Supplementary Materials S3: Stock and Flow Analysis

Key Investments in Kilkenny City in Sustainable Transport and Public Realm

2006

Development of Cycle Routes Commence

Orbital Cycle and Pedestrian Network on Ring Road

2007

Parade Plaza

Removal of 100 car spaces from city centre



2009

Work commences on narrowing of carraigeways for **radial cycle routes**

2010

Smarter Travel Committee established

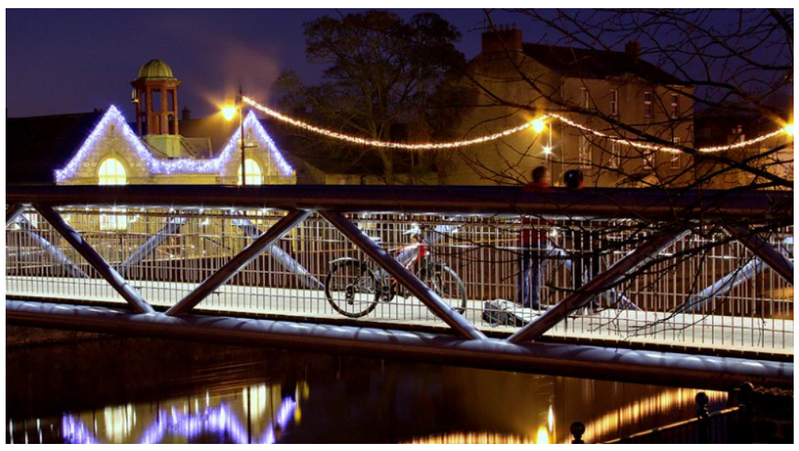
2012

Lacken Boardwalk opens and orbital routes extended



2014

Ossory Cyclist and Pededstrian Under Bridge and Lady Dysart Bridge open



2016

Work begins on the **Abbey Quarter**, the regeneration of a city centre site

2017

Work begins on the highly contested **Inner Relief Road and Central Access Scheme**

2018

Breagagh Valley infrastructure commences, a newly planned city neighbourhood

2019

Introduction of **City Bus**

COVID measures applied



2020

A **one-way system** is introduced in City centre and side streets are **pedestrianised**



2021

Opening of **Riverside Park and Skatepark**

Launch of Active Travel Programme with 20% of Transport Budget for walking and cycling

2022

A **bike share scheme** is introduced

Supplementary Materials S3: Stock and Flow Analysis
Investment to Date in Car, Public Transport or Active Travel Infrastructure

Until recently, transport investment has prioritised car design with a resulting dearth in investment in public transport and active travel infrastructure. In 2020, an active travel funding scheme was introduced, with dedicated funding for active travel staff and projects. This represents a new flow of resources and will allow for the provision of new active travel infrastructure. This is the first dedicated active travel funding since the Smarter Travel programme which funded the provision of two pedestrian bridges, opened in 2014.

In 2021, the Irish government introduced a 2:1 investment allocation ratio between new public transport and new road infrastructure: for every euro spent on new road infrastructure, two are spent on new public transport infrastructure. The transport budget for the period 2021–2030 allocates 46% of funding to public transport (15.7 billion euros), 11% to active modes (3.6 billion euros) and 43% to roads for car use (14.8 billion euros) (OECD, 2022).

