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An Examination of Changes in Sustainable Transport Mode Shares between 2016 and 2022

Transport Research Insights

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This paper has been prepared by staff in the IGEES unit in the Department of Transport. The views presented in this paper do not represent the official views of the Department or the Minister for Transport.

Contents

1. Introduction

The National Sustainable Mobility Policy sets out targets to deliver at least 500,000 additional daily active travel and public transport journeys by 2030. A key factor in achieving a 51% reduction in greenhouse gas emissions by 2030, will be encouraging significant proportions of the population to make the switch from private vehicles to more sustainable transport modes such as walking, cycling and public transport. **The Climate Action Plan 2023 (CAP 23) introduces detailed modal split targets of:**

- **8% (2018) to 19% (2030) for public transport and**
- **20% (2018) to 28% for active travel**.

To achieve these targets, increasing active travel infrastructure provision and expanding public transport capacity have been supported through investments as set out in the National Development Plan (NDP). The NDP allocates €35 billion for transport over the ten years from 2021 to 2030 which will enable the development of active travel and public transport infrastructure. Approximately €360 million per annum is being invested in walking and cycling infrastructure which will support 1,000km of new and improved infrastructure. Further, €11.6 billion has been allocated to new public transport infrastructure and €3.8 billion has been allocated to public transport protection and renewal, helping public transport to make the transition[1].

This study will examine changes in shares in sustainable transport modes between 2016 and 2022 using Census data published by the Central Statistics Office (CSO), focusing on Dublin City and suburbs (Dún Laoghaire-Rathdown, Fingal, and South Dublin). Dublin and its surrounding areas were chosen as the area of focus for the study as it has the largest population in the State (circa. 1.5 million, 28% of the total population)[2] and because of the significant public transport services and prevalence of active travel infrastructure in the county.

This study aims to identify the areas in Dublin which have seen significant changes in sustainable transport modes such as walking, cycling and public transport. The results of this study will help inform the areas which need more changes for a shift to more sustainable mode to achieve targets in CAP 23.

[1] https://www.gov.ie/en/press-release/35dfe-revised-national-development-plan-will-transform-how-we-travel-with-a-35-billion-euro-package-prioritising-investment-in-sustainable-active-accessible-public-transport. The NDP is currently being reviewed, and will be updated later in 2025

[2] Between 2016 and 2022 the population of Dublin grew 8.2% and the population of Ireland grew at a similar rate of 8.1%. As the percentage change in population in Dublin is similar to the change in population for the country, Dublin is not an outlier when compared to the rest of the country e.g. if the population change was significant, it may have led to capacity constraints for road space and public transport use.

Section 2 will outline the methodology applied in this study. Section 3 will present results from the analysis of the data from Census 2016 and 2022. Finally, section 4 will draw conclusions.

2. Methodology

This section sets out the methodology and approach used to analyse the changes in shares of sustainable modes using Census data in 2016 and 2022.

The Small Area Population Statistics (SAPS) from Census 2016 and Census 2022 are analysed to examine the changes in shares of sustainable transport modes between the two years. Electoral Division (ED) data is used as **EDs are the smallest legally defined administrative area in the State** [3] which helps when comparing changes in modal shares of transport use.

The data consists of answers to the question in Census "How do you usually travel to work, school, college or childcare?" (2022)[4]. Respondents were asked to choose one from eleven options for the longest part of usual journey by distance. The options include:

1) not at work, school, college or childcare,
2) on foot,
3) bicycle,
4) bus, minibus, or coach,
5) train, DART or LUAS,
6) motorcycle or scooter,
7) driving a car,
8) passenger in a car,
9) van,
10) other (including lorry) and
11) work mainly at or from home.

The following three sustainable transport modes were considered in this study.

- Walking
- Cycling
- Public transport (categories four and five)

The share of a category is calculated as a percentage of the total value excluding: 1) not at work, school, college or childcare and 11) work mainly from home. Then shares of each category are compared between 2016 and 2022. To highlight changes in each mode on a geographical basis,

[3] To identify the location of ED boundaries of the maps in this paper, please access the interactive map by the CSO: https://visual.cso.ie/?body=entity/ima/cop/2022.

[4] The questionnaire for Census 2022 is available at https://www.cso.ie/en/census/census2027consultation/census2022householdformquestions/.

information is matched to each ED and the data presented on maps. The QGIS software was used to create visualised maps of changes in shares by each mode.

3. Limitations

There are a few limitations to the study:

- The data only focuses on commuting data for the purposes of travel to work or education (school, college or childcare) in 2022. Thus, traveling for other purposes is not part of the data set analysed.
- The Census 2022 was undertaken on 3rd April 2022 a few months after the public health measures due to the COVID-19 pandemic, including the travel restriction, were lifted[5].

It should be noted that the COVID-19 pandemic and the resulting public health measures (i.e. remote working) would have an impact on all data from the 2020 to 2022 period. Further, following the lifting of restrictions, the formal introduction of remote working would have an impact on people's commuting preferences. However, travel or working pattern changes due to the pandemic are not discussed in this study.

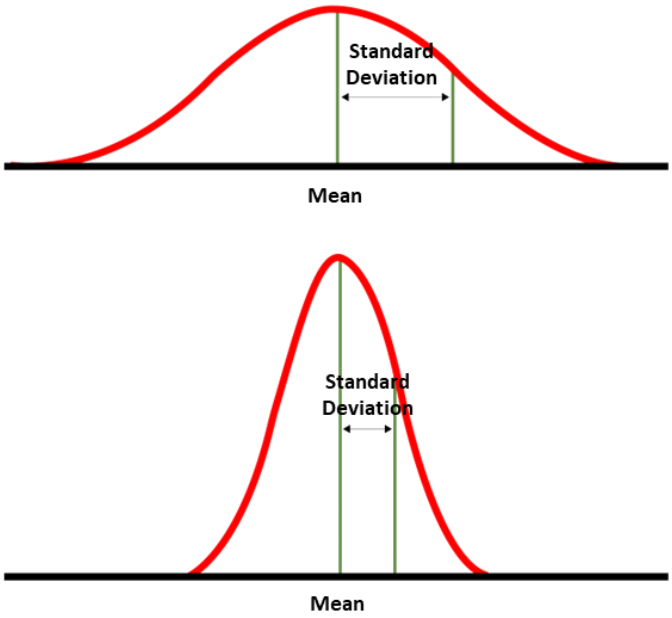
4. Analysis

This section examines the changes in shares of sustainable modes in Dublin City and suburbs, particularly focusing on identifying EDs with a significant percentage point change between 2016 and 2022. To define a significant percentage change, the standard deviation has been used as a criterion.

