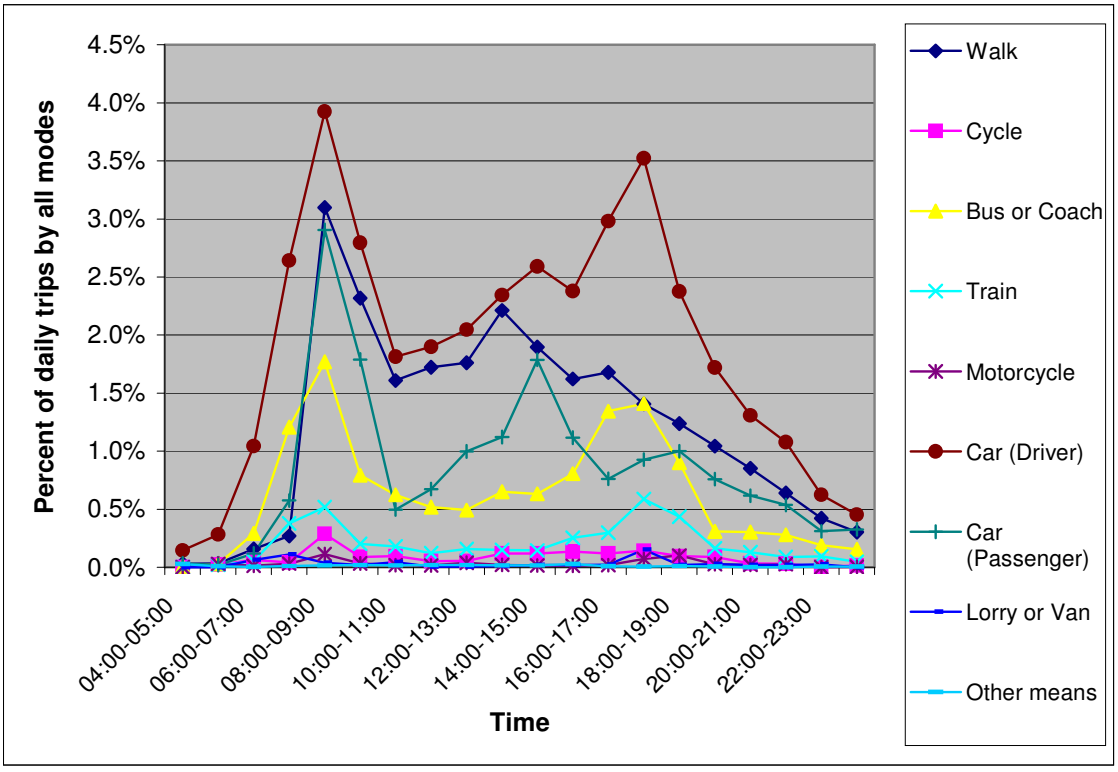
Source: DTO Household Survey 2006

7.1.3 Mode share by time of day

Car, bus and rail daily profiles generally match each other, however the ratio of interpeak (10am-4pm) to peak (7am-10am and 4pm-7pm) travel is higher for car, suggesting that public transport is less of an option during interpeak times than car. This also applies to off peak travel (after 7pm and before 7am).

This is likely to be for a combination of reasons – less road congestion (making car relatively more attractive), as well as lower public transport frequencies and more trips to non-central areas less likely to be served by public transport in the off-peak and interpeak time periods.

Figure 7.4: Daily profile of travel by mode



Source: DTO Household Survey 2006

Note: Non-home based travel (e.g. freight and other non-home based business travel) is not fully represented

7.2 Walking

Analysis of the DTO Household survey shows that walking was mode of transport used by most people in the GDA in 2006. 69% of survey respondents made one or more trips of over 400 metres on foot in the previous week.

7.2.1 Walking Mode Share

Some 31,000 additional persons are walking to work in 2006 relative to ten years earlier. Given the increase in total travel to work over the period, this has resulted in maintaining the modal share for walking to work at 12% of total work travel.

Although census data shows 8,500 additional persons are walking to schools and colleges over the last ten years, this represents a small drop in mode share from 36% to 35% over the region.

Table 7.2 Walking Mode share by trip purpose

Region	Home to Work	Home to Education	Home to Shopping	Home to Sport or Leisure	Home to Other
Dublin	13.6%	38.4%	29.9%	25.6%	25.8%
Mid East	7.9%	25.7%	24.8%	19.5%	18.1%
GDA	12.0%	34.6%	28.6%	24.3%	23.5%

Source: CSO Census 2006 and DTO Household Survey 2006

The walking share for trips to work is substantially lower than for other purposes.

The walk share is higher in Dublin than the Mid-East for all trip purposes, suggesting facilities are generally less accessible on foot in the Mid East than in Dublin.

Table 7.3: Walk mode share into city centre (across Canal Cordon) 7am-10am

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number	16649	15541	18064	15808	18558	16603	17305	15241	16332	17114	18594
Walk share	9.27%	8.22%	N/A	N/A	9.42%	8.49%	8.85%	7.93%	N/A	8.55%	9.12%

Source: Dublin City Council, transport operators, DTO

Walking numbers into Dublin City centre tend to fluctuate year on year, and show a growth of 11% over the period 1997 to 2007. The walking share of total travel across the cordon has remained static between 1997 and 2007 at just over 9%.

Table 7.4 groups the mode share for walk to work into the five GDA Sub Areas.

Table 7.4: Walking mode share to Workplace by GDA Sub Area (2006)

Area (based on DED's)	**Walk Share**
Inside Canals	16%
Between Canals & M50	12%
Between M50 & Metropolitan Boundary	8%
GDA Rural Hinterland	10%
GDA Large Growth Towns	15%

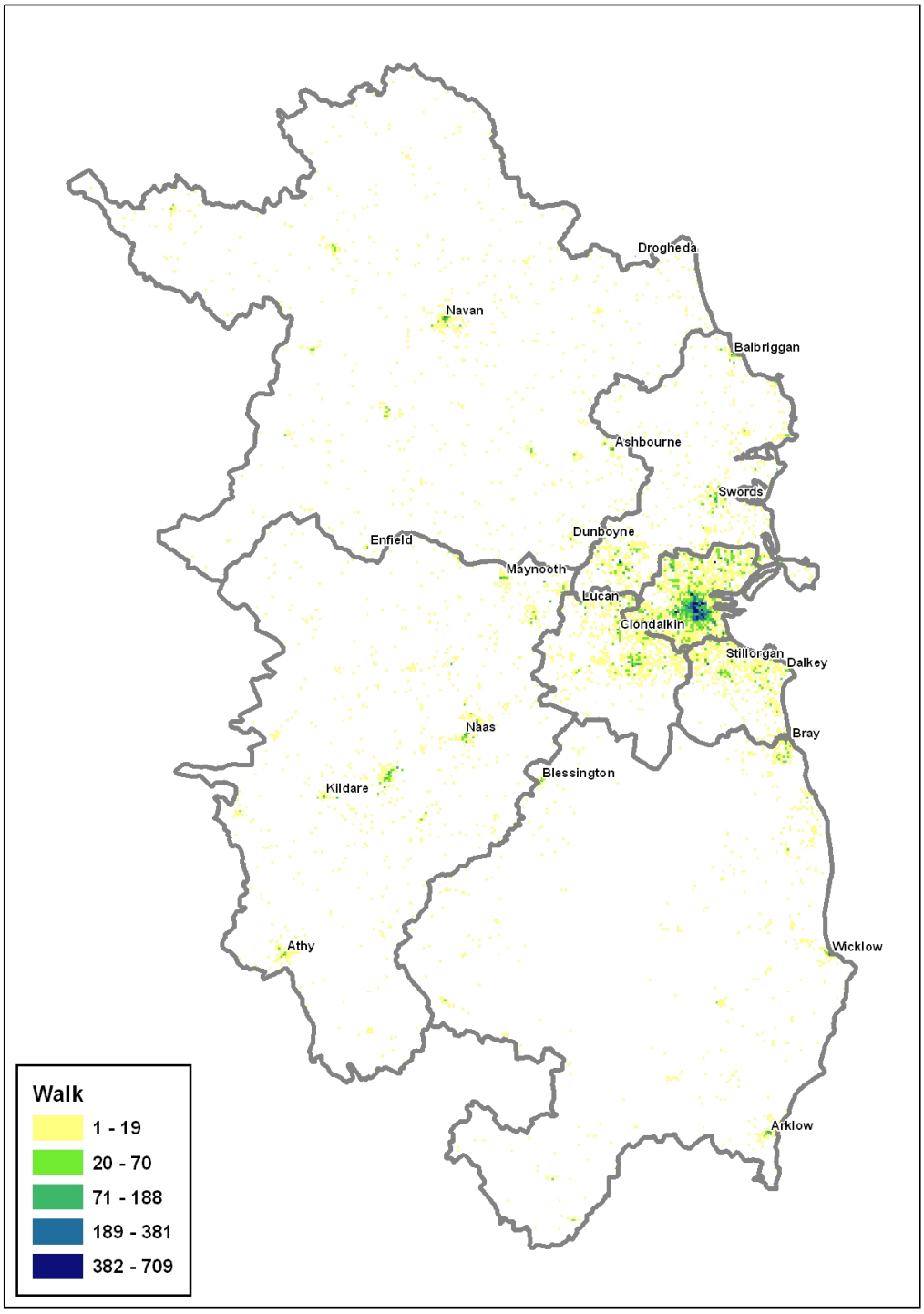
Source: DTO Household Survey 2006

Note that walking to work as a proportion of total travel to work is practically the same to workplaces in the GDA Large Growth Towns as it is Inside Canals. The fact that the GDA Large Growth Towns attract almost as many walk-to-work trips as the centre of Dublin supports the view that the core of old towns such as Dublin, Kildare, Newbridge and Navan were built around a pattern of walking to work. Therefore the form of these centres tends to encourage and maintain walking to work, over time, despite the growth in available alternatives.

There is twice the share for walking in urban centres, both GDA Large Growth Towns and the centre of Dublin, as there is for the band between the M50 and boundary of the Metropolitan Area. Nonetheless, the rate of walking to work is still one in 12 trips, which is not insignificant.

Figure 7.5 and 7.6 show the distribution of walking trips to workplaces in the GDA. As in the case of walking, walk to work trips focus on the city centre, and, to a lesser extent, Metropolitan town centres and Large Growth Hinterland Towns.

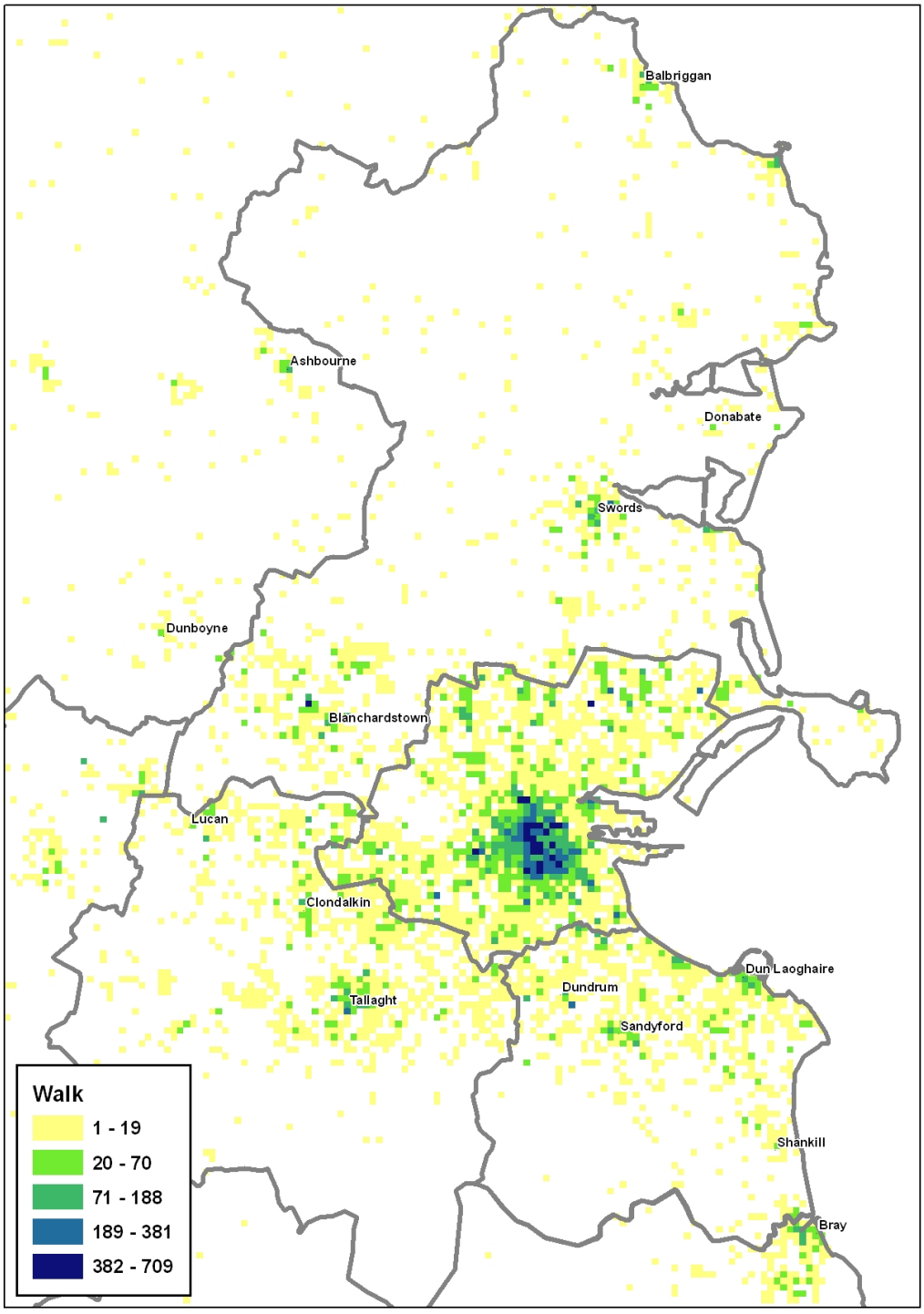
Figure 7.5: Number of walking trips to work in GDA, by 250m square



Source: Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

Figure 7.6: Number of walking trips to work in Dublin Region by 250m square



Source: Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

7.2.2 Walking Distances

The vast majority of walking trips are less than 5km in length.

Table 7.5: Walking distances (various trip purposes)

Trip Purpose	0 to 5km	5 to 10km
To Work	99%	1%
To Education	100%	0%
To Shops	100%	0%

Source: DTO Household Survey 2006

7.2.3 Walking Times

Walk times to work are fairly consistent across the GDA (approximately 20 minutes on average), with longer average walk times in more Central areas of Dublin.

Table 7.6: Journey times on foot to workplaces by GDA Sub Areas

Sub Area	Minutes
Inside Canals	23
Between Canals & M50	20
Between M50 & Metro Area	20
GDA Rural Hinterland	18
GDA Large Growth Town	18

Source: CSO Census 2006, DTO

The additional journey time could be accounted for by the cumulative delay involved in crossing busy streets in the city centre, or the willingness of people to walk for longer periods in congested urban environments where motorised travel alternatives are slow.

Table 7.7: Walking times by trip purpose

Trip Purpose	0 – 5 mins	6 – 10 mins	11 – 15 mins	16 – 20 mins	21 – 30 mins	31- 50 mins	51 – 100 mins
To Work	16%	21%	21%	12%	17%	10%	3%
To Education	16%	25%	28%	17%	10%	3%	1%
To Shops	20%	41%	20%	10%	6%	2%	0%

Source: DTO Household Survey 2006

Walk journey times to work are longer than for other trip purposes.

7.2.4 Pedestrian Facilities

The DTO carries out annual Road User Monitoring surveys.[8]. Pedestrian facilities in the city centre and a series of town centres elsewhere in the GDA are surveyed on an annual basis.

Pedestrian facilities at 22 major signalised junctions in Dublin city centre were surveyed in summer 2007.

The survey showed the following:

Percentage crossing points

- with dropped kerbs 89%
- with pedestrian signals 76%
- with audible signals 58%
- with tactile paving 74%
- with pedestrian guardrails 26%

64% of junctions enabled all pedestrian movements (either directly or indirectly) under pedestrian signal control. This means that 34% of signalised junctions require some pedestrians to cross without the aid of signals. In addition, several other signalised crossings do not provide pedestrian signals on all arms, requiring some pedestrians to navigate three arms to cross the street at a signalised crossroads, for example.

Recorded maximum pedestrian wait times to cross a single junction arm inn Dublin city centre were almost universally 2 minutes (the typical cycle time for signals in Dublin City Council area), but can be as high as 4 minutes where staggered crossing of a junction arm (using intermediate signals on pedestrian islands) is required.

[8] Annual reports are available on the DTO website www.dto.ie

Survey results for a selection of Metropolitan and Hinterland town centres show 66% of signalised junctions enabled all pedestrian movements (either directly or indirectly) under pedestrian signal control.

Maximum wait times (typical signal cycle times) tended to vary by town centre rather than by local authority area. Most maximum wait times are 2 minutes. In Bray and Newbridge, maximum wait times at surveyed junctions were 90 seconds, however in Navan, recorded maximum wait times were 2 minutes 30 seconds. Junction signal cycle times in the city centre and other town centres in the Greater Dublin Area are high by European standards, and this has a direct impact on delays experienced by pedestrians at junctions.

7.2.5 Pedestrian Signage

There does not appear to be a clear policy in relation to provision of pedestrian signage to major attractions or tourist destinations in many parts of the Greater Dublin Area, including the city centre. Dublin Docklands is a notable exception.

7.2.6 Quality of Footpaths

Maintenance of footpaths and reinstatement following utilities work is often deficient. In addition many footpaths suffer from a legacy of redundant signage/poles, which can create clutter and impede movement, particularly of the mobility impaired and people with child buggies. Footpath widths are deficient in many areas, including some central areas heavily trafficked by pedestrians.

7.3 Cycle

7.3.1 Overview

Some 4000 less persons cycled to work and education in the region in 2006 than 10 years earlier,. Around 2600 of that reduction originated in County Dublin and 1400 originated in the Mid-East Counties.

7.3.2 Cycle Mode Share.

Table 7.8 shows cycling by trip purpose for trips ending in the GDA. The mode share for cycling to work or education in Dublin Region is generally three times the share in the Mid-East. It is interesting to note that cycling share for trips to work and to education is higher than for other trip purposes.

Table 7.8: Cycling share by region and trip purpose

Region	Home to Work	Home to Education	Home to Shopping	Home to Sport or Leisure	Home to Other
Dublin	4.1%	4.3%	0.7%	1.7%	0.9%
Mid East	1.2%	1.5%	0.4%	1.2%	1.0%
GDA	3.3%	3.4%	0.6%	1.6%	0.9%

Source: CSO Census 2006 and DTO Household Survey 2006

Table 7.9 shows the numbers cycling into the city centre in the morning peak period has fluctuated over the last ten years. A downward trend to 2004 has been replaced by a noticeable upward trend since then (44% increase 2004-2007), coinciding with the opening of the Dublin Port Tunnel and the associated Dublin City Council daytime restrictions on larger HGV movements in the city centre.

Table 7.9: Cycle mode share into city centre (across Canal Cordon) 7am-10am

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number	5616	4574	5335	4464	5085	4675	4711	3941	4404	4839	5676
Cycle share	3.13%	2.42%	N/A	N/A	2.58%	2.39%	2.41%	2.05%	N/A	2.42%	2.78%

Source: DTO, DCC, transport operators

Table 7.10 shows that cycling mode share to workplaces in central Dublin is over twice that in GDA Large Growth Towns, in contrast to the comparison for walking mode share, which is much the same in both Sub Areas. There are several factors that could explain this difference.