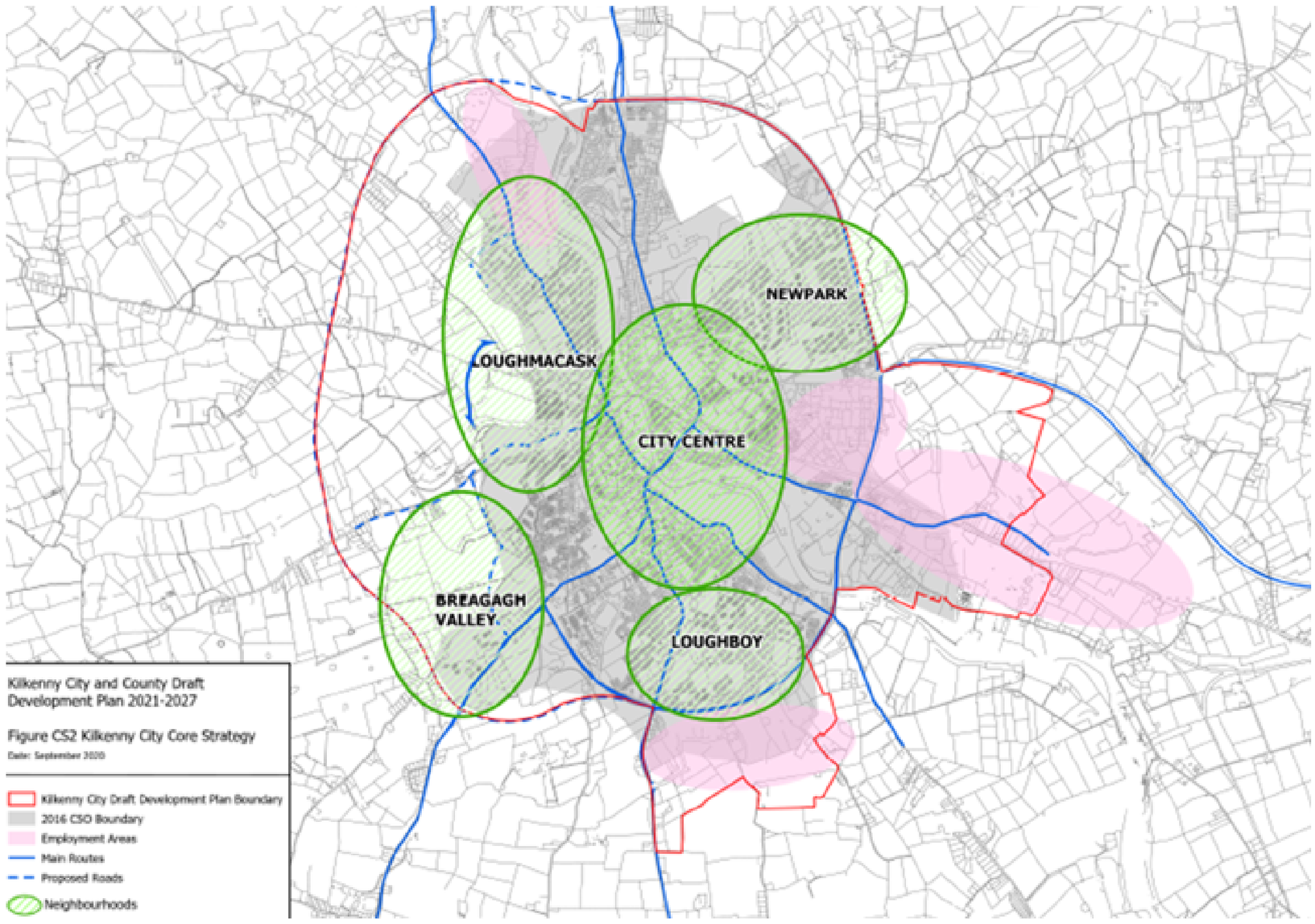
The local authorities have dedicated active travel teams in place since 2020, with a remit of delivering active travel projects. This represents a new flow of resources for dedicated active travel projects as outlined below.

		Project Description	**Funding Stream**
2023	€2,448,000	Safe Routes to Schools Various public realm improvements in the city Public lighting, footpaths, junction tightening Progression of radial cycle route improvements and new river crossings Ancillary Cycling facilities	Active Travel
2022	€2,166,000	City Centre Traffic Management Plan Various public realm improvements in the city Public lighting, footpaths, junction tightening Progression of radial cycle route improvements and new river crossings Ancillary Cycling facilities	Active Travel
2021	€2,113,000	City Centre Traffic Management Plan Various public realm improvements in the city Public lighting, footpaths, junction tightening Radial cycle route improvements New river crossings Ancillary Cycling facilities	Active Travel
2021	€11,460,000	Abbey Quarter Phase 2	Urban Regeneration Development Fund
2021	€6,641,000	Kilkenny City Enhnaced Livability Project, upgrade of streetscape and laneways	Urban Regeneration Development Fund
2020	€650,500	Ormonde St: one way street, public realm design Bishop Birch Place: Provision of walking/cycling route Ballybought St: Provision of new cycle lane Newrath : Provision of footpath and lighting scheme Nuncio Road: Provision of dished crossing points Maudlin St : Design of Shared Surface	Active Travel
2019	€4,764,000	Abbey Quarter, city centre regeneration project to develop the Abbey Quarter as a seamless complement to the medieval city, incorporating a river and urban park.	Urban Regeneration Development Fund