Figure 1 presents the concept of the standard deviation. The standard deviation is a statistical measure of how dispersed the data is in relation to the mean or how data are clustered tightly or loosely around the mean. If the percentage point between two years is greater than the standard deviation of the percentage points, it indicates that this change is more significant compared to the typical variability in the dataset. In the other words, this change is larger than what is typically observed in the dataset, indicating a significant change.

[5] A return to physical attendance in workplaces commenced on a phased basis from 24 January 2022. In February 2022 the Government announced the ending of protective measures in schools (such as pods and social distancing) and mandatory face masks .

Figure 1 Standard Deviation



Therefore, in the analysis of this section, **a significant change is defined as a percentage point between 2016 and 2022 which is greater than the standard deviation.**

Walking

Table 1 presents descriptive statistics on walking shares between 2016 and 2022. The mean of walking share between two years shifted slightly from 21.58% to 22.19% which indicates that the change in walking share is marginally upward.

Clonskeagh-Belfield shows the largest walking share among EDs in both years, where the University College Dublin and its student residences are located with 67% of people (1665) walking in 2022. Hollywood (4.83%) in 2016 and Balscadden (3.05%) show the smallest walking shares and both EDs are located in suburban area and away from the town centres.

Table 1 Descriptive Statistics of Walking Share

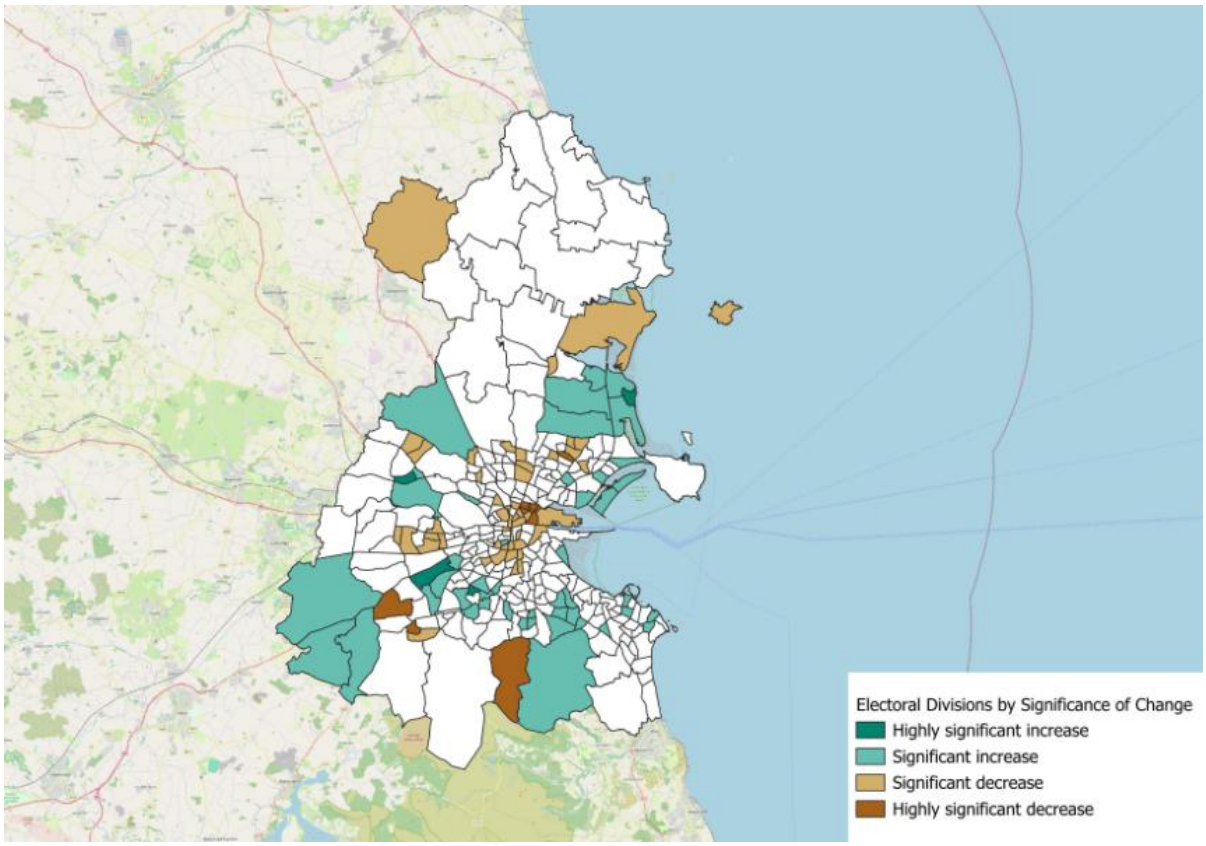
	2016	2022	Changes in shares between 2016 and 2022
Mean	21.58%	22.19%	0.61%
Max	66.57%	67.41%	11.86%
Min	4.83%	3.05%	-12.57%
Median	18.19%	19.60%	1.05%
Standard Deviation	12.12%	10.62%	3.46%

Between two years, 191 EDs (59% of total EDs) show positive changes in walking share; however, 131 EDs (41% of total EDs) show negative percentage points. As the standard deviation of percentage points in walking shares between two years is 3.46%, any percentage point more than 4.07% is considered a significant increase in walking and any percentage point less than -2.85% is considered as a significant decrease in walking. **Between the two years, 47 EDs show significant increases in walking shares, and 56 EDs show significant decreases.**

Figure 2 presents a map with changes in walking shares in EDs between 2016 and 2022. The green colour presents a significant increase while the brown colour presents a decrease. The gradient of each colour shows the significance of changes. The darker the colour the more significant the change is. The white colour indicates that no significant changes in shares between two years. The size of coloured area does not indicate the magnitude of changes in the share[6]. It should also be noted that the maximum and minimum shares in 2022 are not the darkest shaded areas in Figure 2. The largest increase in walking is seen in Portmarnock North (11.86%) while the largest decrease in walking is seen in Tibradden (-12.57%).

[6] This applies to all maps hereafter.

Figure 2 Significant Changes in Shares of Walking in Dublin City and Suburbs by ED



The areas recording highly significant increases are seen in suburbs such as Portmarnock North, Clondalkin-Ballymount and Templeogue-Orwell. Significant increases are widely seen EDs in:

- Dún Laoghaire-Rathdown (e.g. Foxrock-Beechpark, Dún Laoghaire-Glenageary, Dalkey-Bullock, Dalkey Upper, Dún Laoghaire-West Central),
- South Dublin (Stillorgan, Ballinteer, Templeogue, Clondalkin) and
- Fingal (e.g. Sutton, Malahide East, Balgriffin, Portmarnock South).