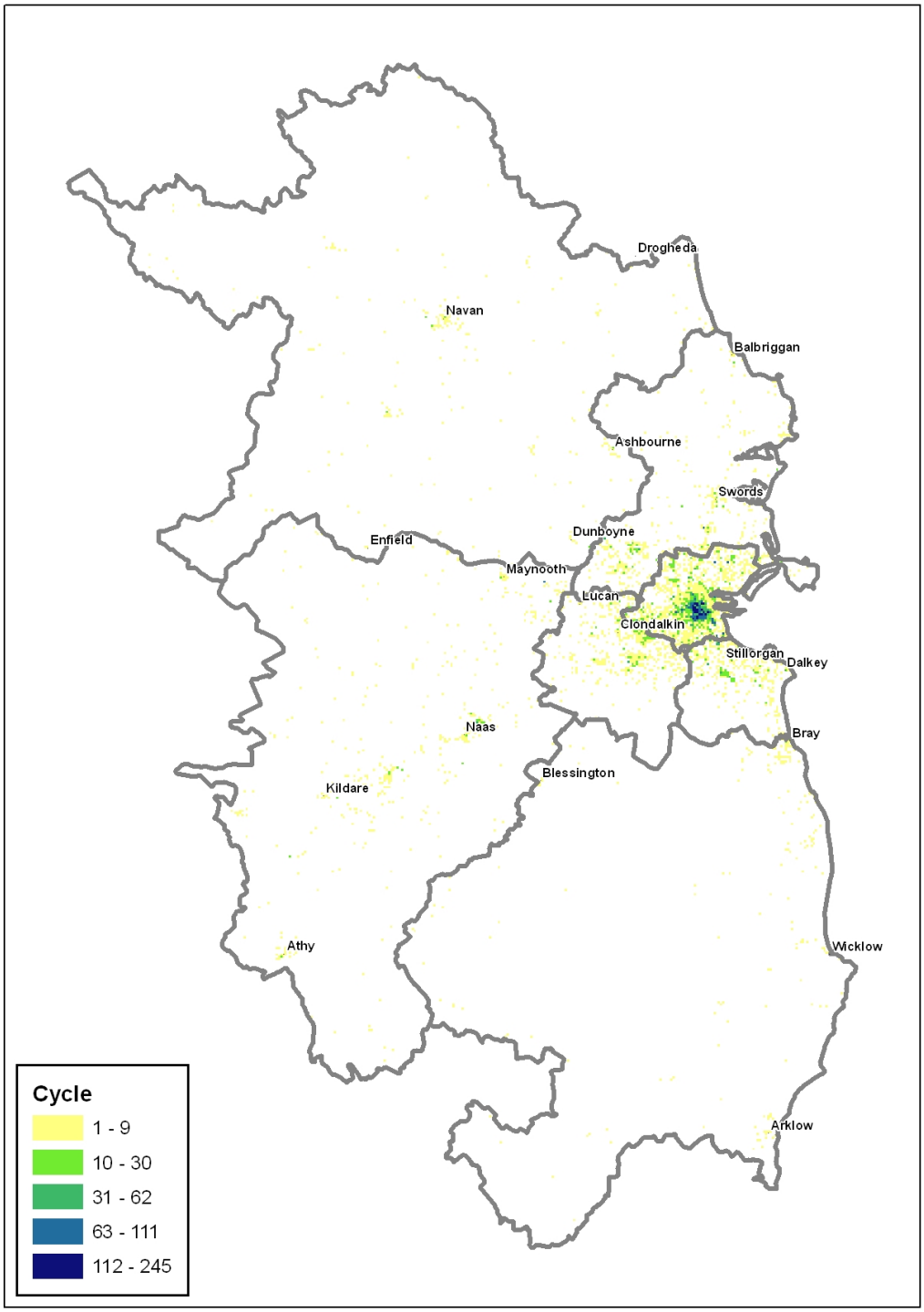
Table 7.10: Cycle Share to work by GDA Sub Area

Sub-Area	Cycle Share
Inside Canals	5%
Between Canals & M50	4%
Between M50 & Metropolitan Boundary	2%
GDA Rural Hinterland	2%
GDA Large Growth Towns	2%

Source: CSO Census 2006, DTO

Figure 7.7 and 7.8 show the distribution of cycling trips to workplaces in the GDA. As in the case of walking, cycling trips focus on the city centre, and, to a lesser extent, Metropolitan town centres and Large Growth Hinterland Towns.

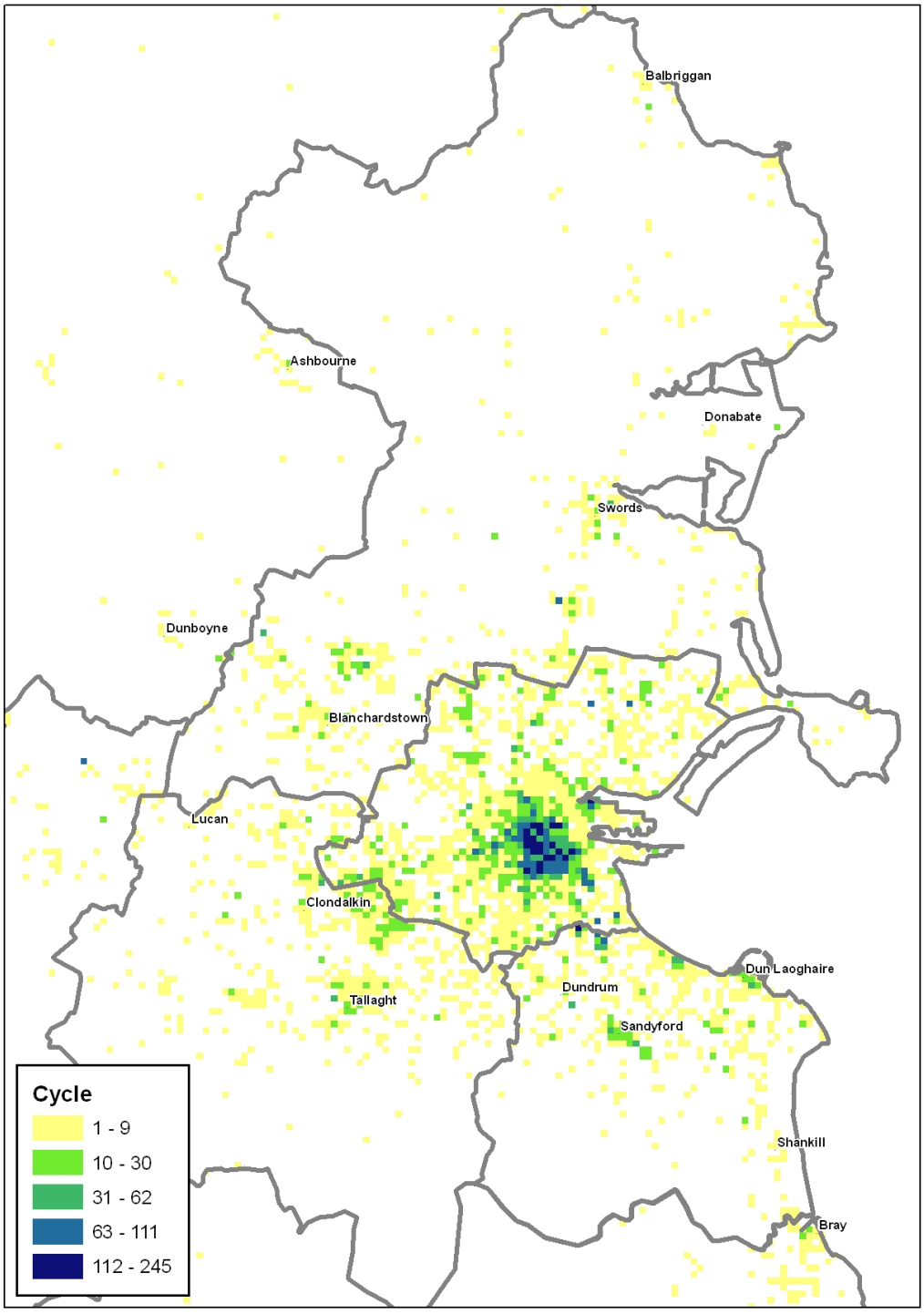
Figure 7.7: Number of cycling trips to work in GDA, by 250m square



Source: CSO Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

Figure 7.8: Number of cycling trips to work in Dublin Region, by 250m square

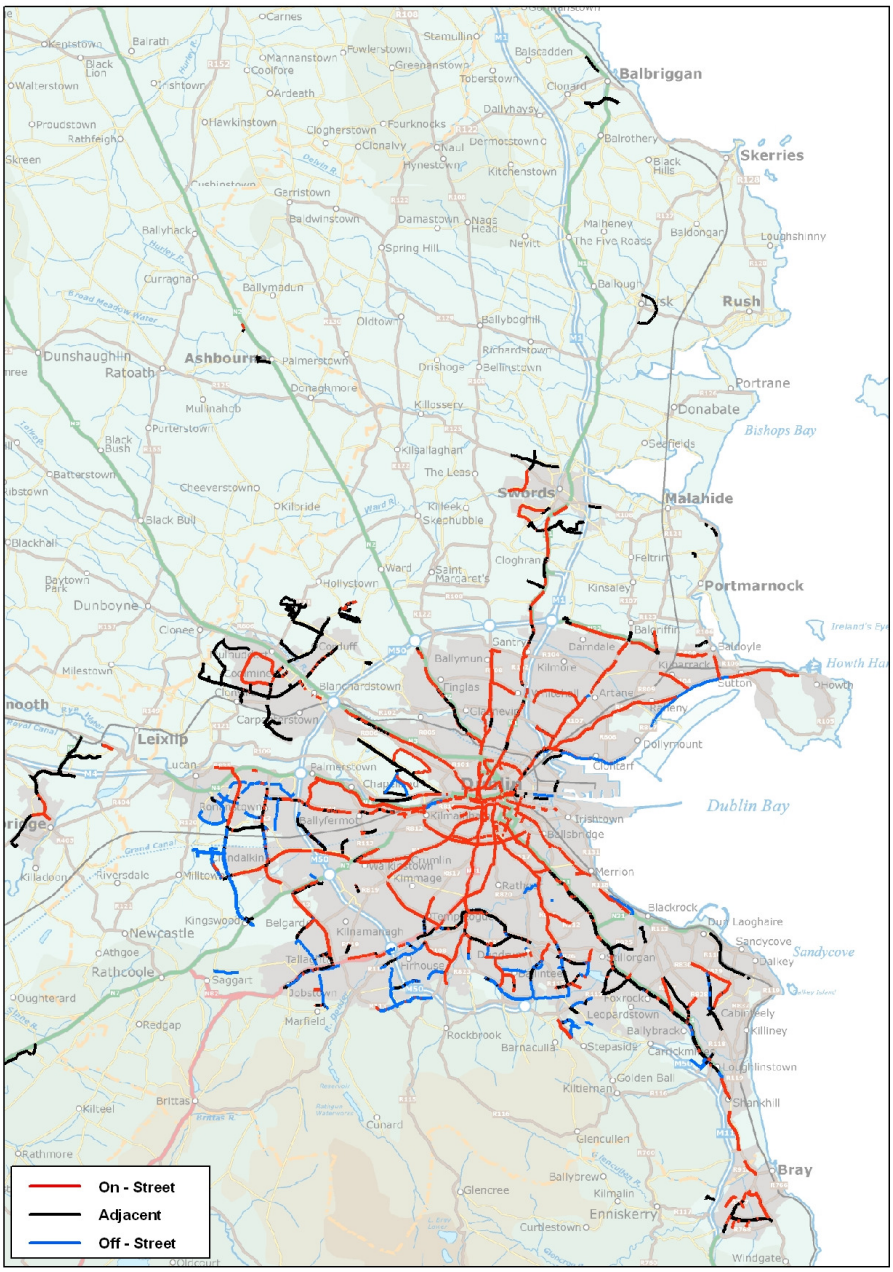


Source: CSO Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

7.3.3 Cycle Network

Figure 7.9: GDA Cycle Network Coverage



Source: DTO Cycle Network Survey 2007

Note: (1) Map shows cycle lanes recorded in Summer 2007

(2)"Adjacent" means within highway boundary, but off-street (e.g. between street and footpath).

(3) "Off-Street" means away from street, road or footpath

(3) No significant cycle lanes are recorded outside mapped area.

Figure 7.9 (previous page) highlights two aspects. Firstly, the network is not continuous. The lack of continuity may contribute to the relatively poor share for cycling as a mode of transport, as conditions where no facilities are provided and the consequent perceived lack of safety may be the determining factor in whether a person chooses to cycle or not.

Secondly, the difference in provision of cycle facilities between urban centres in the GDA is marked. The city centre and approaches are relatively well covered, and the cycle mode share for trips to work ending in the 'inside canal ring' band is more than twice that of the GDA Large Growth Hinterlands Towns (see Table 7.11).

7.3.4 Cycle Distances

Table 7.11 below shows the percentage of trips by distance band for various trip purposes

Table 7.11: Cycling distance travelled (various trip purposes)

Trip Purpose	0 to 5km	5 to 10km	Over 10km
To Work	61%	30%	7%
To Education	78%	19%	3%
To Shops	83%	13%	5%

Source: DTO Household Survey 2006

Most cycle distances are less than 5 kilometres. People tend to cycle further to work than to education or shopping.

7.3.5 Cycling Times

Table 7.12 shows that the average cycle to work journey time is longer than for other trip purposes.

Table 7.12: Cycling Journey Times to Work (2006)

Trip Purpose	0 – 5mins	6 – 10mins	11 – 15mins	16 – 20mins	21 – 30mins	31 – 50mins
To Work	0%	16%	14%	22%	29%	15%
To Education	6%	14%	47%	19%	7%	6%
To Shops	13%	33%	18%	12%	8%	4%

Source: DTO Household Survey

Table 7.13 shows that average Journey times by cycle to work in the city centre are approximately 50% higher than in outer areas. This may be because those who live and work in the same town have shorter average commuting distances than equivalent commuters living and working in the

Metropolitan Area. In addition those who live in the Hinterland Area away from the towns they work in may consider cycling to work as too far, or too unsafe.

Table 7.13: Average Journey times to work by cycle (2006)

Workplace Sub Area	Minutes
Inside Canals	23
Between Canals & M50	22
Between M50 & Metro Area	21
GDA Rural Hinterland (including smaller urban centres)	16
GDA Large Growth Town	15

Source: CSO Census 2006

7.3.6 Cycle parking in the city centre

There are c. 2000 cycle parking spaces in an area Parnell Square to Stephen's Green and from Amiens St./ Westland Row to Capel St./Parliament St on two-bike Sheffield stands or equivalent[9].

There are 1146 spaces for parking bicycles (other than those within the city centre area described above) adjacent to existing cycle lanes / tracks within the region.

7.3.7 Cycle parking standards in new developments

The provision of cycle parking at destinations can influence the propensity to cycle. This has been demonstrated in particular for schools. The specification of cycle parking standards for new developments by local authorities is relatively recent.

Three local authorities (South Dublin, Fingal and Wicklow) still do not have any formal cycle parking standards. In the case of local authorities that do prescribe cycle parking standards, there are wide variations in minimum requirements.

[9] Communication from DCC 12 December, 2008

Table 7.14: GDA Local Authority Development Plan Cycle Parking Standards[10]

	Residential	Retail	Offices	Industry	Schools
Dublin City	1space/ dwelling	1space/ 150-200 m^2	1space/ 100-150 m^2	1space/ 333-500 m^2	1space/ 3-6 pupils
Dun Laoghaire Rathdown	1space/ 80 m^2	1space/ 80 m^2	1space/ 80 m^2	1space/ 80 m^2	1space/ 80 m^2
South Dublin	-	-	-	-	-
Fingal	-	-	-	-	-
Meath	0.375 – 0.66 stands/ dwelling	1stand/ 60 m^2	1stand/75 m^2	1 stand/150 m^2	1 stand per classroom
Kildare	1unit/ dwelling	1 unit/ 200 m^2	1 stand/ 500 m^2	1stand/ 500 m^2	1 stand/10 pupils
Wicklow	-	-	-	-	-

7.3.8 Cyclist Signage

Signage for cyclists to major attractions or tourist destinations is absent in many parts of the Greater Dublin Area, including the city centre.

7.3.9 Quality of Cycle Lanes

Maintenance of cycle lanes and reinstatement following utilities work is often deficient. The DTO surveyed cycle lanes in the GDA in summer 2007. The survey included comprehensive video surveys of quality. The survey database has been made available to local authorities.

[10] Cycle Parking standards are generally expressed as minima. Taken from current Local Authority Development Plans (correct as of November 2008).

7.4 Bus

7.4.1 Bus Mode Share

Bus mode share in the Mid-East, for all trip purposes other than education, is less than one third of the mode share in the Dublin Region.

Table 7.15: Bus share by Region and trip purpose

Region	Home to Work	Home to Education	Home to Shopping	Home to Sport or Leisure	Home to Other
Dublin	15.1%	20.1%	14.1%	15.8%	11.7%
Mid-East	4.7%	24.1%	2.5%	2.6%	2.8%
GDA	12.1%	21.3%	10.7%	12.4%	9.7%

Source: CSO Census 2006, DTO Household Survey 2006

The lower mode share in the Mid-East is likely to be for several reasons – including the lack of services to many areas in the Mid East (see Figures 7.12 – 7.15) and the dispersed nature of development, which makes it difficult to provide a viable bus service to many areas outside larger towns.

Table 7.16: Bus mode share into city centre (across Canal Cordon) 7am-10am

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number	41270	52022	55220	N/A	58372	65483	67792	62345	59814	59874	57201
Bus share	22.98%	27.53%	N/A	N/A	29.62%	33.50%	34.66%	32.42%	N/A	29.91%	28.05%

Source: Dublin City Council, DTO, Transport Operators

The mode share for bus travel to workplaces in the city centre is 22%. This falls away to 3% or less in the Hinterland Area (Table 7.17 overleaf).

Table 7.17: Bus share for travel to work– at workplace (by GDA Sub Area)

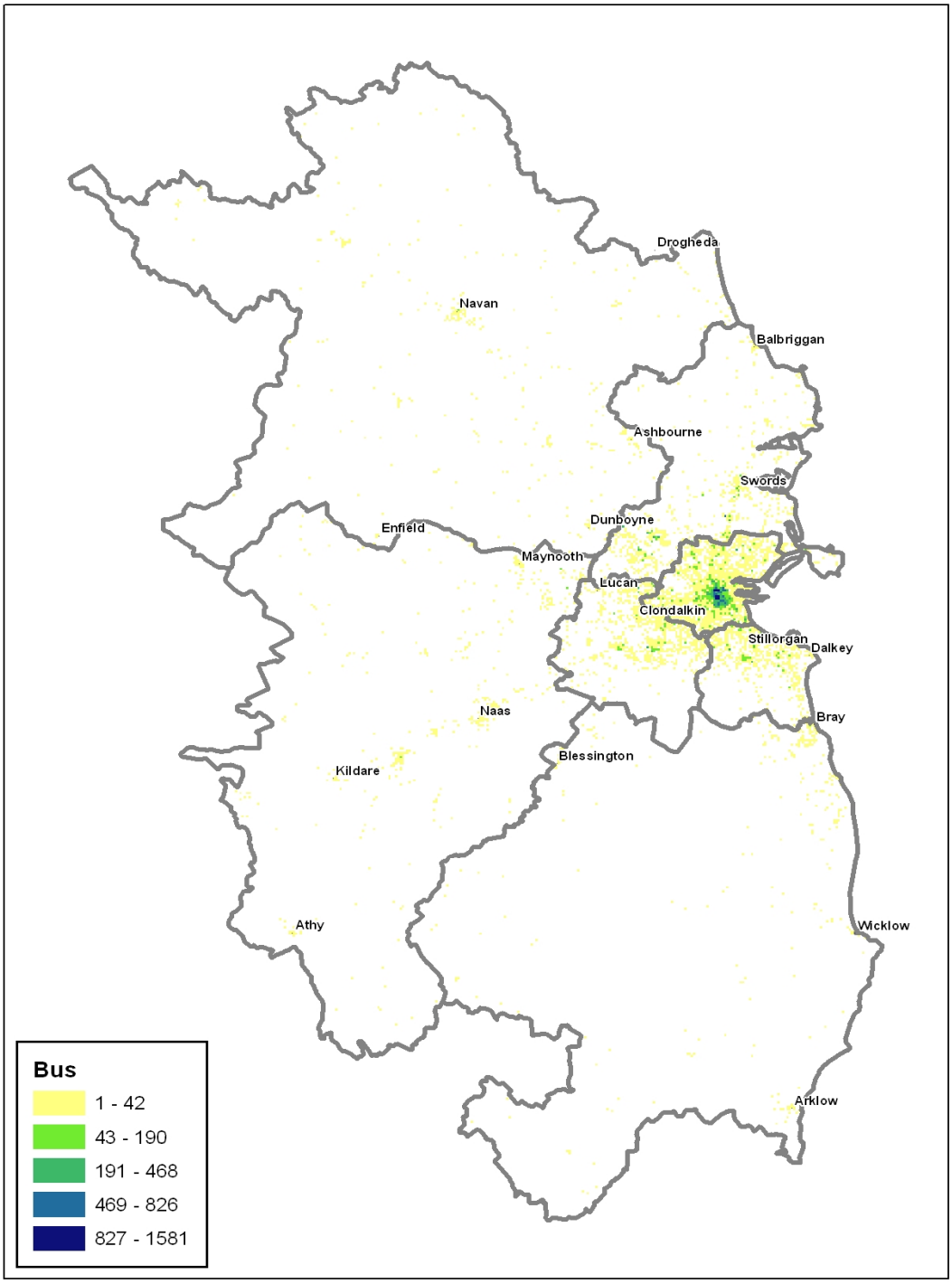
Area	Bus or Coach
Inside Canals	22%
Btw Canals & M50	11%
Btw M50 & Metropolitan	9%
GDA Rural Hinterland	3%
GDA Large Growth Towns	2%

Source: CSO Census 2006, DTO

Figure 7.10 and Figure 7.11 overleaf show the number of trips to work by bus in the GDA and the Dublin region. Figure 7.12, 7.13, 7.14 and 7.15 show bus services and frequencies. Some points are worthy of note

- Bus trips to workplaces in the Dublin Region/Metropolitan Area outside the city centre are quite dispersed, and do not in general focus on RPG Metropolitan Centres (Figure 7.11)
- Bus trips to workplaces outside the Metropolitan Area are confined to the RPG Large Growth Hinterland Towns, and are low in number Figure 7.10)
- Within Dublin city centre, bus trips to Docklands are low. There were no services to much of the Docklands area in 2006 (Figure 7.13).
- Services with higher frequencies are generally radial to the city centre. There are few orbital bus services in the Metropolitan Area, and those that do exist are usually low frequency or circuitous (Figure 7.15)
- There are no orbital services between towns outside the Metropolitan Area (Figure 7.10)
- Higher frequency bus services are present from certain Hinterland Towns to the city centre including Naas, Navan, Ashbourne and Drogheda via Balbriggan.