Supplementary Materials S3: Stock and Flow Analysis
Integration of Transport and Land Use Planning
Population, population change, densities and zoning patterns

The provision of sustainable transport options is highly dependent on population densities and dispersal. Lower population densities and more dispersed populations, leads to more expensive and inefficient provision of transport.

In the last three development plans, Kilkenny has adopted the 10 minute city concept, to grow the city in a compact form and cater for the projected population increase with two new neighbourhoods to be developed to the west of the city and infill development in the built up area (Kilkenny County Council, 2021).



The table below shows patterns of settlement, the lowest population uplift in Kilkenny City in the previous two decades was between 2016 and 2002 at 2.5% (Census, 2022).

If population increases continue at this level, Kilkenny City will fail to meet the targets outlined in the Regional Spatial and Economic Strategy (Southern Regional Assembley, 2021)

	2002	2006	2011	2016	2022
Kilkenny County	80,399	87,558	95,419	99,232	104,160
Population Change County	5,063	7,159	7,861	3,813	4,928
Population Change %	6.6%	8.9%	9.0%	4.0%	5.0%
Kilkenny City	20,735	22,719	24,423	26,512	27,184
Population Change City	2,039	1,984	1,704	2,089	672
Population Change %	10.9%	9.6%	7.5%	8.6%	2.5%
Population Density City (persons per sq km)	1,547*	1,695*	1,825 (13.4sq km)	2,116 (12.5sq km)	2,348 (12sq km)

Supplementary Materials S3: Stock and Flow Analysis
Existing Mobility Infrastructure and Services

Walking

Kilkenny has sections of good public realm (particularly within the city centre) and the city's unique heritage contribute to an overall attractive pedestrian environment. Characterised by its medieval origins, the city centre contains a network of back lanes which are a particular feature of the overall townscape. These back lanes offer enhanced permeability and connectivity. There is a continuous provision of footpaths, although these can be narrow. The pedestrian environment is negatively impacted by the dominance of vehicles, poor quality pedestrian crossing facilities and the width of the footpaths.

Cycling

Cycle facilities, in the form of advisory on-road cycle lanes or shared use paths, are provided along a number of the radial routes. Within the city centre, there is no dedicated cycling infrastructure. Where there are dedicated cycle facilities, many of these are discontinuous and of mixed quality. There is a lack of physical segregation from motorists and little to no provision for cyclist movements through junctions. Cycle parking is provided on key streets within the city centre.



Permeability

There are a number of significant barriers to permeability within Kilkenny, including the River Nore, River Breagagh, the railway line, escarpments, large areas of private lands/development, and the Kilkenny Ring Road.

Bus

In December 2019, a new city bus service commenced with two routes. Both routes are circuitous, to broaden catchment areas. However, this reduces directness and increases journey times, potentially decreasing the attractiveness of the service. There are no bus priority measures in place, which would improve reliability and speed of service. Inter-urban services are provided by public and private operators with limited schedules.