Also, the results show the differences within an area. For example, the EDs in Blanchardstown are not homogeneous in their change as Blanchardstown-Mulhuddart and Blanchardstown-Corduff show significant decreases, -3.65% and -5.31% respectively, while Blanchardstown-Delwood and Blanchardstown-Roselawn show significant increases, 7.62% and 5.40% respectively. This could indicate that the proximity to commercial, industrial or educational facilities has impacted on the choice of transport mode and could encourage more walking trips with some EDS rather than other EDs in the same area.

The areas registering highly significant decreases are seen near the city centre (e.g. North Dock A and C, Mountjoy B, Ballybough A and B) as well as in some suburbs (e.g. Kilmore C, Tibradden, Tallaght-Fettercairn, Tallaght-Killinardan), the city centre (e.g. North Dock A and C, Rotunda A,

Mountjoy B) and north and south of the city (e.g. Whitehall A and B, Ballymun B and C, Ballybough A and B).

Cycling

Table 2 highlights that the mean of cycling share between two years is slightly shifted from 7.89% to 8.93% which indicates that the change in the **central tendency of cycling share is positive**. Terenure A, a suburban town in south Dublin, shows the largest cycling share among EDs in both years. The lowest cycling share is seen in Balscadden in 2016 and in Garristown in 2022. Both EDs are located in suburbs in the northwest of County Dublin significantly away from the city centre and do not have densely developed town centres.

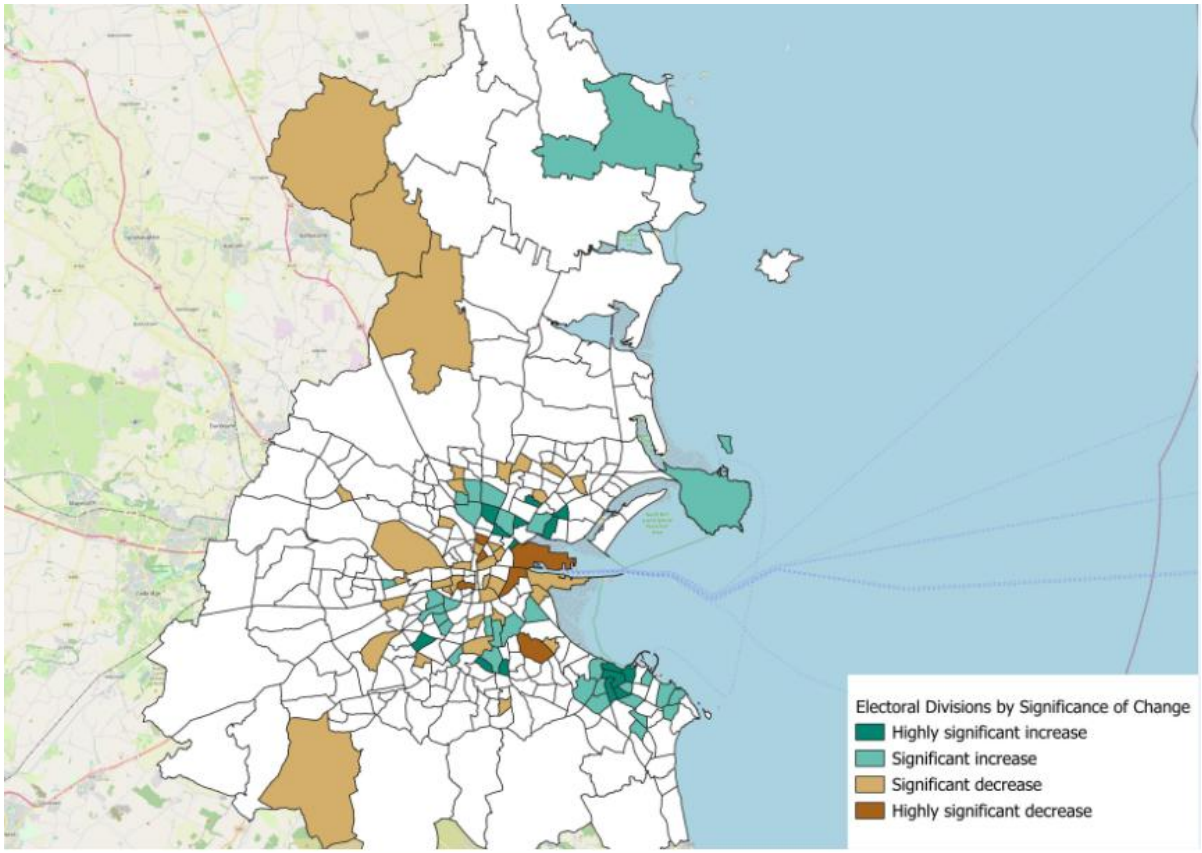
Table 2 Descriptive Statistics of Cycling Share

	2016	2022	Changes in shares between 2016 and 2022
Mean	7.89%	8.93%	1.04%
Max	22.42%	23.33%	5.73%
Min	0.44%	0.42%	-2.88%
Median	7.26%	8.28%	0.86%
Standard Deviation	4.65%	4.97%	1.47%

Between the two periods, 252 EDs (78% of total EDs) show positive percentage points in cycling share while 70 EDs (22% of total EDs) show negative percentage points. As the standard deviation of percentage point between two years is 1.47%, any percentage point more than 2.51% is considered as a significant increase and any percentage point less than -0.43% is considered as a significant decrease. Between two years, 48 EDs show significant increases and 42 EDs show significant decreases.

The largest increase in cycling is seen in Dún Laoghaire-Salthill (5.73%) while the largest decrease in cycling is seen in Inns Quay A (-2.88%). Changes in cycling share between the two years are moderate to the other sustainable modes.

Figure 3 Significant Changes in Shares of Cycling in Dublin City and Suburbs by ED



Highly significant increases are seen in EDs of suburbs such as Dún Laoghaire-Salthill, Churchtown-Woodlawn, Blackrock-Stradbrook and Clontarf East E, as well as one ED in the city centre, North Dock A. Significant increases are widely seen in suburbs such as South Dublin, Dún Laoghaire-Rathdown as well as some EDs in the city centre unlike walking share. As many of the EDs in these suburbs are located well inside the average distance of typical journey by bicycle (i.e. 12.7 km[7]) it could imply that people are choosing to cycle to education or work located near the city centre to avoid congestion on the road.