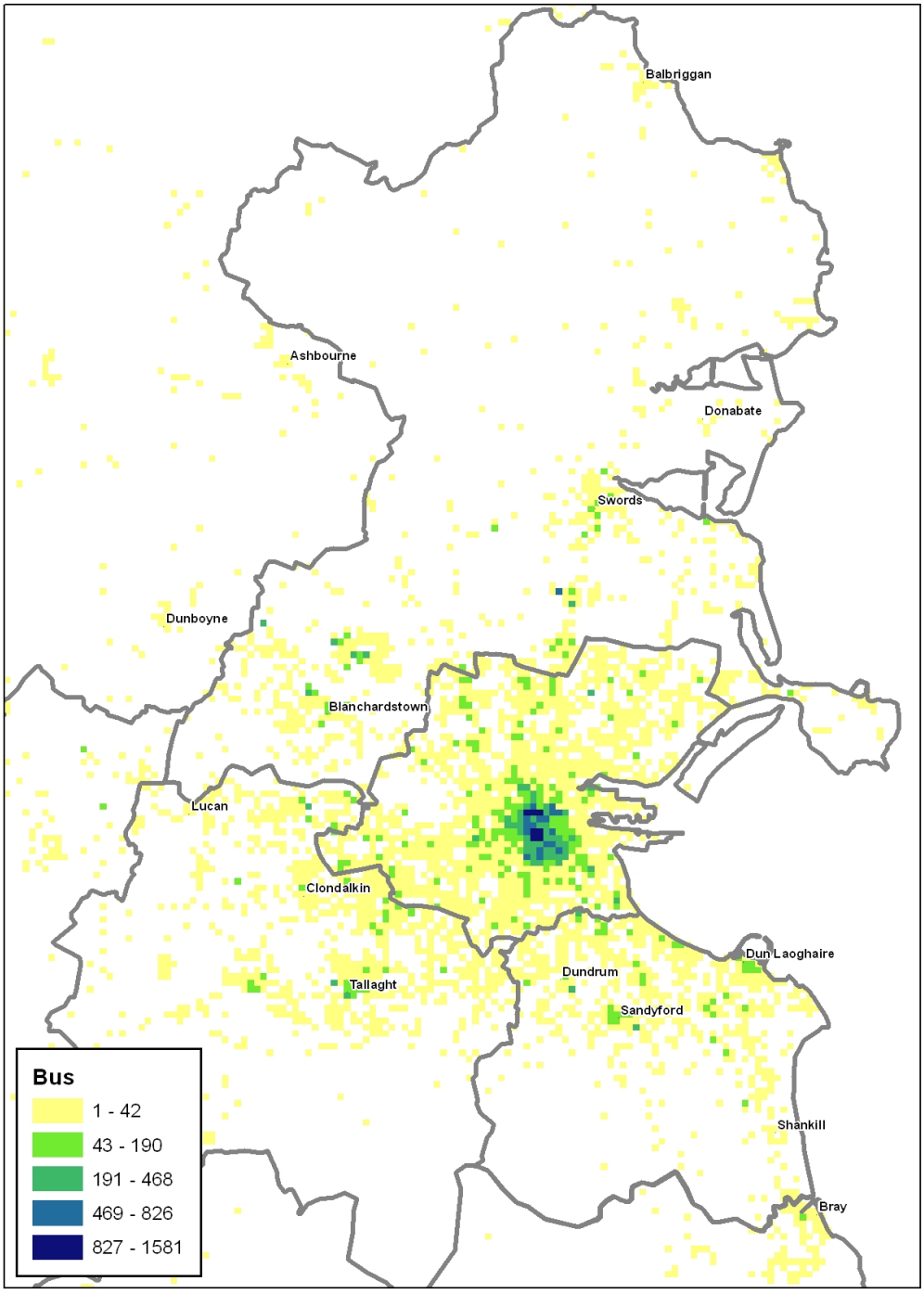
Figure 7.10: Number of bus trips to work in GDA, by 250m square



Source: CSO Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

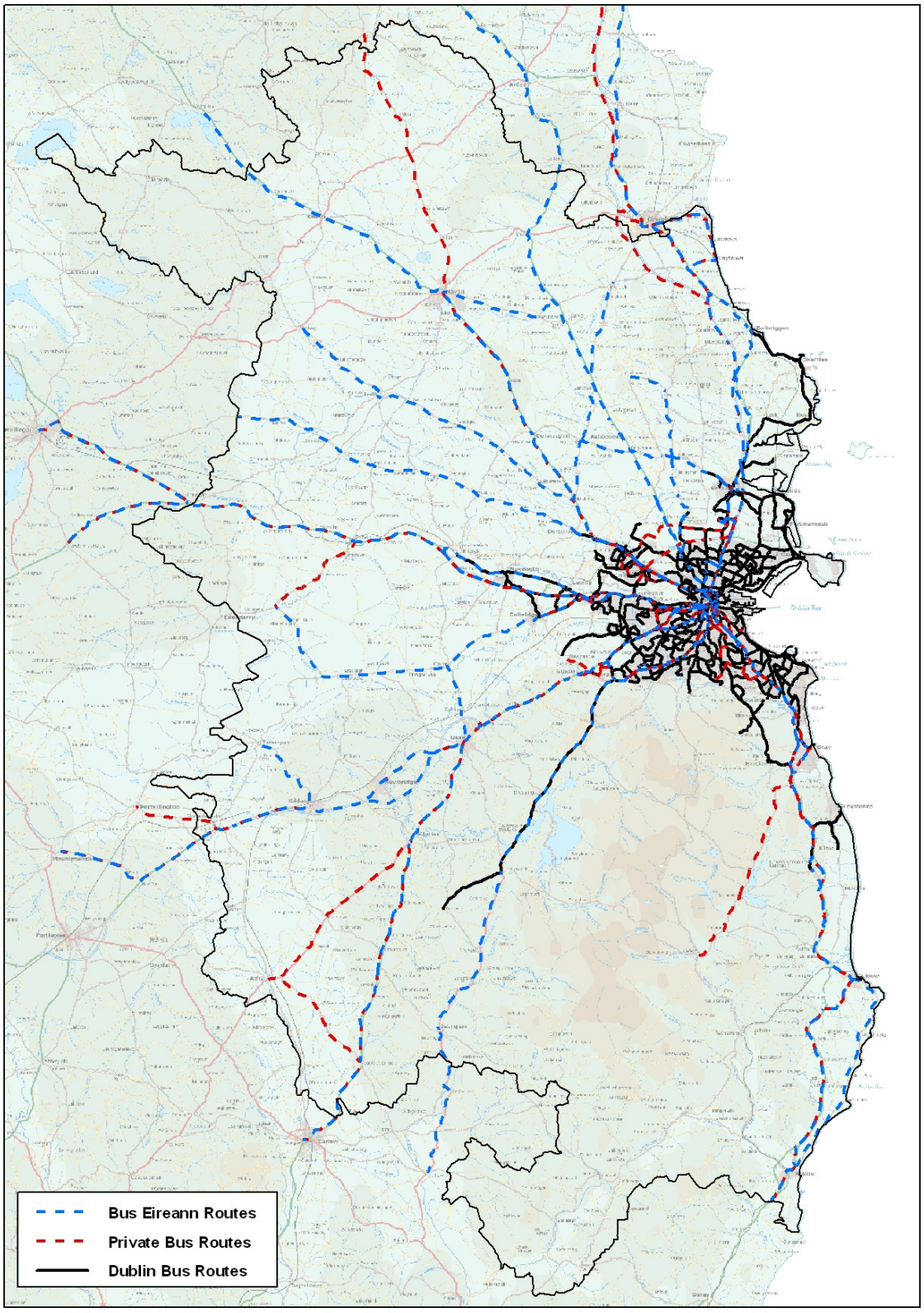
Figure 7.11: Number of bus trips to work in Dublin Region, by 250m square



Source: CSO Census 2006 POWCAR data

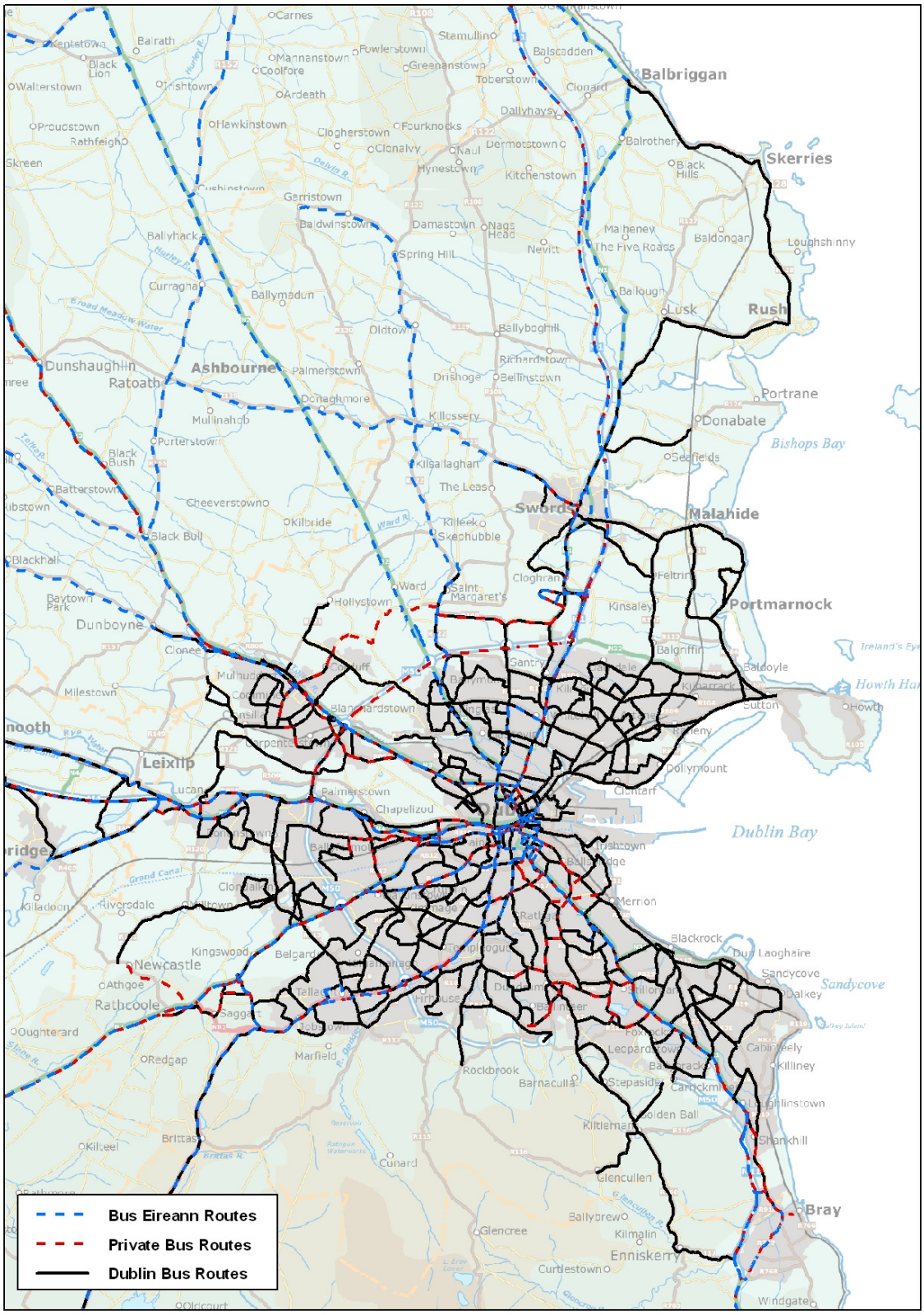
Note: Only squares with more than 20 trips to work in total are shown

Figure 7.12: GDA Bus Network Coverage (2006 -all operators)



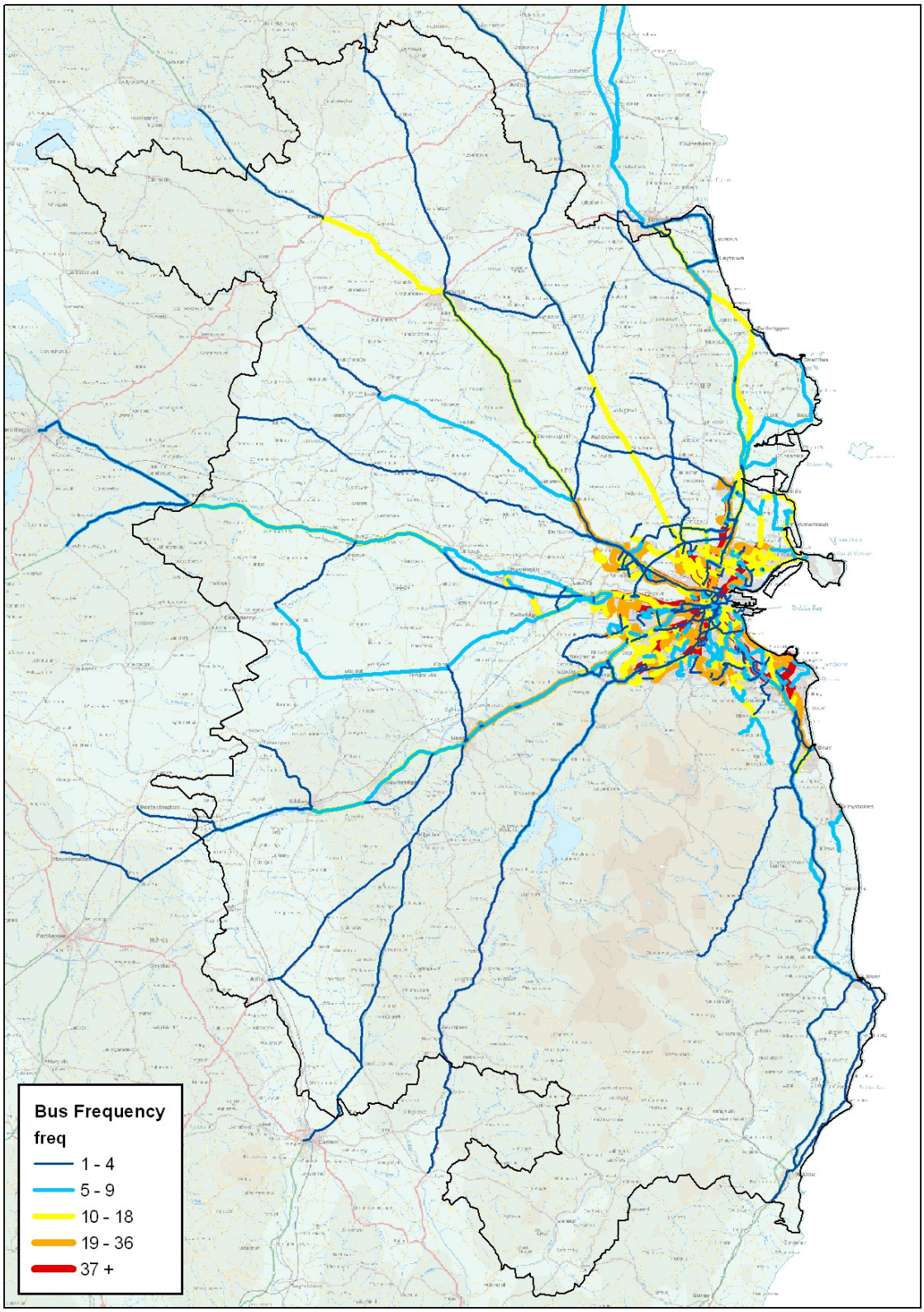
Source: DTO Model (2006)

Figure 7.13: Bus Network Coverage in Dublin (2006- all operators)



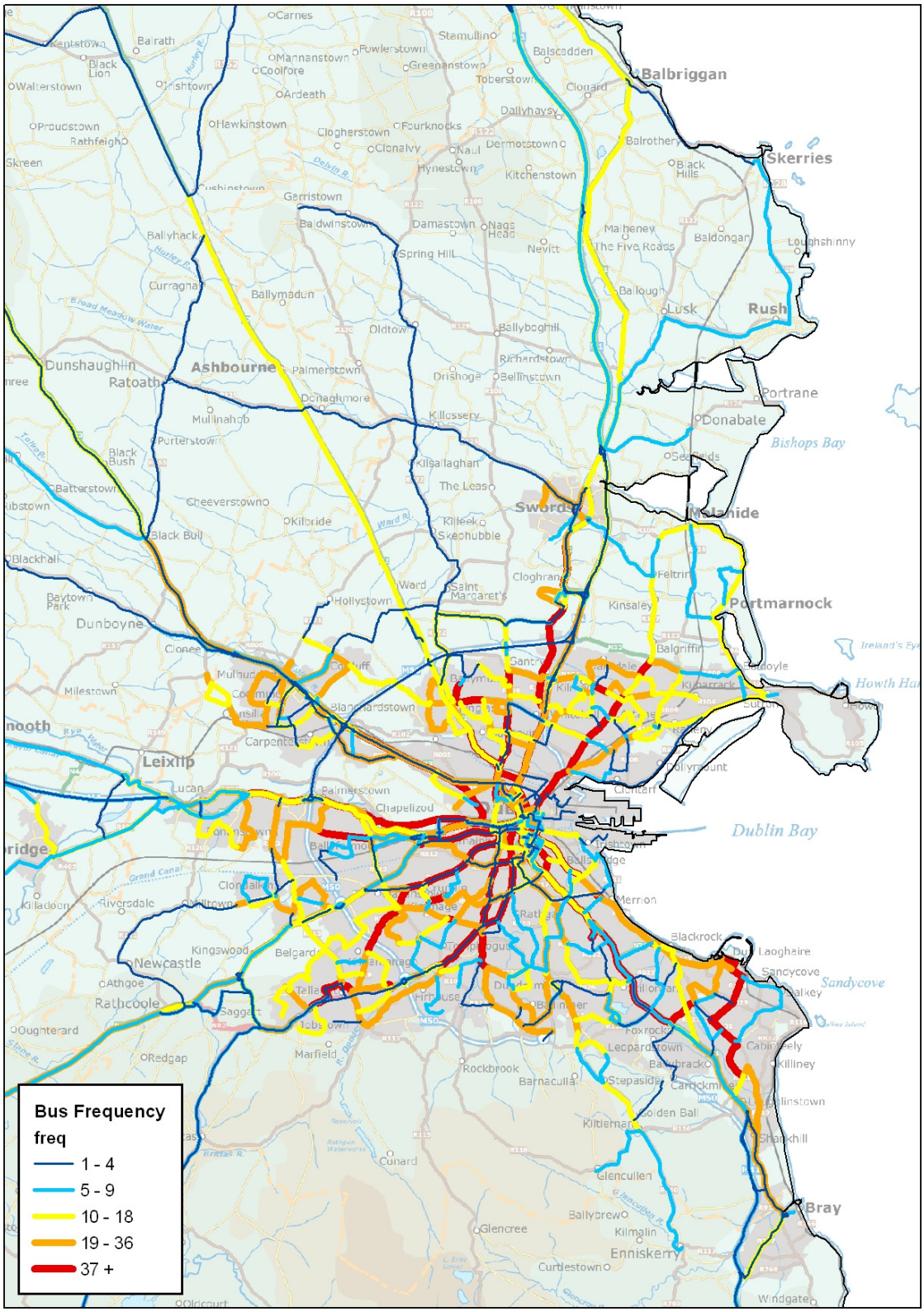
Source: DTO Model (2006)