Rail

Kilkenny is served by the Dublin-Waterford InterCity Route. It does not facilitate inward commuting from the north for a standard 09:00- 17:00 working day. The immediate environment around the station is car dominated and unfavourable for pedestrians and cyclists with the presence of guardrails and wide, multi-stage crossings

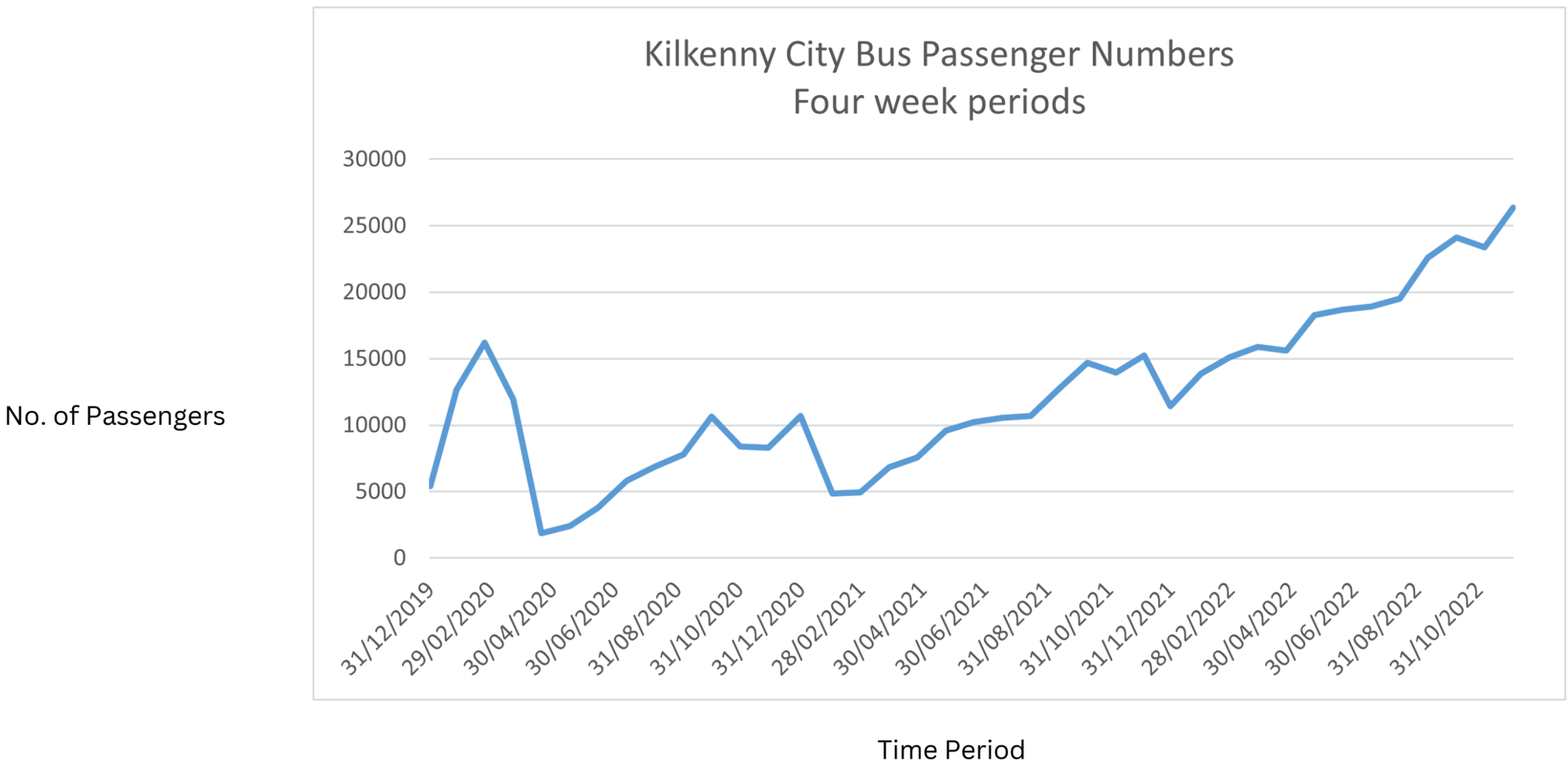
Road

Kilkenny City is well served by its existing road network. The National road network provides the basis for Kilkenny's national and inter-regional connectivity, with access to motorway, and national primary and secondary routes. The Kilkenny Ring Road is a key part of Kilkenny's road network. This orbital route bounds the city, with an unfinished section to the north.