Clusters of significant increases are also found in Dún Laoghaire-Rathdown where the Coastal Mobility Route (CMR) was developed during the summer of 2020. The CMR consists of a 4.5km cycle route along the coastline from Blackrock to Sandycove. In addition, other clusters of significant increases are found in the north of Dublin City including Ballygall C & D and Botanic A near Glasnevin, several EDs in Drumcondra South and Clontarf. Rapid build cycle infrastructure was

[7] From the results of the National Travel Survey (NTS) 2021, it was identified that the average distance of a typical journey by bicycle was 12.7km. The average cycling distance for males was 14.8km compared with 9.6km for females. For more details, please refer to the link: https://www.cso.ie/en/releasesandpublications/ep/p-smt/sustainablemobilityandtransport2021/cycling/#:~:text=The%20average%20cycling%20distance%20for,See%20Table%205.2.

completed on Griffith Avenue in 2021, linking the residential catchments in Glasnevin to the west and Clontarf in the east[8]. These increases can imply that segregated cycling infrastructure can encourage cycle use. Considering that improving connectivity by the cycle network plan can maximise the impact of cycle routes, it is expected that significant increases in cycling shares will be observed once the cycle network plan is delivered widely in Dublin City and suburbs.

Table 3 Percentage point changes in clusters of significant increases in cycling

ED	2016	2022	Changes in shares between 2016 and 2022
Dublin City			
North Dock A	13.95%	19.57%	5.62%
Clontarf East E	10.46%	15.70%	5.24%
Clontarf West E	14.29%	18.69%	4.40%
Clontarf East D	12.82%	17.13%	4.31%
Ballygall C	8.97%	12.45%	3.48%
Botanic A	12.06%	15.50%	3.44%
Ballygall D	9.67%	12.53%	2.87%
South Dublin and Dún Laoghaire-Rathdown Costal Mobility Route			
Dún Laoghaire-Salthill	5.30%	11.03%	5.73%
Blackrock-Seapoint	7.18%	11.67%	4.49%
Dún Laoghaire-Sallynoggin South	6.03%	9.34%	3.31%
Dún Laoghaire-Monkstown Farm	8.09%	12.43%	4.35%

Significant decreases are mainly seen in the city centre EDs (e.g. Inns Quay A, Rotunda B, South Dock, Merchants Quay C, North Dock B) and a few EDs in South Dublin (e.g. Rathmines East D, Clonskeagh-Belfield). However, the magnitude of decreases is not as large as the increases and range from -0.46% to -2.88%.

Public Transport

Table 4 indicates that the mean of public transport share between the two years is slightly lower, moving from 22.99% to 22.41%, similar to the trends in cycling and walking share. The highest public transport share is seen in Dún Laoghaire-West Central in 2016 and Phoenix Park in 2022. The lowest public transport share is seen in Clonskeagh-Belfield in 2016 and Rathcoole in 2022.

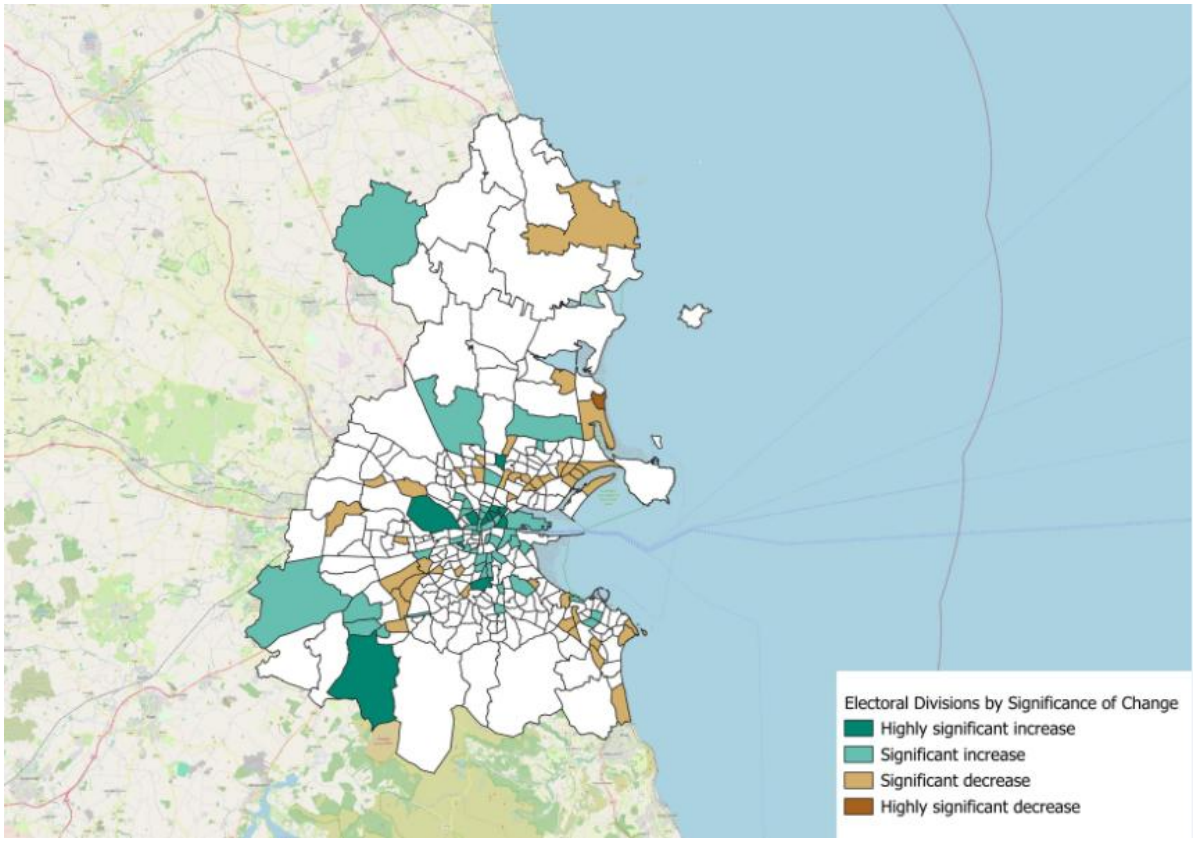
Table 34 Descriptive statistics of percentage point changes of public transport shares

	2016	2022	Changes in shares between 2016 and 2022
Mean	22.99%	22.41%	-0.57%
Max	38.12%	41.56%	11.13%
Min	6.91%	7.86%	-7.35%
Median	22.98%	22.12%	-0.97%
Standard Deviation	2.84%	5.64%	2.84%

Between two years, 116 EDs (36% of total EDs) show positive percentage points in public transport share while 206 EDs (64% of total EDs) show negative percentage points. As the standard deviation in public transport shares between two years is 2.84%, any percentage point more than 2.26% is considered as a significant increase and any percentage point less than -3.41% is considered as a significant decrease. Between two years, in public transport share, 54 EDs show significant increases and 44 EDs show significant decreases.