Figure 7.14: Bus Frequencies in GDA (2006)



Source: DTO model (AM peak period 7am-10am)

Figure 7.15: Bus Frequencies in Dublin (2006)

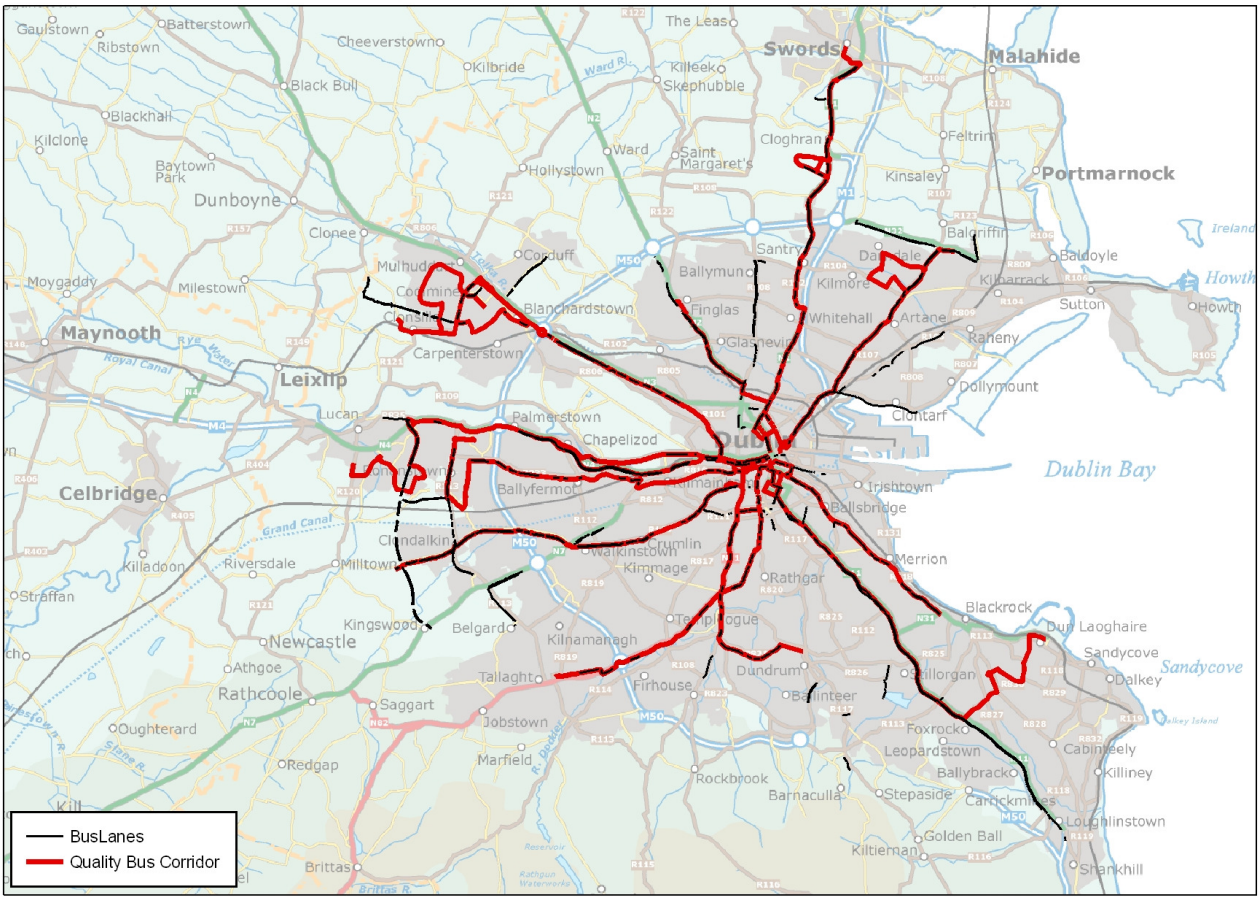


Source: DTO model (AM peak period 7am-10am)

7.4.2 **QBC Network**

Figure 7.16 shows the Quality Bus Network coverage in the Greater Dublin Area. It also shows where bus lanes are present (in black).

Figure 7.16: GDA Quality Bus Network and Bus Lanes (Summer 2007)



Source: DTO Bus Lane Survey 2007

Note: a section of bus lane is also present on the N3 Navan Road in the Dunshaughlin area. The section of bus lane on the N32 (Malahide Road to M50) has since been removed

Issues worthy of note include:

- Bus lane priority varies widely by QBC. In general corridors with substantial sections of dual carriageway are more likely to have bus lane priority
- There is currently no bus priority on many routes with high bus frequency (ref Figure 7.11) – e.g. Greenhills Road Tallaght
- Bus Lanes have been provided on certain roads where few or no buses currently run in the morning peak period.

7.4.3 Average QBC Speeds

There is a wide variation in bus speeds by corridor, related to the degree of segregation offered by buses along the QBC.

Table 7.18: Average Bus Speeds on QBC Corridors AM Peak 2007

Corridor	Speed (km/h)	Surveyed Section
Bray	23.1	Bray to Foxrock
Clontarf	21.4	Clontarf Bus Garage to Fairview
Lucan	20.7	Foxhunter to City Centre
Stillorgan	19.1	Foxrock to St Stephen's Green
Howth Road	18.4	Raheny to Fairview
Rock Road	17.8	Blackrock to City Centre
Malahide Road	17.3	Greencastle Road to Connolly Station
Finglas	15.6	Finglas to City Centre
Blanchardstown	14.8	New River Road to Vity Centre
Swords	13.8	Swords to City Centre
North Clondalkin	13.7	Coldcut Road to City Centre
South Clondalkin	12.5	Grangecastle to City Centre
Tallaght	11.7	West of M50 to City Centre
Crumlin Road	10.6	Drimnagh Road to City Centre
Ballymun	10.1	Ballymun to City Centre
Rathfarnham	8.5	Rathfarnham to City Centre

Source: DTO QBC Monitoring

6 of the 16 surveyed QBC sections had speeds which met the QBC target speed of 17.6km/h in the morning peak.

In general the bus corridors with the lowest speeds are those with the least segregation in the form of bus lanes (e.g Rathfarnham QBC has 45% bus lane priority and an average bus speed of 8.5km/h, whereas Stillorgan QBC has 88% bus priority and an average bus speed of 19.1km/h.

7.4.4 Time spent stationary on QBC Corridors

The table below illustrates the time spent stationary on each QBC, as surveyed by DTO in 2007.

Table 7.19: Time spent stationary by QBC Corridor AM Peak 2007

	Dwell Time at Bus Stops		Time Stationary at Traffic Signals		Time Stationary in Congestion		Summary of Time Spent Stationary	
Corridor	Time (secs)	% of Total Journey Time	Time (secs)	of Total Journey Time	Time (secs)	of Total Journey Time	Time (secs)	of Total Journey Time
Ballymun	329	11.4%	804	27.8%	442	15.3%	1579	54.6%
Blanchardstown	188	9.4%	401	20.0%	84	4.2%	672	33.6%
Bray	257	18.1%	109	7.7%	8	0.5%	377	26.6%
Clontarf	126	23.3%	21	3.9%	1	0.1%	152	28.2%
Crumlin Road	282	17.1%	267	16.1%	80	4.9%	640	38.8%
Finglas	220	18.6%	274	23.2%	17	1.4%	514	43.6%
Howth Road	147	17.1%	83	9.7%	27	3.2%	266	31.0%
Lucan	181	11.8%	163	12.8%	118	8.8%	439	33.4%
Malahide Road	283	22.0%	187	16.1%	11	0.9%	506	39.4%
North Clondalkin	246	11.1%	367	16.6%	141	6.4%	783	35.5%
Rathfarnham	339	16.8%	451	22.3%	148	7.3%	938	46.5%
Rock Road	135	7.0%	432	22.5%	76	4.0%	647	33.7%
South Clondalkin	492	14.9%	570	22.2%	155	4.7%	1388	42.1%
Stillorgan	412	21.1%	226	11.6%	29	1.5%	682	35.0%
Swords	303	11.3%	575	21.5%	259	9.7%	1138	42.6%
Tallaght	326	11.9%	567	20.6%	559	20.3%	1466	53.3%
Totals	**4266**	**14.1%**	**5497**	**18.2%**	**2155**	**7.1%**	**12187**	**40.4%**

Source: 2007 DTO QBC Monitoring

7.4.5 Variation in bus journey times

There is a wide variation bus journey times on QBCs, as illustrated below. This variation is partly related to time spent stationary

Table 7.20: Variation in bus journey times (AM peak 2007)

Corridor	Section	Low	High	% Variation
Ballymun	Ballymun to City Centre	26:13	47:21	81%
Blanchardstown	New River Road to City Centre	24:00	44:33	86%
Bray	Bray to Foxrock	17:08	29:54	75%
Clontarf	Clontarf	4:30	11:28	155%
Crumlin Road	Drimnagh Road to City Centre	19:20	42:06	118%
Finglas	Finglas to City Centre	15:22	29:08	90%
Howth Road	Raheny to Fairview	10:42	16:37	55%
Lucan	Foxhunter to City Centre	27:24	40:11	47%
Malahide Road	Greencastle Road to Connolly Station	12:59	26:50	107%
North Clondalkin	Coldcut Road to City Centre	30:54	48:02	55%
Rathfarnham	Rathfarnham to City Centre	30:48	51:55	69%
Rock Road	Blackrock to City Centre	22:52	36:27	59%
South Clondalkin	Grangecastle to City Centre	44:59	74:22	65%
Stillorgan	Foxrock to St Stephen's Green	18:53	38:07	102%
Swords	Swords to City Centre	44:12	73:10	66%
Tallaght	West of M50 to City Centre	35:46	53:05	48%

Source: DTO QBC Monitoring

7.4.6 QBC Bus Service Reliability

Service arrival time reliability varies widely by QBC, as illustrated below

Table 7.21: Excess wait time for bus service (AM peak 2007)

Corridor	Excess Wait Time (secs)	Timing Point
Blanchardstown	0	Navan Road
Finglas	0	Harts Corner
Lucan	0	Palmerston
Malahide Road	0	Fairview
Stillorgan	0	Donnybrook
Tallaght	0	Rathmines
Bray	23	Shankill
Ballymun	26	Ballymun Road
Swords	38	Drumcondra
Clontarf	52	Fairview
Rathfarnham	55	Canal
Crumlin Road	84	Cork Street
Howth Road	128	Fairview
Rock Road	180	Ballsbridge
North Clondalkin	275	Ballyfermot Road
South Clondalkin	341	Nangor Road

Source: DTO QBC Monitoring

Note: Excess wait time is defined as average additional wait time over scheduled arrival time, over the surveyed period.

Again, QBC bus service reliability is related to the level of bus priority provided on the QBC.

7.4.7 Bus Trip Distance and Time

Table 7.22: Bus Trip Distance (kms) by Trip Purpose

Journey Purpose	0 – 5km	6 – 10km	11– 15km	16– 20km	21– 30km	31– 50km	51– 100km
To Work	21%	40%	19%	10%	7%	1%	1%
To Education	25%	38%	21%	8%	3%	5%	0%
To Shopping	44%	31%	11%	5%	5%	4%	0%

Most people travel less than 10km by bus for work, education or shopping. Only 8% of those travelling to work by bus travel over 20km.

Table 7.23: Bus Journey Time by Trip Purpose

Journey Purpose	0 – 5 mins	6 –10 mins	11 – 15 mins	16 – 20 mins	21 – 30 mins	31 – 50 mins	51 – 100 mins	100+ mins
To Work	0%	1%	6%	7%	21%	29%	31%	5%
To Education	1%	1%	8%	12%	27%	22%	26%	3%
To Shopping	1%	10%	16%	14%	28%	16%	14%	1%

Most people travelling by bus to work and education experience a journey time of over half an hour, even though 60% of these trips are less than 10km in length (Table 7.22).

7.4.8 Annual Bus Passenger Numbers

Bus Eireann Commuter passenger numbers grew dramatically (by 61%) in the two years 2005 to 2007.

There was a slight growth in Dublin Bus patronage between 2002 and 2007, however there was a decline in patronage from 2003 to 2005 that can be attributed partly to the introduction of LUAS and improved suburban rail services.

Table 7.24: Bus passenger journeys by GDA Operator

Year	Dublin Bus[11]	BusEireann (Commuter)[12]
2002	146.5m	N/a
2003	149.8m	N/a
2004	149.8m	N/a
2005	145.6m	4.5m
2006	146.2m	5.6m
2007	147.0m	7.3m

Source: Dublin Bus and DoT

7.4.9 Bus Fleet in GDA

The number of Dublin Bus buses in operation has grown by 8.6% between 2003 and 2007. Information for private operators is not available.

Table 7.25: Number of buses in operation in GDA (Source: Dublin Bus and DOT)

Year- End	Dublin Bus	Bus Eireann (Commuter)[13]
2003	1062	N/a
2004	1062	N/a
2005	1082	68
2006	1097	77
2007	1153	77

[11] Letter from BAC 14 November, 2008
[12] Quarterly performance reports to DoT under MoU
[13] Quarterly performance reports to DoT under MoU

Table 7.26: Large Public Service Vehicles Licensed in GDA

	2002	2003	2004	2005	2006	2007	Growth 2002-2007
Dublin County Region	2,468	2,569	2,529	2,569	2,686	2,772	12%
Kildare	230	221	231	243	267	314	37%
Meath	193	207	223	231	224	249	29%
Wicklow	187	191	187	188	189	201	7%
GDA Total	**3,078**	**3,188**	**3,170**	**3,231**	**3,366**	**3,536**	**15%**
National Total	**7,090**	**7,392**	**7,430**	**7,625**	**7,997**	**8,451**	**19%**

Source: DOT

The number of bus vehicle kilometres operated by Dublin Bus increased by 7.3% between 2003 and 2007. The number of seat-km grew by 9.1% over the same time. This indicates a trend in Dublin Bus towards the operation of buses with higher seat capacity

Table 7.27: Bus vehicle km and Seat-km serving GDA

Year- End	Dublin Bus		Bus Eireann (Commuter)	
	Veh-kms (m)	Seat-kms (m)	Veh-kms (m)	Seat-kms (m)
2003	57.7	4154.4	N/a	N/a
2004	58.2	4190.4	N/a	N/a
2005	58.0	4168.9	12.5	N/a
2006	58.2	4229.3	13.2	N/a
2007	61.9	4533.0	13.0	N/a

Source: DOT

Comparing vehicle kilometres (Table 7.27) to passenger numbers (Table 7.24), the average vehicle kms per Dublin Bus passenger has increased from 0.394 to 0.421 from 2003 to 2007, an increase of 7%, indicating longer average journeys lengths. In the case of Bus Eireann, the average vehicle km per passenger has declined from 2.775 to 1.789 from 2005 to 2007, a decrease of 36%, indicating significantly shorter average journey lengths. This is likely to be related to the recent growth in Bus

Eireann services to Hinterland commuter towns such as Ashbounre and Rathoath, which lie relatively close to the Dublin Metropolitan boundary

Table 7.28: Average age of GDA bus fleet (years)

Year- End	Dublin Bus
2002	5.2
2003	5.5
2004	6.1
2005	6.4
2006	6.2
2007	6.2

Source: Dublin Bus

Note: Information for Bus Eireann and private operators is not available

The average age of the Dublin Bus fleet in 2007 increased by one year since 2002. However it still remained relatively low by international standards.

7.4.10 Service Quality

Information issues include

- Lack of an internet based public transport journey planner (incorporating bus)
- Lack of real time bus arrival information at bus stops
- Lack of timetables showing time of arrival at bus stops (except at termini)

Stop/interchange issues include

- Lack of shelters at many bus stops, including heavily used bus stops in the city centre
- Lack of information about transfer to other public transport services, including bus

Ticketing and fares

- Lack of GDA integrated ticketing (i.e. a single ticket for GDA public transport use (including bus))
- Delays at busier bus stops due to high proportion of on-board fare payment
- Lack of GDA fares integration (i.e. distance or zonal based fare for whole journey), leading to fare penalties for those changing between bus services or from bus to rail during their journey.

- Lack of information on fares at stops, prior to boarding bus

Many of these issues were raised during the April-June 2008 public consultation on issues

7.4.11 Areas of bus overcrowding at peak times

Detailed data are not available, but it is understood that bus overcrowding in the GDA is currently relatively rare. The busiest section for most routes serving the city centre is at the Canal cordon.

7.5 Rail/LUAS

7.5.1 Rail/LUAS Mode Share

The mode share for rail is highest for trips to work. The mode share for rail is generally higher in Dublin than in the Mid-East, particularly for the most common trip purposes (work, education and shopping)

Table 7.29: Rail/LUAS Mode Share by trip purpose

Region	Home to Work	Home to Education	Home to Shopping	Home to Sport or Leisure	Home to Other
Dublin	7.8%	4.9%	3.2%	5.0%	4.3%
Mid-East	4.3%	3.1%	0.8%	2.9%	1.6%
GDA	6.8%	4.4%	2.6%	4.5%	3.5%

Source: CSO Census 2006, DTO Household Survey 2006

The mode share for rail crossing the Canals into the city centre in the AM peak period has climbed significantly over the last 10 years, and particularly since 2003, following the introduction of LUAS and improvements to suburban rail commuter services (Table 7.30 below).

Table 7.30: Rail/LUAS mode share into city centre (across Canal Cordon) 7am-10am

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number (IE Rail)	21416	24906	N/A	27554	26626	25339	24927	28201	N/A	33534	35692
Number (LUAS)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5622	7244	9029	9171
Rail/LUAS Total	21416	24906	N/A	27554	26626	25339	24927	33823	N/A	42563	44863
Rail/LUAS share	11.9%	13.2%	N/A	N/A	13.5%	13.0%	12.7%	17.6%	N/A	21.3%	22.0%

Source: Dublin City Council, DTO, Transport Operators

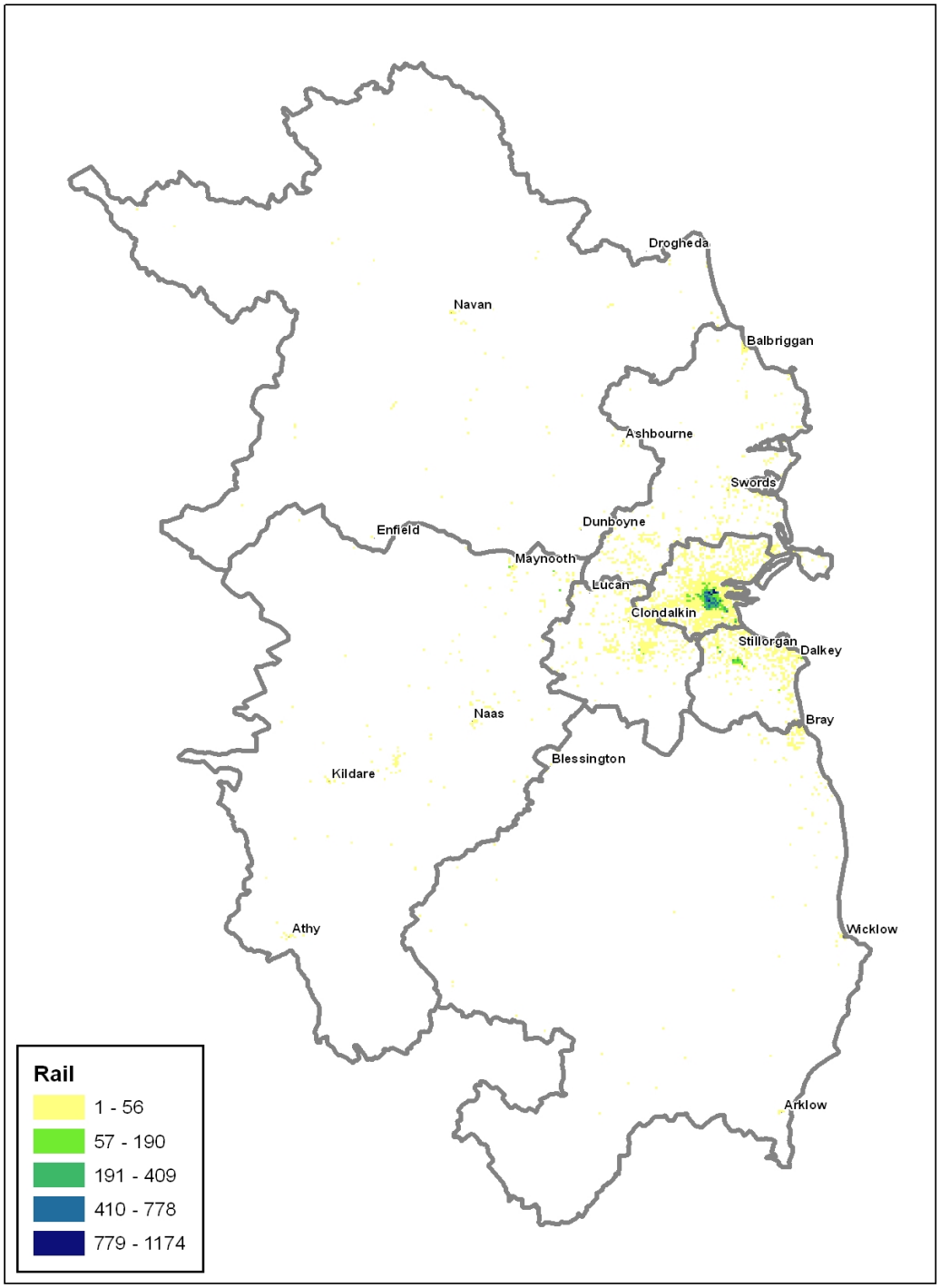
The mode share for rail/LUAS travel to workplaces in the city centre is 18% (comparable to bus mode share, which is 22%). This falls away to 1% in the Hinterland Area.