Supplementary Materials S3: Stock and Flow Analysis
Existing Transport Services and Usage Patterns

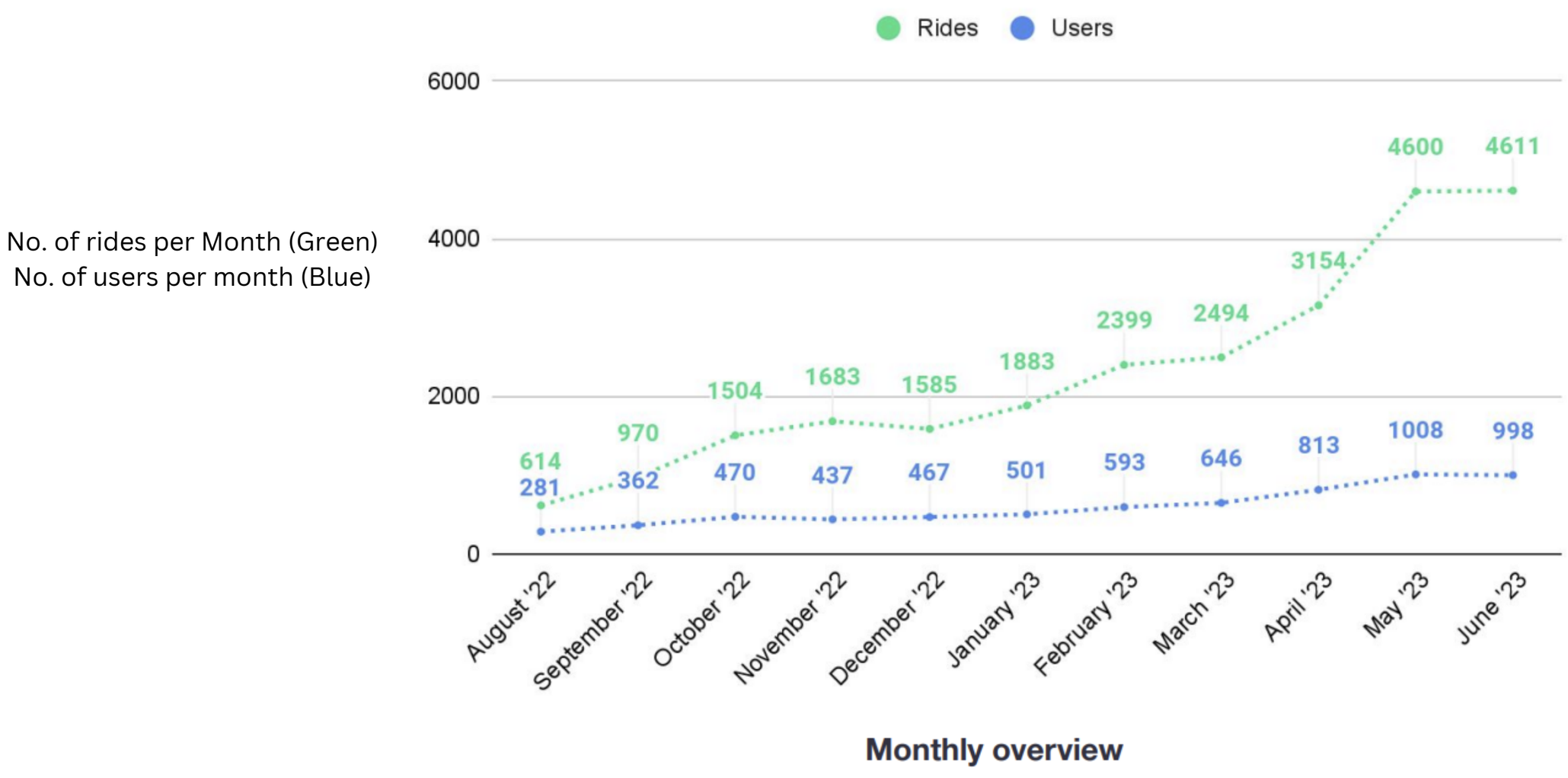
Bus Service Passenger Numbers

There are two services KK1 and KK2 that operate every 30 minutes Monday to Saturday, and Sunday 30/60 minutes. After an inital sharp decline in passenger numbers as a result of COVID restrictions, the numbers using the services have grown.