Figure 4 presents a map with changes in public transport shares in EDs between 2016 and 2022. The largest increase in public transport is seen in Mountjoy B (11.13%) while the largest decrease in public transport is seen in Portmarnock North (-7.35%). Census 2022 was undertaken about two months later after the return to physical attendance in workplaces and one month after the mandatory requirement for face masks was lifted. Therefore, the travel and working tendency during the pandemic, such as not using public transport and remote working, could have remained in place when the 2022 Census was undertaken.

Figure 4 Significant Changes in Shares of Public Transport in Dublin City and Suburbs by ED



Highly significant increases are mainly seen in EDs of the city centre (e.g. Mountjoy B, Ballybough A and B, Arran Quay B, Phoenix Park, Ushers D, Rotunda A and B and North Dock B and C). Significant increases are widely seen in EDs of suburbs in South Dublin (e.g. Ballinascorney, Newcastle, Rathfarnham, Rathmines West A, B, C, D and F, Tallght-Fettercairn, Clonskeagh-Belfield) as well as Fingal (e.g. Balgriffin, Dubber). An expansion of Luas Network by the extended Luas Green Line (Luas Cross City) opened in December 2017 and some EDs alongside the extended or existing lines show significant increases from 2016 to 2022. These are in EDs along with the Red Line such as Inchicore, Phoenix Park, Ushers F and EDs in the City Centre (e.g. Arran Quay C, Inns Quay C, North City) as well as EDs along the extended Green Line (e.g. Clonskeagh-Farranboley, Dundrum-Sweetmount, Rathfarnham, Rathmines East A, Rathmines West B, D and F) and existing Green Line (e.g. Cabra West B, Cabra East B and C, Arran Quay B, Inns Quay B, Rotunda B). However, significant decreases are widely seen outside the city centre and in suburbs (e.g. Portmarnock North, Holmpatrick, Tallagh-Kilnamanagh, Malahide West).

5. Conclusion

This study analyses changes in shares of sustainable modes of transport such as walking, cycling and public transport using Census data in 2016 and 2022, focusing on the commuting trips. The results demonstrate that **shares of walking and cycling change positively as 59% (walking) and 78% (cycling) of total EDs**. **In public transport, shares between the two years show negative changes in 64% of total EDs**, and this could be because of the tendency of remote working and avoiding public transport at the time of the Census. **Significant increases in both walking and cycling shares are seen in suburban EDs rather than in the city centre**. On the other hand, **where some EDs show significant decreases in active travel shares, public transport shares increase significantly**. These EDs are located well in the catchment area of Luas lines. This may indicate that the expansion of Luas network may support a shift commuting trips inside or to the city centre from walking and cycling to Luas due to the improved accessibility of public transport.

On the other hand, significant increases in cycling shares are seen in the suburbs while public transport shares decrease in many of these EDs. This may indicate that people could change their commuting mode from public transport to cycling due to the traffic congestion considering that these EDs are located close enough to the main destinations for work and education within the average distance of a typical journey by bicycle.

However, this study does not consider population size and structure of each ED. For example, changes in age distribution and population density may affect changes in mode share of sustainable transport mode. The largest decrease in walking share is seen in Tibradden from 22.5% in 2016 to 9.93% in 2022, and a difference is -12.57%. Population in Tibradden decreased from 1,111 in 2016 to 945 in 2022, in particular, population aged 10–19 significantly decreased from 305 (27.5%) in 2016 to 103 (10.9%) in 2022. This age group may walk to education or work more than any groups. Tibradden is a suburban town in the south outside M50 without a densely developed centre and a school is located near residential areas. Thus, rather than behavioural or infrastructure changes, a decrease of younger populations might be attributed to the significant decrease in walking share. Also, the population size is smaller than compared to other EDs in suburban areas near Dublin City as the average population of EDs in Dublin and suburbs is 4,528. When the ED has a small population size, changes in responses of sustainable mode as a commuting mode would have a more significant impact when there is an increase or a decrease of shares between two years.

For the future research, it would be insightful to separate commuting trips into the work, school travel and childcare. This will be helpful to investigate the policy impact such as the school transport scheme or Safe Routes to School programme. Also, such research will be able to provide insights on which groups will need more interventions to encourage mode shift to sustainable modes.

A detailed analysis to identify the impact of delivery of sustainable transport infrastructures is recommended. As this study only focuses on identifying small areas in Dublin and its suburbs which show significant increases between 2016 and 2022, considering the sustainable transport infrastructure and improvement which were implemented between these two years may provide a clear view on how these developments contributed to promoting the mode shift to the sustainable modes.

To measure the targets from the CAP 23, it should be examined if more negative changes in public transport shares will remain in future years. There is research to show that public transport was substituted by sustainable modes or private cars during the COVID-19 pandemic as well as by remote working (Schaefer et al., 2021; Melo, 2022; Vallejo-Borda et al., 2022). However, it is unclear whether this is a tendency caused by the pandemic temporarily or continued after the pandemic was over.

On the other hand, the research results investigating the relationship between the built environment and transport mode choice in Dublin suggest that more walkable built environments increase the cost efficiency of active transport modes while these environments negatively impact the relative cost efficiency of buses and trams due to increased congestions (Credit and O'Driscoll, 2024). This indicates that better environments for walking and cycling and increased congestions could make people shift from public transport to walking and cycling as a commuting mode, considering that 69% of EDs show negative changes in shares of driving and passenger in a car. Finally, the same analysis on the regional cities such as Cork, Galway, Limerick and Waterford could provide a full picture for the areas where further behavioural and infrastructure interventions are needed for promoting a mode shift. The results from this paper suggest that 72% (public transport) and 51% (active travel) of total EDs in Dublin City and suburbs show shares of these modes in commuting above targets by the CAP 23 in 2030, 19% for public transport and 28% for active travel. Considering that Dublin City and suburbs have better transport environments than other areas, regional cities and rural areas may have different patterns.