Table 7.31: Rail mode share to Workplace by GDA Sub Areas (2006)

Area	Rail Share
Inside Canals	18%
Btw Canals & M50	6%
Btw M50 & Metropolitan	2%
GDA Rural Hinterland	1%
GDA Large Growth Hinterland Towns	1%

Source: CSO Census 2006, DTO

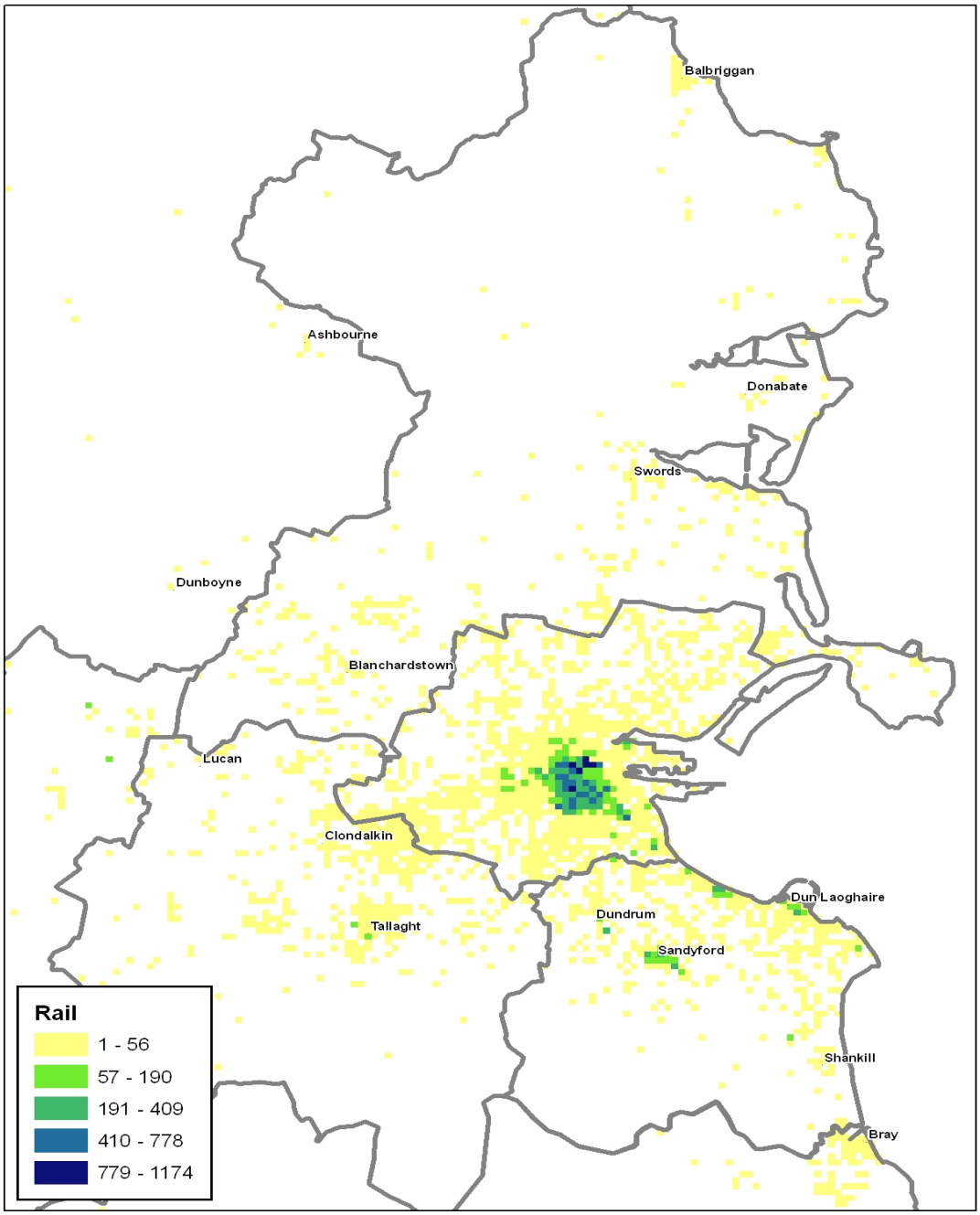
Figure 7.18: Number of rail/LUAS trips to work in GDA, by 250m square



Source: CSO Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

Figure 7.19: Number of rail/LUAS trips to work in Dublin Region, by 250m square



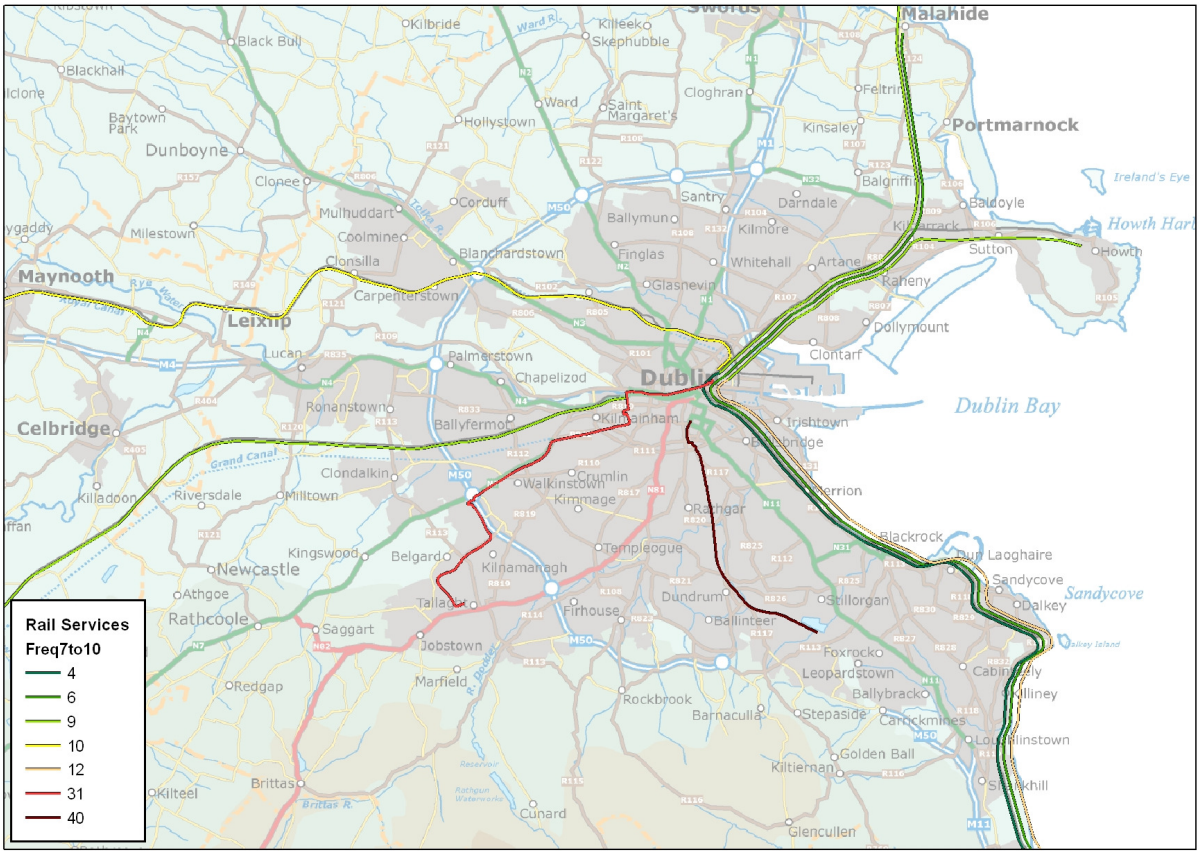
Source: CSO Census 2006 POWCAR data

Note: Only squares with more than 20 trips to work in total are shown

7.5.2 Rail/LUAS Network and Frequencies

The current (2008) rail network in the GDA is shown in Figure 7.20 below. Generally, the rail network is focussed on the city centre. Frequencies on LUAS services are much higher than suburban rail and DART.

Figure 7.20: GDA Rail/LUAS Network and Frequencies (AM Peak 7am-10am)



Note: Not all train services serve all stations (e.g. outer suburban costal rail services typically only stop at larger stations in Metropolitan Area)

7.5.3 Rail Reliability

Information not currently available

7.5.4 Areas of Rail Overcrowding

Information not currently available

7.5.5 Rail/LUAS Journey Distances and Times

Most trips to work, education and shopping in the GDA by rail are less than 15km. A considerable number of work trips by rail (27%) are over 20km in length**.** Average distances travelled by rail are longer than for other modes.

Table 7.32: Distances travelled by rail (various trip purposes)

Journey Purpose	0 – 5km	6 – 10km	11– 15km	16– 20km	21– 30km	31- 50km	51- 100km
To Work	16%	28%	16%	13%	19%	6%	2%
To Education	11%	30%	23%	27%	0%	9%	0%
To Shopping	29%	38%	8%	12%	6%	1%	5%

Source: DTO Household Survey 2006

Journey times by rail are also relatively long when compared with other modes. More than half the journeys to work by rail are over half an hour in duration.

Table 7.33: Distances travelled by rail (various trip purposes)

Journey Purpose	0 – 5 mins	6 –10 mins	11 – 15 mins	16 – 20 mins	21 – 30 mins	31 – 50 mins	51 – 100 mins	100+ mins
To Work	2%	2%	4%	5%	24%	34%	26%	2%
To Education	0%	2%	2%	1%	38%	21%	34%	2%
To Shopping	0%	0%	17%	11%	37%	18%	17%	1%

Source: DTO Household Survey 2006

Rail and LUAS Passenger Numbers

Table 7.34 illustrates where the growth in Iarnrod Eireann rail patronage has taken place, from 1997 to 2006. Percentage growth in DART patronage over the ten year period has been in single figures, elsewhere growth has been extraordinary, particularly on the Maynooth corridor (Midland Suburban) albeit from a much lower base. This growth coincided with the improvement of frequencies on these corridors and suggests a strong latent demand for additional rail services existed on these corridors.

Table 7.34: Weekday patronage by IE rail service (November Weekday 1997-2006)

Service	1997	2000	2001	2003	2004	2006	Increase 1997-2006
DART	75,582	76,927	72,858	68,152	64,435	81,560	8%
Outer Suburban (coastal)	13,155	17,301	19,441	19,446	20,419	23,305	77%
Midland Suburban (Maynooth)	4,150	5,098	9,039	11,642	13,614	21,966	429%
Southern Suburban (Kildare)	3,035	6,896	8,148	8,246	9,219	11,349	274%
Total	95,922	106,222	109,486	107,486	107,687	138,180	44%

Source: IE Rail Passenger Census

Table 7.35: Annual patronage IE and LUAS Rail

	Passenger Journeys (million)		
	DART	IE Rail excluding DART	LUAS
2005	16.256	11.029	22.2
2006	19.69	13.152	28.8
2007	23.306	17.406	28.4
Growth 2005-2007	43%	58%	28%

Source: RPA and DoT

7.5.6 Rail Fleet in GDA

Information on DART/Suburban Rail fleet numbers operating in GDA is not available.

Table 7.36 shows how seat-kilometres operated by Iarnrod Eireann have grown in recent years. Outer suburban services have all increased, whereas DART services operated have declined.

Table 7.36: Annual Seat-km (IE Rail) (million seat km)

	2005	2007	2008	Growth 2005-2008
Dublin – Wicklow	0.273	0.675	0.677	147%
Dublin – Kildare	6.280	7.597	7.673	22%
Dublin - Maynooth	20.466	27.291	27.381	34%
Dublin - Drogheda	23.244	32.993	33.102	42%
DART	72.399	63.800	64.386	-11%

Source: DoT

7.5.7 Service Quality

Information issues include

- Lack of an internet based public transport journey planner (incorporating rail/LUAS)
- Lack of real time bus arrival information at certain suburban rail stations

Station/interchange issues include

- Lack of shelters at some train stations
- Lack of information about transfer to other public transport services, including bus

Ticketing and fares

- Lack of GDA integrated ticketing (i.e. a single ticket for GDA public transport use (including rail/LUAS))
- Lack of GDA fares integration (i.e. distance or zonal based fare for whole journey), leading to fare penalties for some changing between rail/LUAS services or from bus to rail during their journey.

The public highlighted many of these issues, during the April-June 2008 public consultation

7.6 Car

7.6.1 Car ownership

The propensity to own a car is very related to a person's place of residence, and strongly influences the likelihood of driving to work. From Figure 7.21, it can be seen that 'Inside Canals', (where public transport and linkages to services can be assumed to be quite good), a large majority of households have no car available to them. This is in contrast to outer areas, where car ownership, or access to more than one car increases with distance of residence from the city centre. This is most apparent in the GDA Rural Hinterland Sub Area, where only 11% of households have no access to a car, and most have access to two cars or more.

Figure 7.21: Household Car Ownership by Sub Area.

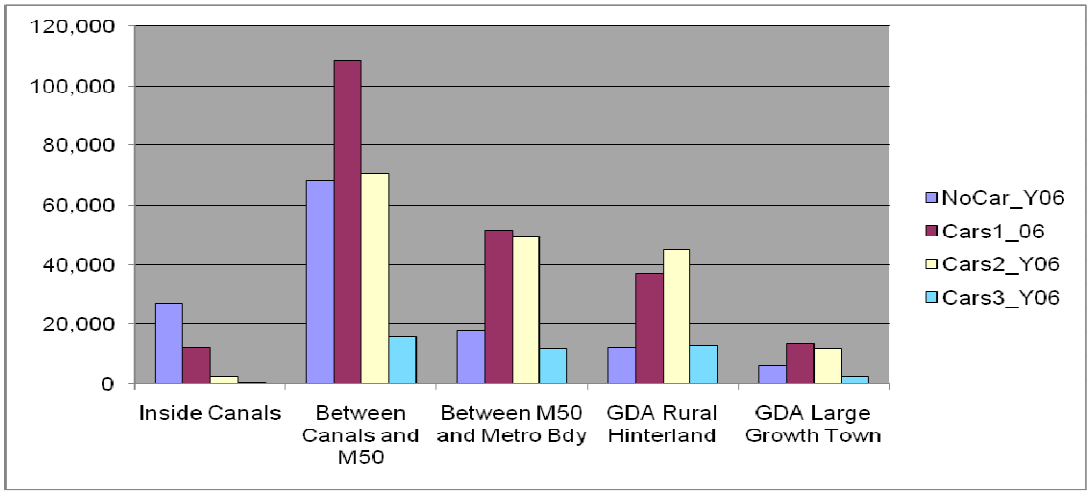


Table 7.37: Car ownership by Sub Area (cars per 1000 persons)

Sub Area	2002	2006	Percentage Increase
Inside Canals	171	172	0%
Between Canals & M50	383	416	9%
Between M50 and & Metro Area	414	437	6%
GDA Large Growth Town	419	458	9%
GDA Rural Hinterland	456	515	13%
Total GDA	392	427	9%

Source: CSO Census 2002, Census 2006

Car ownership rates are far lower within the Canals than any other area of the GDA. Generally car ownership rates increase with distance from the city centre. Unsurprisingly, car ownership is highest in the Rural Hinterland and is growing at a faster rate than in any other part of the GDA.

7.6.2 Car Mode Share

The share of trips made car dominates other modes, for all trip purposes in both Dublin and Mid-East Regions, except for trips to education

Table 7.38: Car Mode Share (Dublin and Mid-East) by trip purpose (driver+passenger)

Region	Home to Work	Home to Education	Home to Shopping	Home to Sport or Leisure	Home to Other
Dublin	54.6%	31.8%	49.6%	51.1%	51.6%
Mid-East	72.8%	45.2%	69.6%	65.3%	75.2%
GDA	59.8%	35.9%	54.8%	54.2%	58.5%

Source: CSO Census 2006, DTO Household Survey 2006

The mode share for car (drivers and passengers) crossing the Canals into the city centre in the AM peak period has fallen significantly over the last 10 years, following the introduction of QBCs and stricter controls on all-day on-street parking in the late nineties, and again following the introduction of LUAS and improvements to suburban rail commuter services between 2003 and 2005. There was however a 10% increase in cars entering the city centre between 2005 and 2007.

Table 7.39: Car mode share into city centre (across Canal Cordon) 7am-10am

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006(1)	2007
Number	89506	87009	88647	82201	82607	76102	73701	69918	63041	68457	71596
Car share	49.9%	46.0%	N/A	N/A	41.9%	38.9%	37.7%	36.4%	N/A	34.2%	35.1%

Source: Dublin City Council, transport operators, DTO

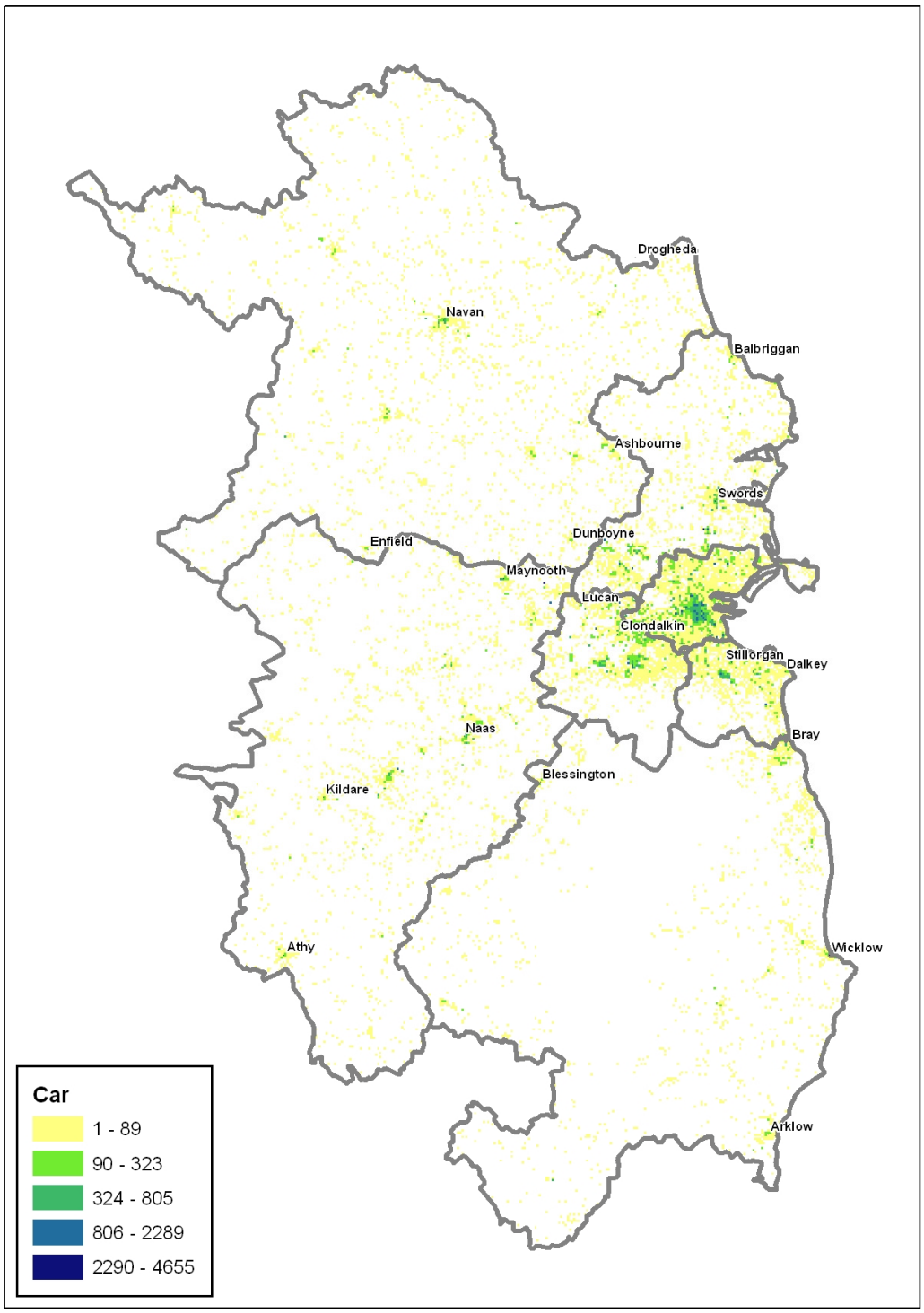
Note: (1) 58,644 cars crossed the Canal during the 3-hour survey period in 2006. (Average car occupancy was 1.17)

Figures 7.22 and 7.23 overleaf show the numbers of trips by car to workplaces in the GDA. They demonstrate the dispersed nature of workplaces in the GDA, with many workplaces located outside the city centre, and outside other Metropolitan Centres and the Hinterland Large Growth Towns. Away from these centres, the prospect of a good public transport service is inevitably less, and it must be expected that public transport to many of non-central workplaces will remain limited.