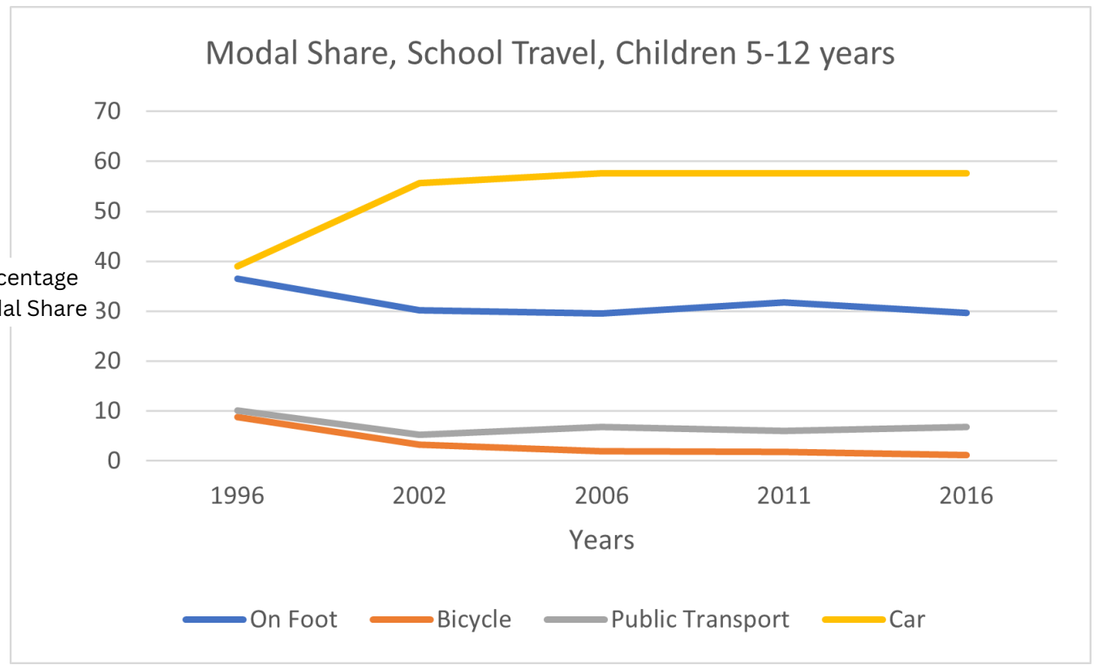
E-Bike Share Scheme

Kilkenny's E-Bike Share Scheme was introduced in August 2022. There are now 47 parking locations and 60 bikes in operation. In the 10 month period from August 2022 to June 2023, over 51,611km were travelled on the scheme with over 3,000 unique users.