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Appendix 1: List of EDs with significant increases and decreases in walking shares between 2016 and 2022

Increases

	2016	2022	Percentage point	Change in values
Portmarnock North	16.13%	28.00%	11.86%	232
Templeogue-Orwell	13.68%	23.02%	9.34%	80
Clondalkin-Ballymount	13.95%	22.16%	8.20%	91
Blanchardstown-Delwood	15.51%	23.12%	7.62%	161
Rathcoole	17.58%	24.66%	7.08%	486
Tallaght-Kilnamanagh	15.02%	21.96%	6.94%	150
Templeogue-Osprey	10.87%	17.80%	6.93%	71
Terenure D	15.64%	22.36%	6.73%	30
Tallaght-Kingswood	17.38%	23.67%	6.29%	122
Foxrock-Beechpark	11.66%	17.74%	6.08%	72
Stillorgan-Leopardstown	8.77%	14.77%	6.00%	113
Ashtown B	14.34%	20.34%	6.00%	111
Firhouse-Knocklyon	16.82%	22.76%	5.95%	93
Stillorgan-Merville	15.70%	21.61%	5.91%	108
Stillorgan-Kilmacud	16.97%	22.81%	5.84%	167
Ballinteer-Broadford	12.10%	17.93%	5.83%	57
Malahide West	11.38%	17.05%	5.67%	157
Portmarnock South	15.74%	21.37%	5.63%	248
Stillorgan-Deerpark	21.73%	27.22%	5.48%	75
Blanchardstown-Roselawn	16.72%	22.13%	5.40%	33
Glencullen	5.85%	11.20%	5.35%	990
Templeogue Village	18.74%	23.94%	5.20%	96
Raheny-St. Assam	10.48%	15.67%	5.18%	138
Castleknock-Knockmaroon	16.06%	21.22%	5.16%	796
Sutton	12.72%	17.80%	5.08%	155
Ballinteer-Meadowbroads	16.41%	21.48%	5.07%	50
Kinsaley	9.04%	14.09%	5.05%	480
Clontarf West A	11.45%	16.49%	5.05%	117
Saggart	10.22%	15.23%	5.02%	218
Pembroke East C	17.61%	22.61%	5.00%	118
Rathfarnham-Hermitage	15.17%	20.05%	4.87%	62
Dún Laoghaire-Glenageary	12.52%	17.34%	4.82%	337
Rathfarnham-Ballyroan	12.34%	17.12%	4.78%	89
Clontarf East B	13.67%	18.44%	4.77%	178
Dalkey-Bullock	16.56%	21.26%	4.71%	31
Dalkey Upper	10.30%	14.90%	4.60%	55
The Ward	10.64%	15.22%	4.58%	707
Malahide East	16.66%	21.20%	4.54%	271
Walkinstown A	18.42%	22.94%	4.53%	26

	2016	2022	Percentage point	Change in values
Stillorgan-Mount Merrion	19.87%	24.33%	4.46%	53
Newcastle	9.53%	13.93%	4.40%	250
Balgriffin	5.96%	10.26%	4.29%	184
Ballinteer-Ludford	14.11%	18.33%	4.22%	67
Templeogue-Kimmage Manor	15.38%	19.54%	4.16%	118
Dún Laoghaire-West Central	19.60%	23.72%	4.12%	41
Dundrum-Balally	20.13%	24.20%	4.07%	211
Merchants Quay D	44.15%	48.23%	4.07%	165

Decreases

	2016	2022	Percentage point	Change in values
Tibradden	22.50%	9.93%	-12.57%	-82
Mountjoy B	53.42%	41.12%	-12.30%	-275
North Dock A	37.94%	30.37%	-7.57%	-82
Tallaght-Killinardan	32.13%	24.55%	-7.57%	-181
North Dock C	57.31%	50.15%	-7.16%	-235
Kilmore C	28.42%	21.53%	-6.88%	-66
Ballybough B	40.59%	34.02%	-6.58%	-28
Tallaght-Fettercairn	25.70%	19.16%	-6.54%	139
Ballybough A	43.75%	37.23%	-6.51%	-114
Merchants Quay F	37.35%	31.44%	-5.91%	-67
Rotunda A	49.88%	44.21%	-5.67%	-189
Finglas South C	28.62%	23.00%	-5.62%	-105
Rotunda B	49.61%	44.01%	-5.60%	-328
Priorswood D	23.03%	17.53%	-5.50%	-67
Priorswood B	32.21%	26.77%	-5.44%	-50
Edenmore	22.89%	17.57%	-5.32%	-60
Blanchardstown-Corduff	25.81%	20.50%	-5.31%	-166
Whitehall A	35.32%	30.42%	-4.90%	-146
Arran Quay B	42.58%	37.78%	-4.80%	-305
Ballymun B	30.70%	25.94%	-4.76%	-165
Ballymun C	27.56%	22.86%	-4.70%	-278
Royal Exchange B	60.06%	55.36%	-4.70%	-64
Tallaght-Kiltipper	21.23%	16.62%	-4.61%	-118
Kylemore	27.72%	23.21%	-4.51%	-38
Priorswood C	26.07%	21.67%	-4.40%	-154
Clondalkin-Rowlagh	27.59%	23.21%	-4.37%	-77
Rathmines West C	32.99%	28.62%	-4.37%	-143
Merchants Quay A	53.65%	49.44%	-4.22%	-164
Kimmage C	29.13%	24.97%	-4.17%	-32
Finglas North A	22.99%	18.87%	-4.13%	-92
Carna	22.51%	18.39%	-4.12%	-37

	2016	2022	Percentage point	Change in values
Mountjoy A	54.83%	50.77%	-4.06%	89
Drumfinn	29.53%	25.51%	-4.02%	-26
Donabate	22.84%	18.83%	-4.01%	35
North City	52.04%	48.09%	-3.95%	-280
Garristown	9.80%	5.93%	-3.87%	-26
North Dock B	41.42%	37.67%	-3.75%	113
Inns Quay C	53.95%	50.21%	-3.74%	21
Rathmines West D	30.48%	26.73%	-3.74%	-122
South Dock	57.04%	53.35%	-3.69%	-117
Blanchardstown-Mulhuddart	19.01%	15.35%	-3.65%	-86
Cabra East B	30.23%	26.64%	-3.59%	-68
Rathmines West B	43.93%	40.39%	-3.54%	-237
Kilmore B	29.81%	26.28%	-3.54%	-38
Arran Quay A	40.70%	37.23%	-3.47%	-79
Whitehall B	26.18%	22.79%	-3.39%	-64
Merchants Quay E	52.44%	49.10%	-3.35%	-190
Inns Quay A	40.91%	37.59%	-3.32%	-94
Wood Quay B	45.50%	42.32%	-3.18%	-114
Cherry Orchard C	24.81%	21.64%	-3.17%	-35
Swords Village	29.96%	26.83%	-3.13%	-79
Clondalkin-Moorfield	24.32%	21.19%	-3.13%	-34
Saint Kevin's	49.18%	46.06%	-3.12%	-235
Kimmage B	21.51%	18.51%	-3.00%	-48
Rathmines West A	38.21%	35.35%	-2.86%	-154
Inchicore B	24.95%	22.11%	-2.85%	9