Figure 7.24 shows the National and Regional Road network in the Dublin Region. All the radial national roads have been upgraded to motorway or dual carriageway standard approaching the M50, and some existing motorways and dual carriageways (M50, N4, N7) have been, or are being, widened.

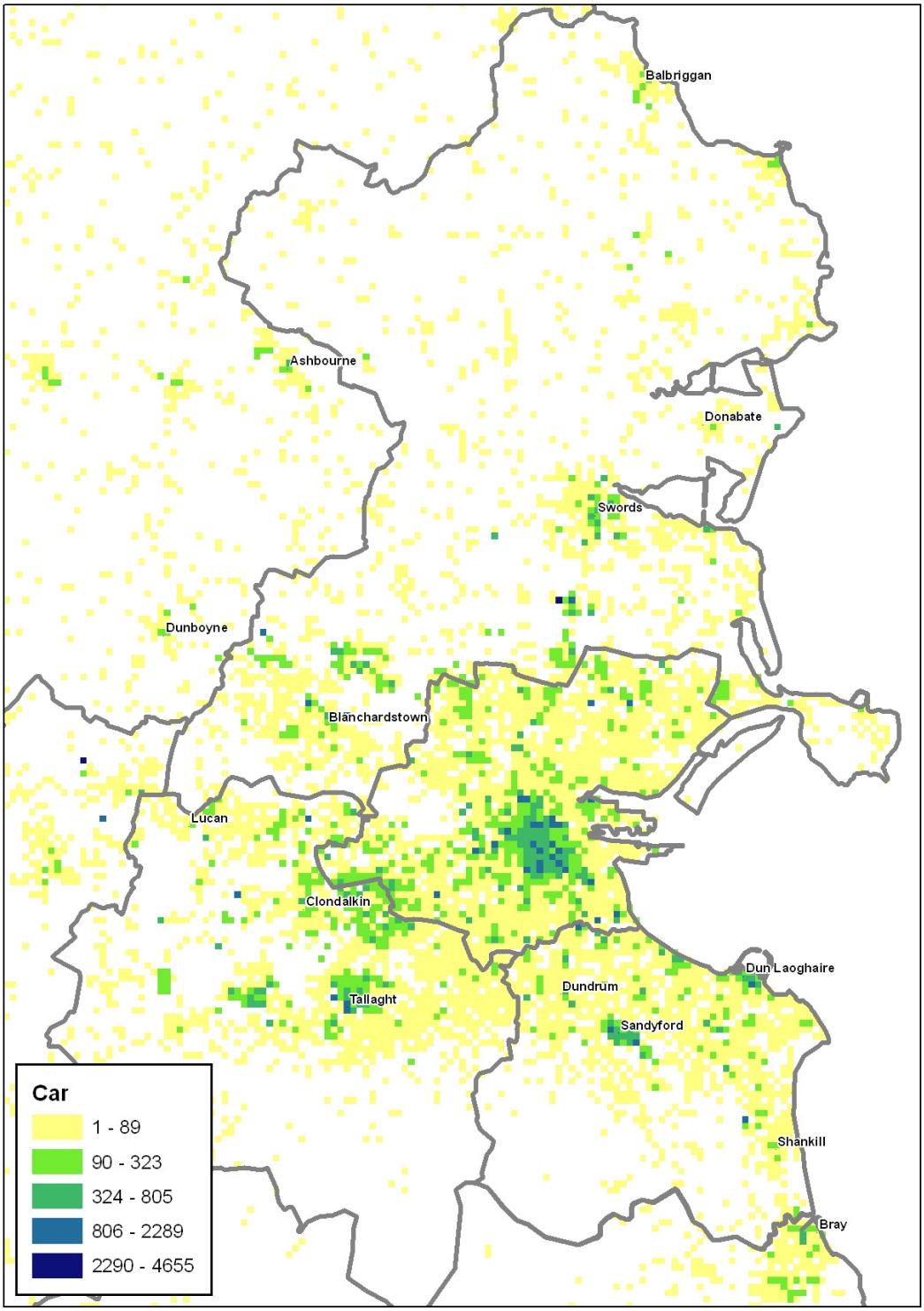
This increase in road capacity (coupled with generous car parking standards in these areas – see section 7.6.2) is undoubtedly facilitating car based commuting to non-central workplaces.

Figure 7.22: Number of car trips to work in GDA, by 250m square



Source: CSO Census 2006 POWCAR data, usual mode of travel to work

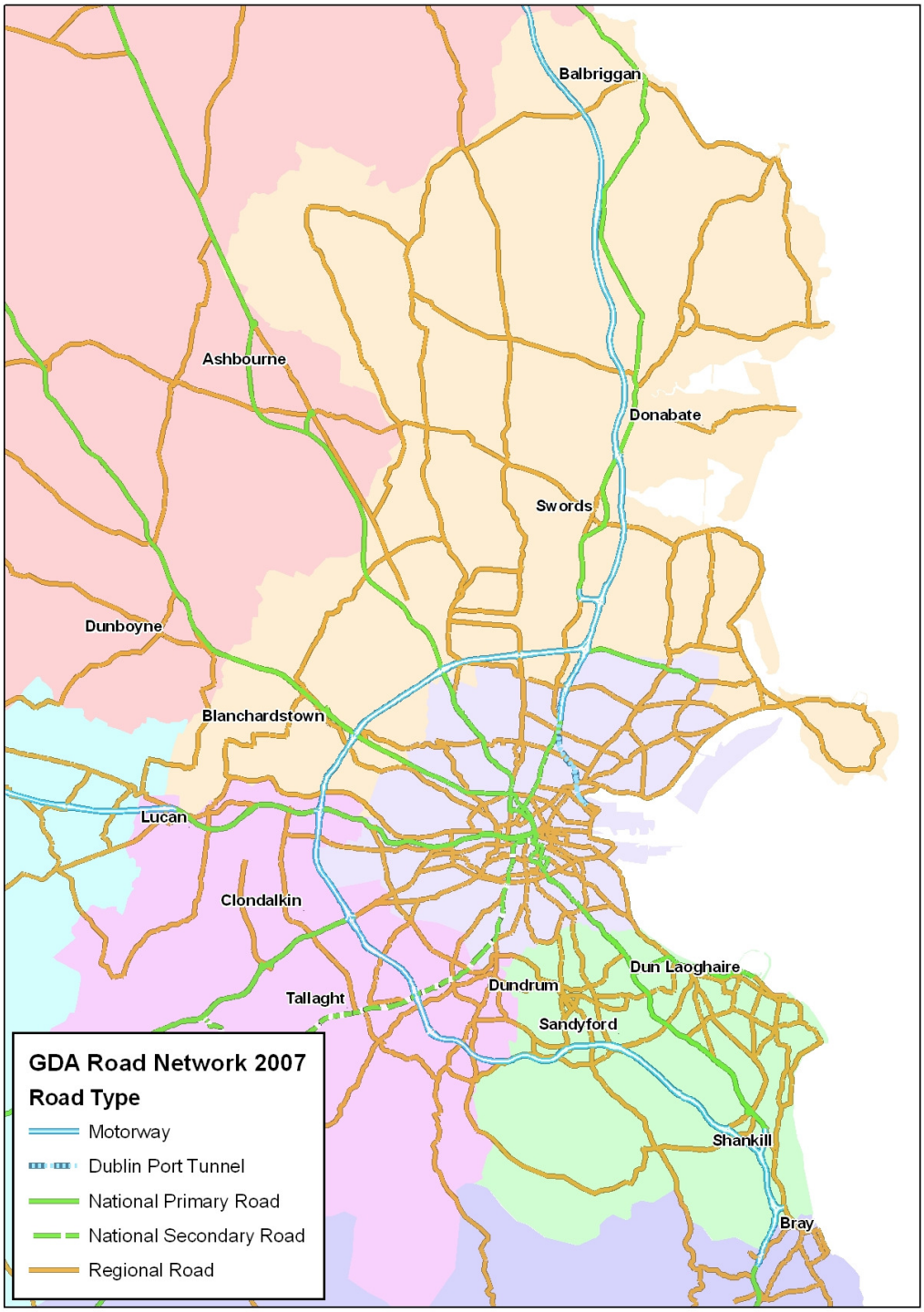
Figure 7.23: Number of car trips to work in the Dublin Region, by 250m square



Source: CSO Census 2006 POWCAR data, usual mode of travel to work

Note: Only squares with more than 20 trips to work in total are shown

Figure 7.24: National and Regional Roads in the Dublin Region



7.6.3 Car Parking

Examining the CSO data for car drivers to work, an estimate of the number of parking spaces available to those in work can be made (Table 7.40 below). These figures include spaces in workplaces, as well as on-street spaces or other off-site car parking spaces available to car drivers to work.

The large majority of car parking at workplaces occurs outside of the city centre area.

It is interesting to note that the level of car parking at workplaces inside the Canals (60,820) closely matches the number of cars entering the city centre in the morning peak period (58,500 – see Table 7.39 - Note (1)).

Table 7.40: Car parking at (or in vicinity of) workplaces

Sub Area	Spaces	% GDA Total
Inside Canals	60,820	16%
Between Canals & M50	135,773	35%
Between M50 & Metropolitan Area Boundary	116,979	31%
GDA Rural Hinterland (including smaller towns)	47,114	12%
GDA Large Growth Towns	22,007	6%
Total	382,693	100%

Source: CSO 2006 Census POWCAR data (estimate based on number of car drivers to work in each area)

The level of car parking available at workplaces has a major impact on choice of mode to travel to work. Car parking standards vary widely by local authority. Dublin City Council has the most restrictive car parking standards. There are three different car parking standard zones in the Dublin City Council area, based on public transport accessibility. Local Authority car parking standards are generally, though not universally, expressed as maxima.

Table 7.41 overleaf presents current local authority development plan car parking standards.

Table 7.41: Table 7.13 GDA Local Authority Development Plan Car Parking Standards

Council	Dwelling	Retail	Retail Warehouse	Offices	Manuf. And Industry	School
	sp. per unit	1 space per x m2	1 space per x m2	1 space per x m2	1 space per x m2	sp. per class
Dublin City	0.5-1.5	30-400	35-300	100-400	75-400	0-1
Dun Laoghaire	1-2	20	20-35	50	50	1
South Dublin	1-2	20	20-35	40	35	1
Fingal	1-2	20	20	25	35	2
Meath	2	20	20	25	50	3
Kildare	1.5-2	12-24	12	20-25	33	1.2 - 2
Wicklow	1-2	17	17	20-25	33	1.2 - 2

7.6.4 Car Journey Distances and Times

The majority of car trips to education and shops are less than 5km in length. One third of car trips to work are less than 5km in length.

Table 7.42: Car journey distance by trip purpose

Journey Purpose	0 – 5km	6 – 10km	11– 15km	16– 20km	21– 30km	31– 50km	51– 100km
To Work	32%	25%	13%	11%	8%	9%	3%
To Education	70%	20%	3%	1%	3%	3%	0%
To Shopping	62%	17%	6%	5%	5%	4%	1%

Source: DTO Household Survey

Table 7.43: Car journey time by trip purpose

Journey Purpose	0 – 5 mins	6 –10 mins	11 – 15 mins	16 – 20 mins	21 – 30 mins	31 – 50 mins	51 – 100 mins	100+ mins
To Work	6%	13%	13%	11%	22%	19%	15%	0%
To Education	17%	34%	20%	11%	10%	5%	3%	0%
To Shopping	18%	27%	18%	13%	14%	8%	2%	0%

Source: DTO Household Survey

Most people travelling to work by car to work experience a journey time of over twenty minutes, even though the majority of these trips are less than 10km in length. Most car trips to education and shops are 15 minutes or less. This contrasts sharply with bus journey times to education (most are over 30 minutes) and shops (most are over 20 minutes).

Over the 11year period 1997-2007, there has been a general upward trend in car journey times on all road corridors surveyed regularly by the DTO.

Table 7.44: Car Journey Times (AM peak period)

Description of Route	Distance (km)	Time (mins)		Speed (km/h)	
		1997	2007	1997	2007
Howth - City Centre	12.9	54	63	14.3	12.3
Malahide - City Centre	14.8	53	87	16.8	10.2
Swords – City Centre	16.7	61	81	16.4	12.4
Ballymun - City Centre	8.4	33	77	15.3	6.5
Kilshane Cross (N2) - Finglas - City Centre	11.1	32	69	20.8	9.7
Dunshaughlin - Blanchardstown - City Centre	28.2	43	99	39.3	17.1
Lucan - City Centre	15.7	61	73	15.4	12.9
N7 Naas Road (Kill) - City Centre	29.1	55	86	31.7	20.3
Tallaght - Harolds X - City Centre	12.4	47	111	15.8	6.7
Ballyroan - Harolds X - City Centre	12	48	73	15.0	9.9
Sandyford – Ranelagh - City Centre	15.2	48	96	19.0	9.5
Loughlinstown - City Centre	16.9	59	73	17.2	13.9
Monkstown - City Centre	10.6	49	71	13.0	9.0
Howth Rd - Finglas obital	7.6	19	41	24.0	11.1
Canal Ring anticlockwise (Custom House - Custom House)	14.8	67	81	13.3	11.0
Average Journey Speeds (km/h)				18.6	11.5

Source: DTO car journey time surveys

Unsurprisingly, average car journey times to work in the city centre are considerably longer than in other areas.

Table 7.45: Car journey time to work by GDA Sub Area (2006)

Workplace Sub Area	Minutes
Inside Canals	43
Between Canals & M50	34
Between M50 & Metro Area	32
GDA Rural Hinterland	25
GDA Large Growth Town	25

Source: CSO Census 2006

7.6.5 Road accident data

An extract from RSA report "Road Collision Facts 2006" for Leinster, including Dublin, Kildare, Meath and Wicklow is presented below. We currently do not have a breakdown by road user type or category of injury, or by Dublin local authority.

Table 5 Persons Killed and Injured in Each County, 2002-2006

	Persons Killed					Persons Injured				
County	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Leinster										
Carlow	11	4	7	9	7	114	102	73	127	83
Dublin	49	37	45	41	34	2,113	1,828	1,621	1,716	1,713
Kildare	19	17	19	14	23	416	287	288	356	266
Kilkenny	9	9	9	6	4	237	146	186	240	199
Laois	5	11	8	14	8	133	132	143	187	181
Longford	8	6	5	9	6	140	102	104	104	90
Louth	19	14	9	14	14	337	364	316	367	308
Meath	18	14	22	30	22	399	345	296	420	397
Offaly	6	7	4	8	9	121	149	116	167	180
Westmeath	10	15	13	12	18	199	208	177	194	168
Wexford	7	16	16	21	20	351	330	295	377	395
Wicklow	11	9	14	8	11	264	282	238	318	234

7.7 Taxis, Hackneys and Limousines

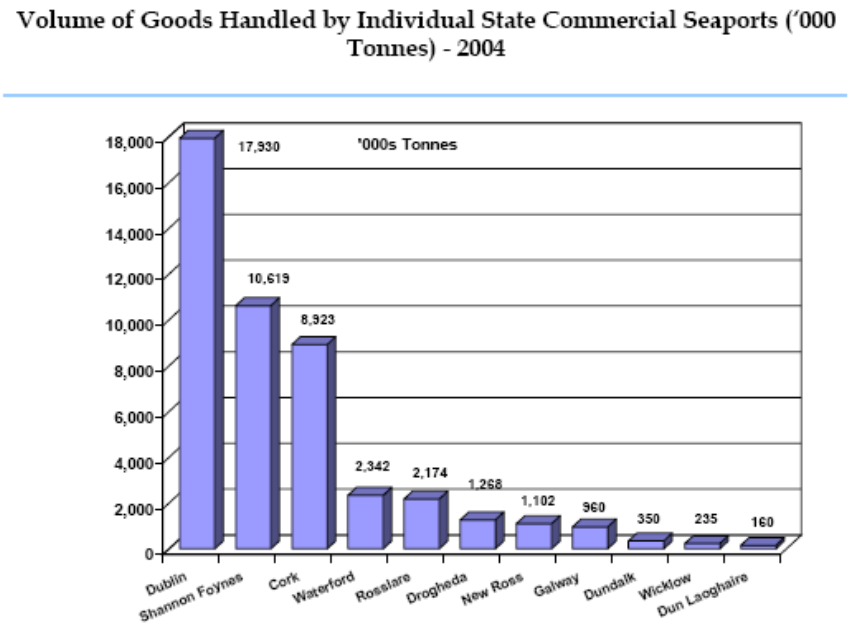
There has been a 65% growth in licensed taxis in Dublin Region since 2002 (associated with taxi deregulation). In the same period, growth in licensed taxi numbers in Kildare, Meath and Wicklow has been 160% or more. In 2007, there were over 14,000 taxis operating in the GDA.

7.8 Freight

There is limited data available for regional freight movement, with statistics generally concentrating on national figures. The DTO Regional Freight study (2002), estimated that 28% of the national road freight tonnage is hauled within the GDA. 45% of this is internal to the four counties of Dublin with the vast majority being distributed by van rather than lorry. In general the Dublin region is of huge importance nationally as a conduit and focus for freight activity.

The total tonnage carried by rail has declined from 3.3m tonnes in 1992 to 2.6m tonnes in 2001. This equates to approximately 4% of the total freight task in Ireland. In Ireland, due to height restrictions, only the container (LI-LO) market is available to rail since the generally more limited height of containers can be accommodated more readily within the prevailing rail loading gauge.

Figure 7.25: Freight handled at Seaports (2004)



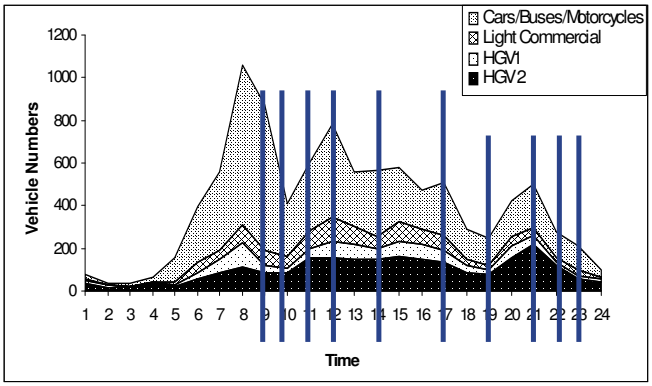
Source: Indecon analysis of CSO Ports Statistics

Dublin is the leading Roll on Roll off (RoRo) port in Ireland, handling over 733,250 freight units in 2007. The RoRo mode accounts for 55% of total throughput in Dublin Port. Dublin is also Irelands main Load on Load off (LoLo) port handling 675,000 TEU's (twenty foot equivalent unit) in 2006. The LoLo mode is growing at over 7% per annum and now accounts for 20% of total throughput.

Between 40% and 50% of goods coming through Dublin Port are destined for areas falling within the M50 ring. The proportion increases to approximately 75% when the line is extended to an 80km (50 mile) radius of the city.

There are 19 sailings a day out of Dublin Port, the timing of these sailings however can be a serious issue for the surrounding road network. Figure 7.26 represents the inbound traffic flows from Dublin Port. There is a significant level of HGV traffic arriving at the port and leaving the port during the AM Peak as a result of the arrival and unloading of three ferries between 6 and 8 am, which has a significant effect on the function of the surrounding road network.