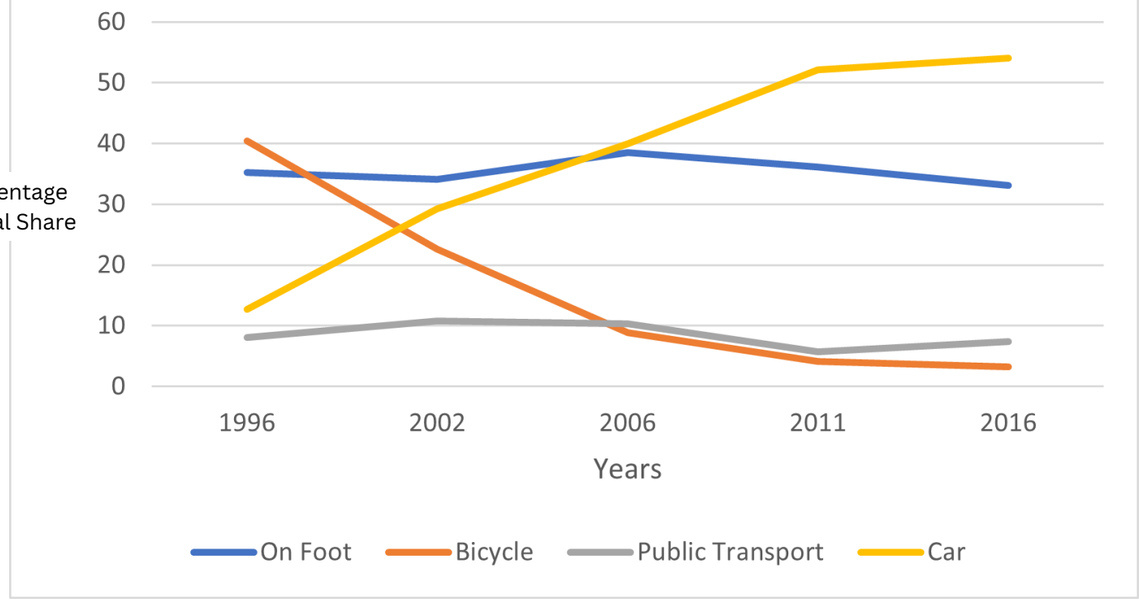


Numbers are currently unavailable for **train** and **taxi** services.

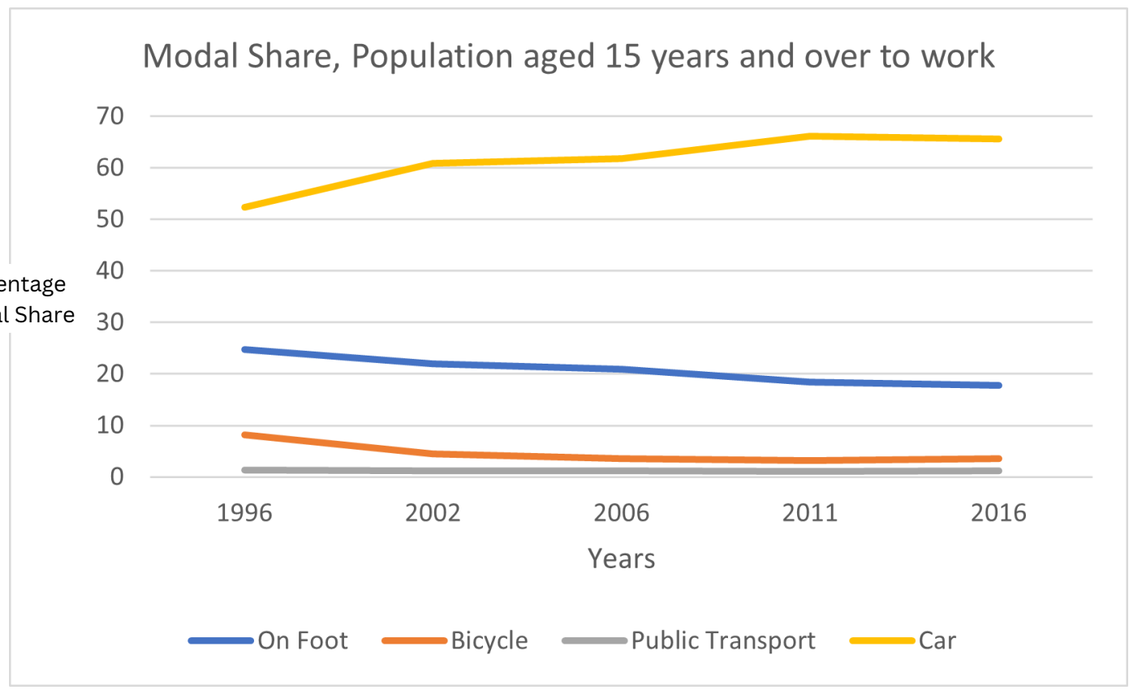
Supplementary Materials S3: Stock and Flow Analysis
Modal shares and car ownership over time



In primary schools, travel by car increased from 40% to 56% between the intercensal period, 1996 to 2002.
There has been a corresponding decline in both walking and cycling (CSO Ireland, 2016).