Appendix 2: List of EDs with significant increases and decreases in cycling shares between 2016 and 2022

Increases

	2016	2022	Percentage point	Change in values
Dún Laoghaire-Salthill	5.30%	11.03%	5.73%	62
Churchtown-Woodlawn	8.70%	14.36%	5.66%	57
North Dock A	13.95%	19.57%	5.62%	36
Blackrock-Stradbrook	7.44%	13.01%	5.57%	95
Clontarf East E	10.46%	15.70%	5.24%	48
Drumcondra South C	13.16%	18.14%	4.98%	68
Drumcondra South B	11.17%	16.09%	4.92%	51
Beaumont E	9.67%	14.35%	4.68%	51
Blackrock-Seapoint	7.18%	11.67%	4.49%	31
Clontarf West E	14.29%	18.69%	4.40%	65
Dún Laoghaire-Monkstown Farm	8.09%	12.43%	4.35%	70
Clontarf East D	12.82%	17.13%	4.31%	77
Terenure-Greentrees	11.02%	15.10%	4.08%	95
Blackrock-Monkstown	8.74%	12.76%	4.02%	87
Churchtown-Landscape	12.07%	16.09%	4.02%	35
Foxrock-Deansgrange	5.03%	8.91%	3.88%	58
Kimmage D	14.30%	18.13%	3.83%	48
Whitehall A	9.40%	13.04%	3.63%	52
Kimmage B	9.69%	13.29%	3.60%	79
Terenure D	13.58%	17.09%	3.51%	15
Ballygall C	8.97%	12.45%	3.48%	82
Blackrock-Templehill	9.64%	13.12%	3.48%	50
Howth	2.30%	5.78%	3.48%	160
Botanic A	12.06%	15.50%	3.44%	56
Dún Laoghaire-Sandycove	6.30%	9.66%	3.36%	60
Dún Laoghaire-Sallynoggin South	6.03%	9.34%	3.31%	26
Rathmines East B	12.99%	16.28%	3.28%	43
Rathmines West C	14.34%	17.45%	3.11%	24
Blackrock-Newpark	11.29%	14.39%	3.11%	22
Crumlin D	10.37%	13.44%	3.08%	83
Clontarf West C	11.49%	14.55%	3.06%	41
Dún Laoghaire-Sallynoggin West	6.47%	9.35%	2.88%	144
Ballygall D	9.67%	12.53%	2.87%	39
Dún Laoghaire-Mount Town	7.21%	10.02%	2.80%	44
Crumlin B	10.52%	13.28%	2.76%	51
Pembroke East E	11.00%	13.72%	2.72%	55
Rathmines East C	15.30%	18.02%	2.71%	23
Dún Laoghaire-East Central	6.46%	9.16%	2.70%	37
Dalkey Upper	4.91%	7.57%	2.67%	32

	2016	2022	Percentage point	Change in values
Churchtown-Orwell	12.10%	14.76%	2.66%	30
Blackrock-Carysfort	8.70%	11.35%	2.65%	77
Holmpatrick	1.22%	3.86%	2.65%	67
Decies	3.67%	6.28%	2.62%	43
Cabinteely-Granitefield	5.82%	8.42%	2.60%	41
Dalkey-Bullock	5.59%	8.16%	2.57%	19
Drumcondra South A	13.38%	15.95%	2.57%	145
Crumlin C	15.17%	17.74%	2.57%	32
Grace Park	12.73%	15.27%	2.54%	102

Decreases

	2016	2022	Percentage point	Change in values
Inns Quay A	14.80%	11.93%	-2.88%	-60
Clonskeagh-Belfield	9.87%	7.09%	-2.79%	-38
Rotunda B	9.71%	7.52%	-2.19%	-72
North Dock B	14.91%	12.89%	-2.02%	3
South Dock	11.43%	9.43%	-2.00%	-83
Merchants Quay C	13.01%	11.02%	-1.99%	-61
Phoenix Park	15.48%	13.58%	-1.90%	-45
Ushers F	17.94%	16.07%	-1.86%	-41
Rathmines East D	17.43%	15.73%	-1.70%	-89
Mansion House B	10.02%	8.53%	-1.49%	-14
North City	7.33%	5.84%	-1.49%	-62
Kilmore C	6.17%	4.72%	-1.45%	-14
Mountjoy A	8.32%	6.91%	-1.40%	-10
Inns Quay B	13.42%	12.07%	-1.35%	-36
Inchicore B	6.47%	5.15%	-1.32%	-5
Rathmines West F	20.99%	19.75%	-1.24%	-67
Whitehall C	9.74%	8.55%	-1.18%	18
Rathfarnham	17.30%	16.12%	-1.18%	38
Arran Quay C	11.19%	10.22%	-0.97%	-78
Cabra West B	8.29%	7.38%	-0.91%	-8
Ushers D	15.66%	14.77%	-0.89%	-8
Saint Kevin's	14.95%	14.06%	-0.88%	-70
Ballinascorney	2.23%	1.42%	-0.80%	-4
Ushers C	12.96%	12.18%	-0.78%	-41
Kilsallaghan	1.98%	1.23%	-0.75%	-9
Clonmethan	1.39%	0.66%	-0.73%	-3
Beaumont D	9.50%	8.79%	-0.71%	-21
Edenmore	7.99%	7.31%	-0.69%	-4
Templeogue-Orwell	7.33%	6.66%	-0.67%	-15
Kilmainham A	8.56%	7.92%	-0.65%	-20

	2016	2022	Percentage point	Change in values
Garristown	1.01%	0.42%	-0.59%	-5
Pembroke East A	12.92%	12.34%	-0.58%	-27
Pembroke East B	14.42%	13.85%	-0.57%	-15
Ballymun F	8.15%	7.59%	-0.56%	-7
Mountjoy B	10.83%	10.28%	-0.56%	-5
Ballinteer-Ludford	9.50%	8.95%	-0.55%	5
Royal Exchange B	6.20%	5.65%	-0.54%	-7
Kilmore A	7.35%	6.83%	-0.53%	-12
Blackrock-Glenomena	12.43%	11.91%	-0.52%	-24
Tallaght-Kilnamanagh	3.07%	2.58%	-0.49%	-18
Ballygall B	9.25%	8.77%	-0.48%	-3
Blanchardstown-Roselawn	5.15%	4.70%	-0.46%	-7

Appendix 3: List of EDs with significant increases and decreases in public transport shares between 2016 and 2022