Figure 7.26: Inbound Traffic Flows to Dublin Port



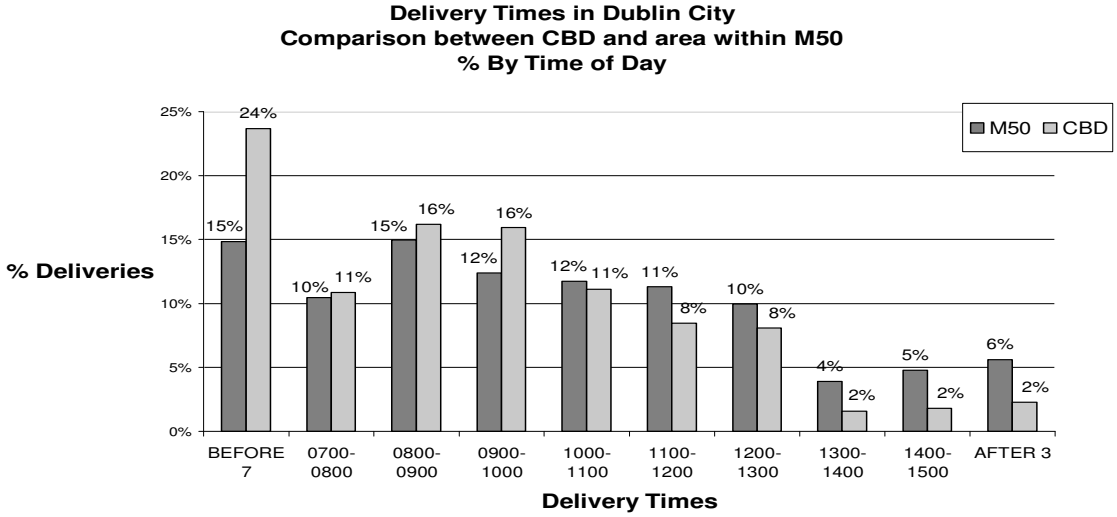
Note: vertical lines are ferry departures

The key destination points of HGVs are the Industrial Estates within the GDA, and also the city centre. The Industrial estates are set out in figure 7.27

Figure 7.27: Map of Industrial Estates in the Dublin Metropolitan Area

There is a noticeable difference in the delivery times between Dublin city and areas within the M50. This is set out in Figure 7.28. In general it can be seen that deliveries in the Dublin CBD tend to be earlier, with most completed before 10am.

Figure 7.28: Deliveries in Dublin and within M50 by time of day



The Dublin Port Tunnel and CC HGV ban has dramatically reduced the number of HGVs in the city centre in the 7am-7pm period, since its introduction in 2004.

The key freight industry needs as identified by the EU SMARTFREIGHT project are reliability, network and distribution information

Efficient movement of freight is of key importance to the economy. Road freight however has a disproportionate impact on the surrounding environment, in particular noise, air pollution. Heavy vehicles also cause significant wear and tear on road surfaces.

8 Environment

8.1 Introduction

A Strategic Environmental Assessment (SEA) of the Strategy is being progressed in compliance with EU Directive 2001/42/EC. This will draw together a comprehensive list of issues related to the environment, which the strategy will have to take into account. The SEA will consider factors such as:

- biodiversity
- population
- human health
- fauna
- flora
- soil
- water
- air
- climatic factors
- material assets
- cultural heritage including architectural and archaeological heritage
- landscape
- the interrelationship between the above factors

The effects may include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects[14]. The SEA will be completed as part of the new DTO Strategy.

Various issues have, however, initially been identified from a consideration of national and European policy documents, plans and research and will be expanded on in the SEA. These include the following:

8.2 Energy Resources and Reliance on Fossil Fuels

Ireland's dependence on imported non-renewable fossil fuels, particularly oil, has continued to increase. The transport sector is the largest energy-consuming sector in Ireland, accounting for 40 per cent of total final energy consumption in 2004. Transport was the main sector responsible for the overall increase in energy consumption, as its energy use increased by 132 per cent over the period 1990-2004. Its overall share of Total Fuel Consumption increased from 28 per cent in 1990 to 40 per cent in 2004.[15]

[14] Annex 1 of Directive 2001/42/EC
[15] Environmental Protection Agency, 2006, 'Environment in Focus' pg74

8.3 Emissions and Climate Change

The three main greenhouse gases (GHG) are carbon dioxide, nitrous oxide and methane with emissions resulting primarily from fossil fuel combustion, industrial process and agricultural.

In 2005, Ireland's GHG emissions increased by 25.4% above 1990 levels. The most significant and sustained increase in GHG emissions of 157% has been in the transport sector, mainly due to road transport.[16]

Improving vehicle technology and fuel quality to reduce the contribution of the transport sector to emissions and climate change is not enough as resulting improvements are off-set by increases in transport volumes.

8.4 Air Quality

Road vehicles, trains and airplanes are all powered (directly or indirectly) by burning fossil fuels, which leads to the emission of a wide variety of pollutants including:

- Carbon monoxide (CO);
- Oxides of nitrogen oxides (NOx);
- Volatile organic compounds (VOCs) e.g. Benzene and 1,3-butadiene;
- Particulate matter (PM10).

Some of these emissions can potentially damage human health (especially for the elderly, children and for those with respiratory and cardiac problems), the environment, or both. The main direct effects tend to be in areas close to busy roads, as the rapid dispersion and dilution of exhaust pollutants quickly reduces their concentrations to levels at which risks are minimal. Air quality is also important in supporting ecosystems.

While overall air quality in Ireland is generally good, emissions of pollutants from road traffic are one of the main threats to air quality in Ireland.

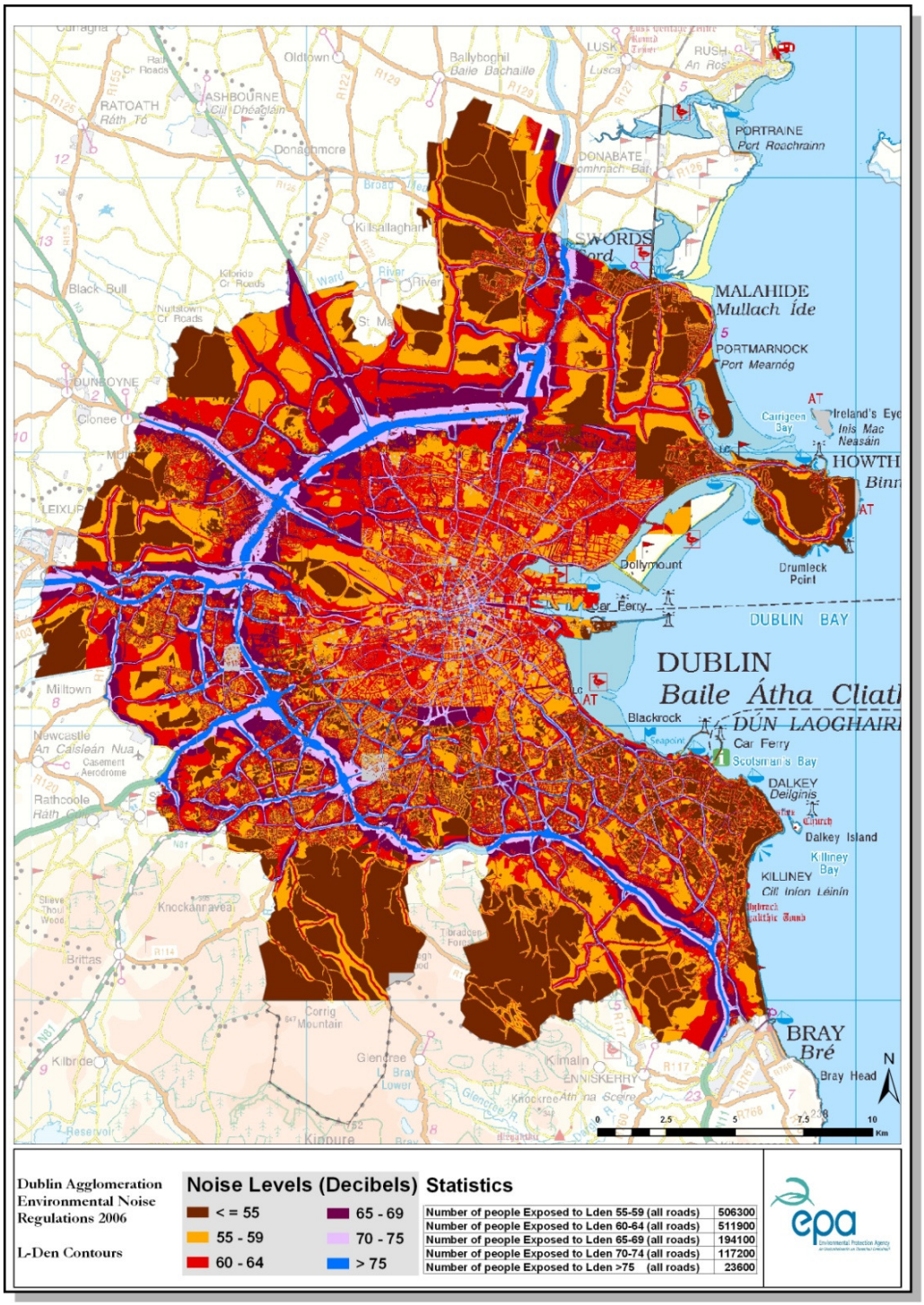
A significant reduction of nitrogen oxides from road transport is required if Ireland is to meet its commitments under the National Emissions Ceiling (NEC) Directive by 2010.[17]

8.5 Noise and Vibration

Noise exposure can have an adverse impact on human health and perceived life quality. Tolerance to noise exposure varies greatly between individuals, but at the community level there is a reasonable correlation between physical measurements of noise and nuisance response. A noise map for Dublin for 2006 is presented overleaf

[16] EEA Report, 2008, 'Climate for a transport change' TERM 2007:indicators tracking transport and environment in the European Union' pg 17
[17] EPA 2006

Figure 8.1: Noise map for built up area of Dublin (2006)



Source: EPA

Note that built up areas near motorways and national roads have the highest noise levels.

8.6 Water Resources/ Flood Protection

Increased standards in relation to water quality and protection of water sources coupled with increasing demands for drinking water and wastewater treatment may result in restrictions in relation to development potential and location.

Another particular concern is flood risk, and any works that are proposed should not increase the risk of flooding.

8.7 Protection of Biodiversity, Flora and Fauna

All plants and animals are dependent on the habitat in which the live and disruption to their habitat can have serious consequences. Development has the potential to result in significant negative impacts on habitats (loss, damage, pollution) and due care needs to be taken to avoid and minimise this.

There may also be more diffuse and non-specific impacts on these environmental resources on a cumulative basis. Particular attention needs to be given to protected areas and species in accordance with the EU Habitats and Birds Directives and national designations.

In terms of biodiversity and natural heritage there are a range of sites throughout the GDA with European and/or national designations including Ramsar Sites, SAC's and SPA's[18]. These need to be protected.

8.8 Impact on Cultural / Built Heritage

Development can have significant implications_for cultural heritage largely through loss or damage and visual intrusion.

In order to avoid or minimise impacts on the historic or cultural environment particular attention will need to be paid to the location of conservation areas, protected structures, scheduled ancient monuments and archaeological areas.

'Setting' considerations relate to a range of designated assets (e.g. listed buildings should also include the wider townscape perspective and the potential impact on strategic views.

8.9 Human Health

The development of infrastructure, particularly transport, such as major roads may impact negatively on health through pollution, accidental injury, severance of communities and reduction in some forms of travel, which are healthy and sustainable, such as walking and cycling.

8.10 Conclusion and Issues Arising

The Strategy will be subject to a Strategic Environmental Assessment. As this is undertaken in tandem with the development of the Strategy itself, a final and comprehensive examination of the

[18] Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive by way of protecting particular habitats and species of plants and animals.
Special Protection Areas (SPA's) are areas designated pursuant to the EC Birds Directive.
Ramsar Sites are wetlands designated as internationally important under the Convention on Wetlands (Ramsar 1971)

issues cannot be presented at this stage. However, a set of initial findings has emerged through a consideration of policy documents.

These issues include Ireland's and the GDA's reliance on fossil fuels, growth in GHG emissions and Air Quality considerations. Other more construction side issues include noise and vibration, protection of water, prevention of flooding and the protection of natural and built assets.

As the Strategy develops and proceeds, it is expected that a more complete set of environmental issues will emerge which will have a bearing on what will emerge as a preferred Strategy in both infrastructural and policy terms.

9 Economy

9.1 Economic Growth

The Economic and Social Research Institute (ESRI)'s Medium-Term Review 2008-2015 noted that economic growth in Ireland had been exceptional over the past 12 years. Sustained GDP/GNP growth in the Economy had been underpinned by close-to-full employment (with the lowest unemployment rate in the EU), sustained growth in the labour force driven by substantial immigration, generally buoyant consumer spending/confidence and continued strong investment, notably in Housing and Construction.

Since this report was published the economy has suffered a remarkable reversal of fortunes. In 2008, the ESRI estimates the economy contracted by 2.6%[19]. Furthermore, in 2009, it estimates a contraction of 4.6%.

9.2 Employment Levels

The latest CSO Quarterly National Household Survey (QHNS)[20] indicates that employment in Construction declined by 25,900 (-9.1%) in the 12 months to Q3 2008 (Jun-Aug). It records that employment in Other Production industries decreased by 9,400 (-3.1%) over the same period.

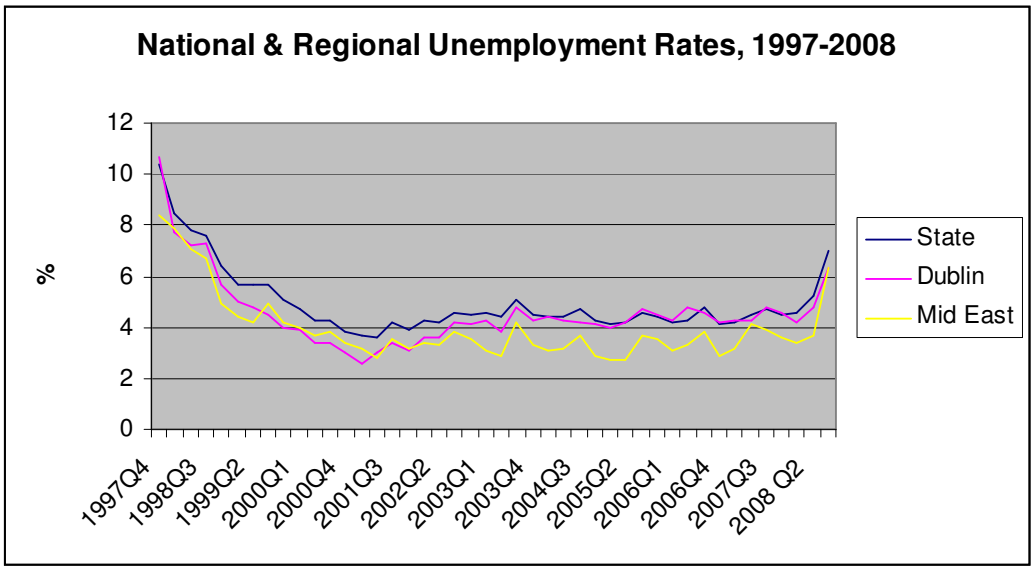
QNHS employment in Financial and Other Business Services decreased by 1,900 (-0.6%), while employment in Public Administration and Defence decreased by 1,100 (-1.0%) in the same period.

9.3 Unemployment Levels

The ILO rate of unemployment rate in Q3 of 2008 was 7%[21]. This was up 30%, from 4.7% in the same quarter in 2007. The increase in the Mid East was more stark: up 70% from 3.9% to 6.3% (see Figure 8.1, below). The ESRI estimates that national unemployment in 2009 will rise to 9.4%.

[19] As represented by estimated change in GNP.
[20] Released by the CSO on 21st November 2008
[21] The International Labour Organisation (ILO) definition of unemployment is measured through the QNHS and covers those people who are looking for work and are available for work. The ILO unemployment rate is the percentage of economically active people who are ILO unemployed. Counts of claimants of unemployment-related benefits are also published (Live Register). The ILO unemployment rate is the number of people who are ILO unemployed as a proportion of the resident economically active population of the area concerned. The claimant count rate is the number of people claiming unemployment-related benefits as a proportion of claimants and jobs in each area.

Figure 9.1: Unemployment Rates

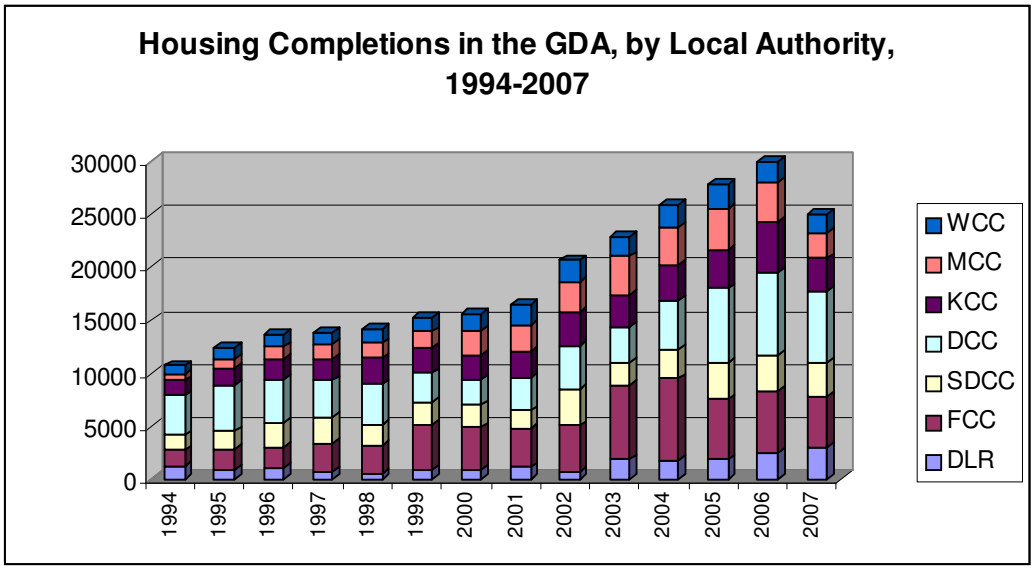


Source: CSO QNHS, Q3 2008.

9.4 Construction Industry – Housing Market

Housing completions in the GDA fell by 16.7% between 2006 and 2007 (see Figure 9.2, below). The ESRI estimates that, nationally, completions will fall to 40,000 in 2008 and just 30,000 in 2009. This contrasts with 78,000 completions in 2007 and 93,000 in 2006.

Figure 9.2: Ireland: Housing completions

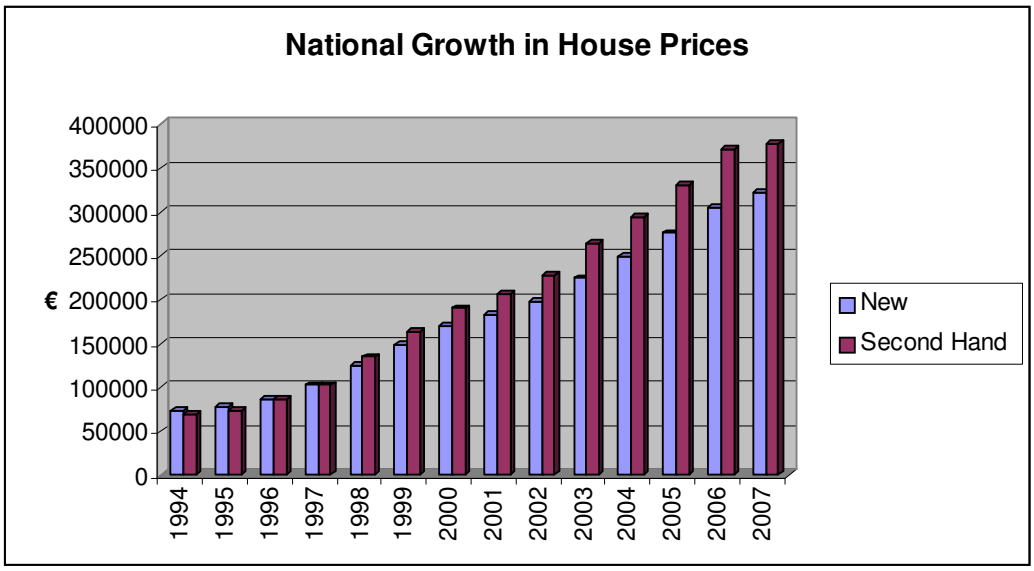


Source: Department of the Environment, Heritage and Local Government, CSO

9.5 House Prices

Between 1994 and 2007, average national house prices almost quadrupled (see figure 9.3 below).