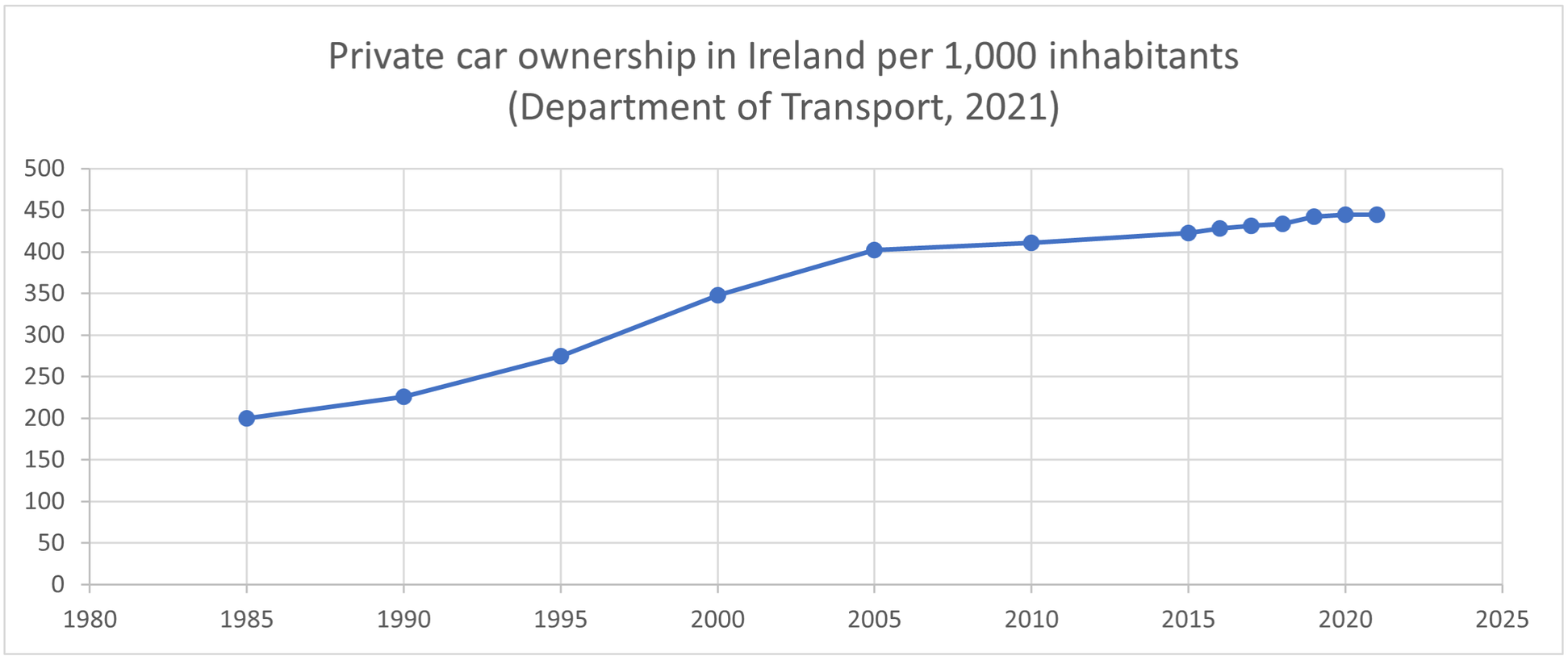


Students from 13 to 18 years of age have experienced the greatest decline in cycling from 40% to 3% in the 2016 census.
The majority of these journeys have been replaced by car travel which has risen from 13% to 54%.



From 1996 census, journeys to work by private car rose from 45% to 66%.
Over this period, the percentages of those walking has fallen from 25% to 18%.
Cycling to work has also fallen from 8.2% to 3.2% in 2011 and 3.6% in 2016.

The first city buses were introduced in 2019



In Ireland, car ownership has risen consistently since the 1980's with 445 cars per 1,000 inhabitants in 2021. This data is not available for Kilkenny City but in the county, private car ownership was above the national average at 458 cars per 1,000 inhabitants in 2021.