Increases

	2016	2022	Percentage point	Change in values
Mountjoy B	25.78%	36.91%	11.13%	314
Ballybough B	26.54%	35.58%	9.04%	288
Ballinascorney	11.69%	19.04%	7.35%	44
Arran Quay B	27.61%	34.18%	6.57%	12
Rathfarnham	24.01%	30.46%	6.45%	328
Ballybough A	23.72%	29.97%	6.25%	139
Phoenix Park	35.59%	41.56%	5.97%	-28
Ushers D	27.56%	33.38%	5.82%	86
Rotunda B	29.43%	35.24%	5.81%	-129
Whitehall C	27.07%	32.86%	5.79%	204
North Dock C	22.36%	27.56%	5.20%	92
Rotunda A	29.98%	35.11%	5.13%	123
North Dock B	21.11%	26.10%	4.98%	446
Dundrum-Sweetmount	29.36%	34.32%	4.96%	162
Royal Exchange B	21.90%	26.79%	4.88%	21
Merchants Quay F	23.11%	27.90%	4.79%	73
Blackrock-Seapoint	29.66%	34.31%	4.65%	9
Rathmines West C	23.01%	27.63%	4.62%	32
Balgriffin	18.24%	22.66%	4.42%	319
North City	33.08%	37.24%	4.16%	-17
Rathmines West A	19.46%	23.57%	4.12%	119
Inns Quay C	22.99%	27.08%	4.09%	104
Rathmines West B	21.31%	25.39%	4.09%	10
Rathmines West D	20.64%	24.67%	4.03%	48
Mountjoy A	27.15%	31.17%	4.03%	224
Cabra West B	24.15%	28.06%	3.92%	71
Mansion House B	14.29%	18.09%	3.80%	3
South Dock	14.51%	18.19%	3.68%	188
Tallaght-Fettercairn	18.82%	22.33%	3.52%	672
Whitehall A	19.21%	22.71%	3.50%	34
Cabra East B	20.76%	24.15%	3.39%	83
Clonskeagh-Belfield	6.91%	10.28%	3.38%	105
Rathmines West F	18.70%	22.03%	3.32%	22
Arran Quay C	31.35%	34.51%	3.16%	-80
Newcastle	10.80%	13.95%	3.16%	218
Tallaght-Jobstown	18.16%	21.21%	3.05%	496
Pembroke West A	10.69%	13.65%	2.97%	85
Cabra East C	31.32%	34.27%	2.95%	32
Inns Quay B	28.17%	31.04%	2.87%	41

	2016	2022	Percentage point	Change in values
Pembroke East B	12.81%	15.65%	2.83%	63
Clonskeagh-Farranboley	24.92%	27.72%	2.80%	51
Merchants Quay A	24.65%	27.44%	2.79%	-25
Inns Quay A	27.07%	29.85%	2.78%	15
Rathmines East A	17.16%	19.92%	2.76%	12
Dún Laoghaire-Glenageary	30.66%	33.39%	2.73%	572
Inchicore B	29.02%	31.62%	2.60%	85
Garristown	14.04%	16.54%	2.50%	59
Merchants Quay E	16.96%	19.38%	2.42%	-13
Dún Laoghaire-Sallynoggin West	24.45%	26.81%	2.36%	311
Dubber	26.96%	29.29%	2.33%	323
Ushers F	24.94%	27.28%	2.33%	30
Tallaght-Killinardan	19.55%	21.88%	2.32%	22
Priorswood B	23.72%	26.02%	2.30%	48
Tallaght-Glenview	17.17%	19.46%	2.29%	52

Decreases

	2016	2022	Percentage point	Change in values
Portmarnock North	23.84%	16.48%	-7.35%	-178
Holmpatrick	24.06%	17.96%	-6.10%	-67
Tallaght-Kilnamanagh	20.50%	14.40%	-6.10%	-193
Malahide West	29.83%	23.84%	-5.99%	-316
Blackrock-Templehill	31.49%	25.67%	-5.83%	-108
Clondalkin-Ballymount	22.21%	16.39%	-5.83%	-81
Whitehall D	28.24%	22.99%	-5.25%	-116
Turnapin	27.34%	22.15%	-5.19%	-71
Beaumont D	28.21%	23.09%	-5.12%	-99
Walkinstown C	22.07%	17.02%	-5.05%	-39
Terenure D	18.93%	13.92%	-5.01%	-26
Tallaght-Kingswood	21.42%	16.50%	-4.92%	-143
Kimmage D	24.81%	19.90%	-4.91%	-80
Sutton	31.54%	26.67%	-4.86%	-175
Clontarf West A	33.28%	28.44%	-4.84%	-114
Grange E	28.53%	23.71%	-4.82%	-68
Raheny-Greendale	32.08%	27.36%	-4.73%	-46
Blackrock-Stradbrook	25.75%	21.04%	-4.72%	-51
Carna	22.24%	17.64%	-4.60%	-45
Clontarf West E	22.97%	18.50%	-4.47%	-74
Ballygall C	22.97%	18.50%	-4.46%	-62
Beaumont F	24.80%	20.44%	-4.36%	-80
Castleknock-Park	26.55%	22.20%	-4.36%	-93
Cabinteely-Kilbogget	24.41%	20.09%	-4.32%	-59

	2016	2022	Percentage point	Change in values
Ballygall A	27.92%	23.65%	-4.28%	-135
Portmarnock South	30.74%	26.54%	-4.20%	66
Raheny-Foxfield	31.93%	27.81%	-4.12%	-40
Tallaght-Oldbawn	16.35%	12.33%	-4.03%	-123
Grange D	33.73%	29.74%	-3.99%	-148
Harmonstown B	29.42%	25.46%	-3.97%	-10
Foxrock-Deansgrange	22.28%	18.35%	-3.93%	-56
Dalkey Hill	36.06%	32.22%	-3.84%	-35
Foxrock-Beechpark	24.12%	20.28%	-3.84%	-25
Blanchardstown-Delwood	23.54%	19.72%	-3.82%	-180
Walkinstown A	25.78%	22.03%	-3.76%	-107
Dalkey-Coliemore	32.03%	28.30%	-3.73%	-49
Clontarf West B	29.25%	25.58%	-3.66%	-51
Cabinteely-Granitefield	22.47%	18.81%	-3.66%	-58
Ballymun D	28.20%	24.60%	-3.60%	-122
Shankill-Shanganagh	29.02%	25.46%	-3.55%	-170
Blackrock-Glenomena	19.15%	15.61%	-3.54%	-71
Raheny-St. Assam	33.76%	30.25%	-3.50%	-21
Lucan Heights	20.98%	17.50%	-3.48%	-139
Decies	24.65%	21.23%	-3.42%	-12