Figure 9.3: House Prices



Source: Department of the Environment, Heritage and Local Government, CSO

Second quarter figures for 2008 show that:

- Average new house prices nationally fell by 5.5% year-on-year to €313,678
- Average second-hand house prices fell by 7.8% year-on-year to stand at €356,638
- Average new house prices in Dublin decreased by 8.5% year-on-year to €390,544
- Average second-hand house prices in Dublin decreased by 10.3% year-on-year to €455,142

The latest ESRI/Permanent TSB House Price Index reports that the October average prices for houses, nationally and in Dublin, were €265,364 and €361,644 respectively. This represents a monthly decline in prices of 0.8% and 2.6% an annual decline of 10.2% and 10.4% respectively.

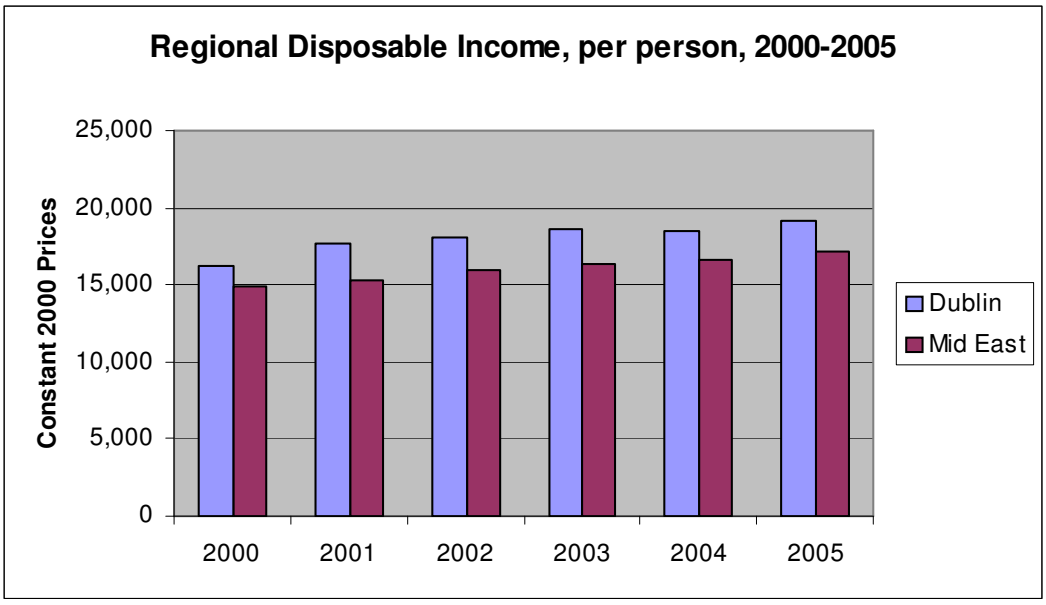
9.6 Disposable Income

In 2000, the average disposable income[22] per person in Dublin was €16,288. Using constant 2000 prices, this had grown by 18% to €19,159 (€22,973 in 2005 prices). For the Mid East the average disposable income per person in 2000 was €14,958. This grew by 15% (in constant prices) to €16,130 in 2005 (19,719 in 2005 prices).

Average disposable income in Dublin, in 2005, was 11.6% higher than in the Mid East. This is illustrated in Figure 9.4.

[22] Total income – income tax + social insurance contributions

Figure 9.4 Regional Income

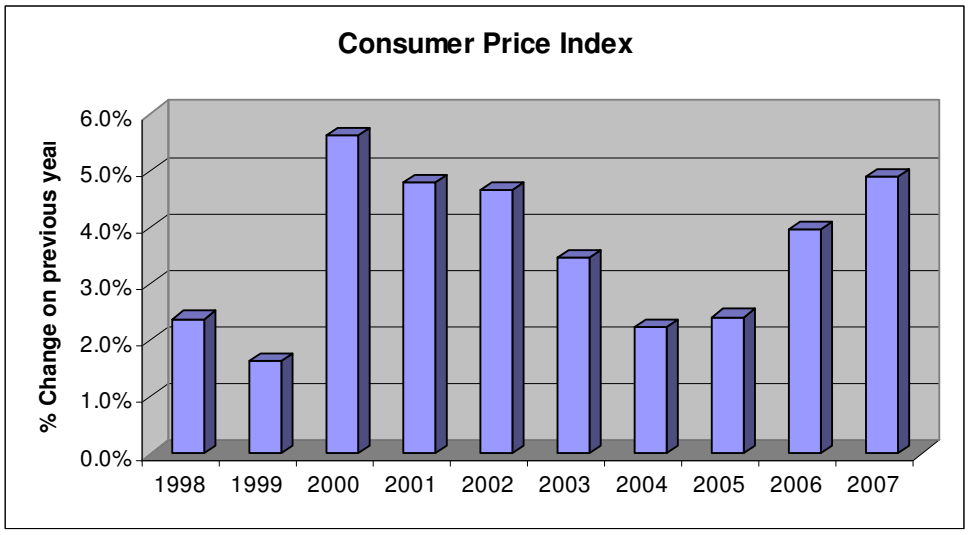


Source: adapted from CSO County Incomes and Regional GDP 2005

9.7 Consumer Price Index

Inflation in Ireland rose from 2.2%, in 2004, to 4.9%, in 2007 (see figure 6.5, below). This trend has since been reversed, with the ESRI estimating 4.2% inflation in 2008 and deflation of 2% in 2009[23].

Figure 9.5: Inflation



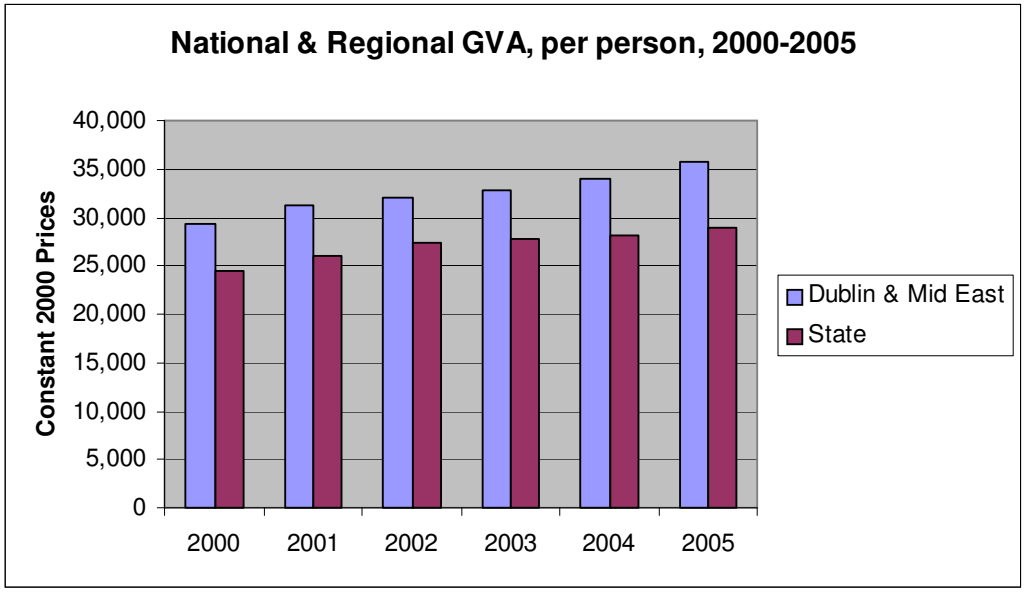
Source: CSO, QNHS, Q3, 2008.

[23] CSO, QNHS, Q3 3008

9.8 Output

Turning to regional output, overall per capita GVA in the GDA (Dublin and the Mid East Regions) was 22% higher than the national figure in 2005. The real growth in Gross Value Added[24] (GVA) per person in the GDA, between 2000 and 2005 was 22% (see Figure 9.6, below). This compares with national per capita GVA growth of 18%.

Figure 9.6: Regional Output

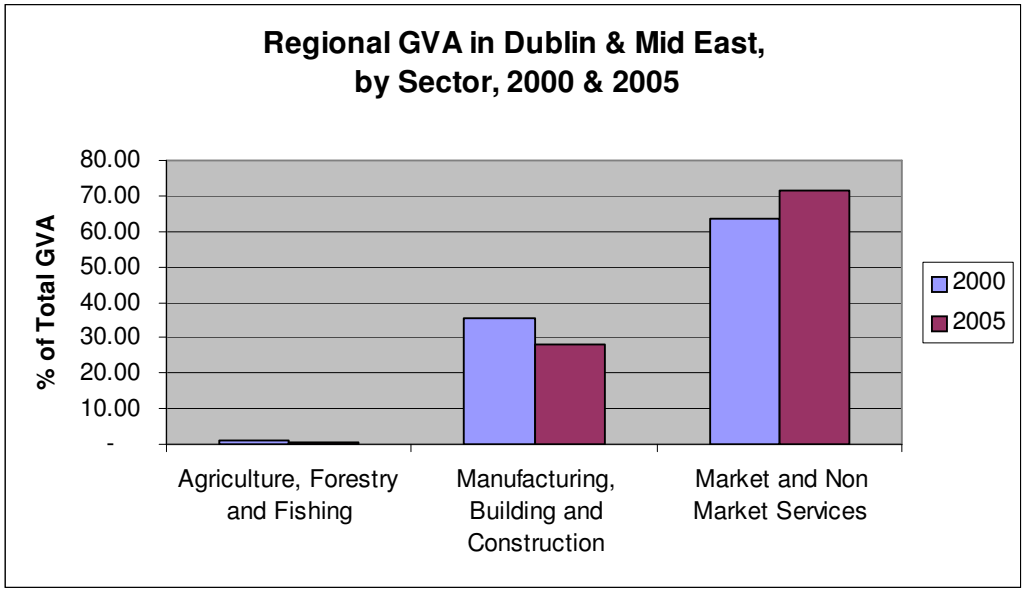


Source: adapted from CSO *County Incomes and Regional GDP 2005*

The sectors contributing to this output underwent significant change over the period. Agriculture, Forestry and Fishing's share of overall output in 2000 was 0.9%. By 2005, this had fallen to 0.5%. Manufacturing, Building and Construction fell from 35.4% of GVA in 2000 to 28.2% in 2005. By contrast, Market and Non Market Services increased from 63.7% in 2000 to 71.3% in 2005 (see Figure 9.7).

[24] GVA per capita is one of the principal concepts used in determining eligibility for structural funds. GVA differs from household income in that it includes the profits of companies operating in a region, a considerable amount of which may accrue to non-residents. In addition, the workforce contributing to those profits may live in and bring their incomes home to a neighbouring region. The Mid East and Dublin regions are affected by a substantial proportion of their workforce living in one region and commuting to work in another. It is more meaningful to combine these two regions when analysing GVA.

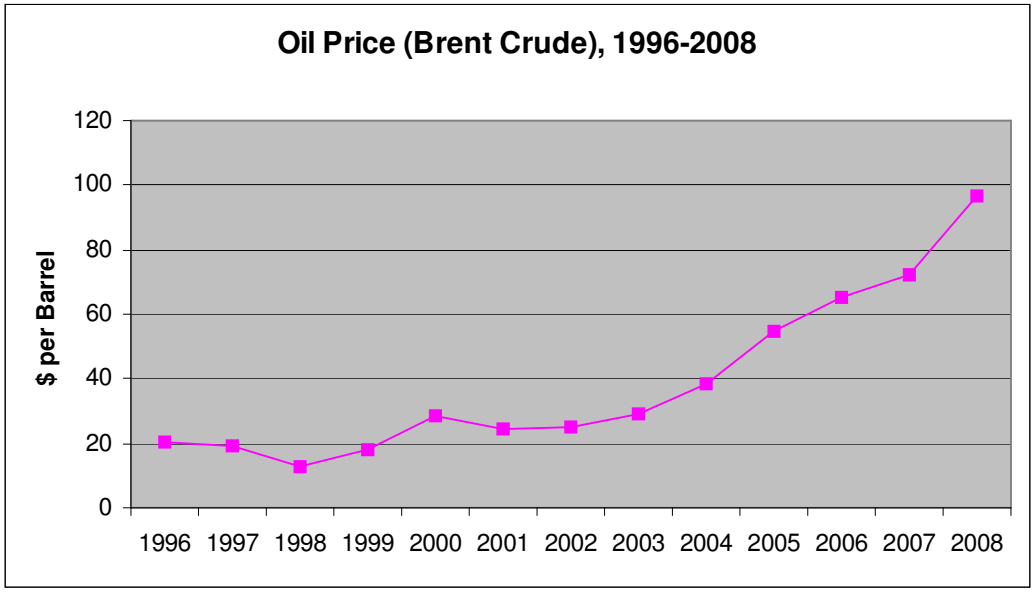
Figure 9.7: Regional Output



9.9 Oil Prices

International oil prices grew steadily in recent years. After a reasonably stable period in the late nineties, when oil traded around the $20 mark, it rose steadily. This was largely the result of strong growth in the Chinese economy and geo-political instability. In the last decade, the annual average increase in the price of oil has been a dramatic 22% (see Figure 9.8). More recently, the price of oil has collapsed, due to the global economic slowdown. In January 2009, oil was trading in the region of $35 a barrel.

Figure 9.8: Oil Price

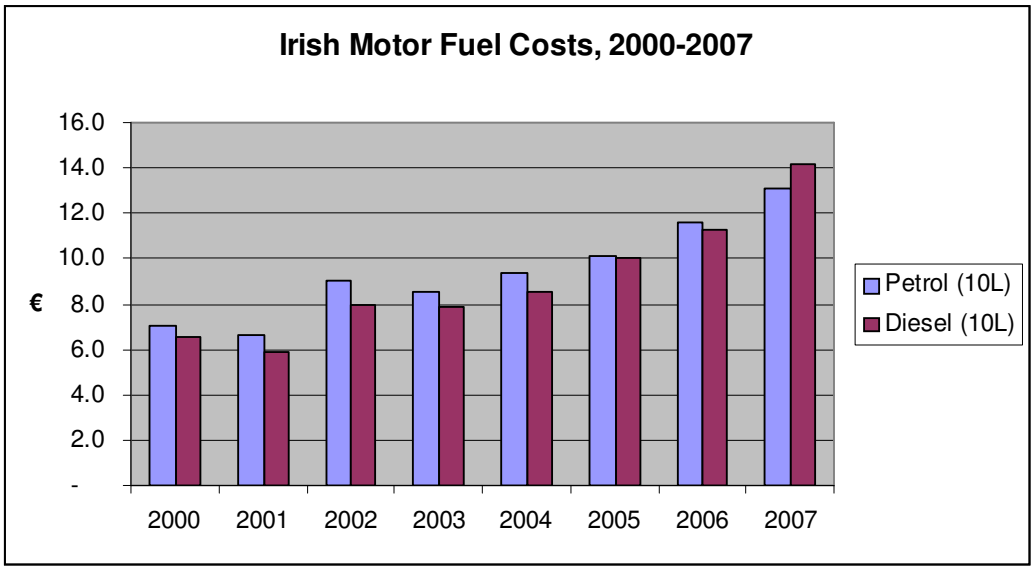


Source: http://tonto.eia.doe.gov/dnav/pet/hist/rbrteA.htm

Increased oil prices, in recent years, fed through to higher diesel and petrol prices. As Figure 9.9 indicates, petrol prices were 66% higher in 2007 than 2000, while diesel was 73% dearer. Given the global economic downturn, this trend is unlikely to continue.

However it should be noted that these recent trends are subject to change due to the instability with regard to the price of oil. Therefore notwithstanding the current decrease with regard to global oil prices it should be noted that given the length of the implementation period, future trends/constraints like peak oil and the price of fuel are also important.

Figure 9.9: Motor Fuel Costs 2000-2007



Source: EU Oil Bulletin http://ec.europa.eu/energy/oil/bulletin/,

9.10 Conclusion and Issues Arising

All proposed strategies and activities, especially those funded from the exchequer are subject to the prevailing economic climate at the time of their emergence. As such the DTO Strategy must take into account a number of economic factors, which will determine the likelihood of its implementation and the seriousness with which it is received both by Government and the general public.

The development of the Strategy must take cognisance of economic trends such as changes in GNP and GDP, employment and changes in the labour force. Ireland is emerging from a sustained economic boom and any major or prolonged slowdowns may have a detrimental impact on investment in transport.

Other important issues relate to the housing market and construction trends. At present, transport infrastructure is trying to catch up with the rate of development, which occurred during the boom, which was in part sustained by house building. In recent months this activity in the construction sector has declined dramatically. Any sustained slowdown in this particular sector will need to be acknowledged and inform the GDA Transport Strategy.

Future trends with regard to peak oil and the price of fuel will impact on the proposed strategy due to the instability with regard to these process in future years and also the length of the implementation period of the strategy.

Appendix A

A Platform for Change Objectives (DTO, 2001)

Employment

- Improve accessibility and reduce congestion
- Sustain economic development and regeneration
- Consolidate existing economic activity
- Encourage LF participation, especially disadvantaged groups
- Enhance sustainable goods distribution

Quality of Life

- Reduce growth in demand for transport, especially private transport
- Improve transport safety
- Reduce need for car commuting by improving PT
- Ameliorate direct environmental effects of transport – noise, severance, air pollution and greenhouse gases.
- Reduce Travel Times and congestion
- Promote cycling and walking as safe, sustainable and healthy

International and National context

- Act consistently with Government, EU and UN policies.
- Improve accessibility to ports and airports for passengers and goods
- Improve accessibility to and from the GDA
- Foster sustainable development

Development of the City and Region

- Promote implementation of the SPGs and NSS
- Within the region, consolidate growth in Metropolitan area.
- Promote self sufficient development centres.

Efficiency

- Optimise the use of existing infrastructure and facilities
- Promote sustainable land use
- Ensure the efficient and cost-effective use of resources – public, eu and private sector
- Ensure the legislative, institutional and administrative structure optimise implementation.
- Maximise self-enforcement
- Ensure timely implementation to meet sustainable travel needs

Specific elements of the strategy include:

Public Transport

- Improving the capacity of public transport networks,
- Improving the coverage of public transport networks, (new modes, extensions to existing modes, park and ride)
- Improving the accessibility to public transport networks (shorter walks, accessible vehicles, more stations, etc.)
- Improving the quality of public transport (through-ticketing, integrated fares, reliability of journey times (bus priority programme, more tracks, interconnector, reducing at-grade level crossings), integrating networks, passenger facilities at interchange points, information, etc.

Roads

- Upgrade the M50
- Upgrade non-national road network by providing extra capacity for public transport, improving access to public transport, improving safety for all road users, and managing access to M50 and other national routes.
- There will be no significant increase in road space on radial roads inside the M50 motorway. Further, there will be no additional roads to cater for car traffic passing through the Metropolitan Areas, apart from those road contained in the Strategy.
- Road capacity released as a result of the provision of by-passes will be re-allocated to public transport, cyclists and pedestrians.

Traffic Management

- Optimise the use of road spaces for all users.
- Define the hierarchy of roads

- Define and agree objectives for the allocation of road space between modes by agencies, ensuring that consistent standards are adhered to, a continuous network results, and that the network is direct

- Pedestrians should be encouraged rather than corralled by improving the attractiveness of using facilities (shorter, more frequently occurring, more accessible crossings; wider, clearer, smoother footpaths)

- Cyclists should be encouraged by providing a network of cycle links to employment, retail and public transport, cycle parking and tourist and recreational cycling facilities

- Develop city centre cells with distinguishable characteristics, deal with boundary issues between them, and provide access to destinations within cells to sustainable modes and legitimate parking movements.

Demand Management

- To reduce the growth in demand for travel by motorised modes

- To encourage further modal transfer from private car to public transport modes at congested times, over and above that achievable through infrastructure and service enhancement measures. Specifically, the measures proposed in the strategy should achieve a reduction in the number of peak hour car trips from 250,000 to 180,000 (i.e. by 28%) in the design year 2016.

- To reduce the level of congestion on the road network to 1991 levels, when the average speed in the morning peak hour was 22 kph.

Land Use

- Locate services and neighbourhood centres where access by public transport is good

- Concentrate development in public transport corridors, particularly employment

- Increase densities in public transport corridors

- Improve design of development to increase access by sustainable modes to destinations

- Increase the proportion of mixed use development

- Provide ancillary development at rail stations that addresses needs of surrounding catchment areas

- Increase the self-sufficiency of hinterland development centres

- Reduce commuting from Hinterland development centres, particularly car commuting

- Raise parking standards, i.e. reduce parking, in public transport corridors

- Stipulate maximum parking standards as opposed to minimum.