

Greater Cambridge Partnership

Business Impacts Assessment
Making Connections

AUGUST 2023



GREATER
CAMBRIDGE
PARTNERSHIP



Quality Control

Issue/Revision	First Issue	Revision 1	Final
Date	19/06/2023	21/08/2023	24/08/2023
Prepared by	AP	AP	AP
Checked by	JC	JC	JC
Authorised by	MA	MA	MA
Report number	V1.0	V2.0	V3.0

Executive Summary

This **business impacts assessment (BIA)** analyses the potential impacts of the Sustainable Travel Zone (STZ) on businesses in the Cambridge area. The BIA provides a baseline analysis before analysing STZ impacts on the workforce, customers and supply chains in the Cambridge area. The BIA also delves deeper into the potential STZ impact on a selection of key industry-sectors that are particularly pertinent to Cambridge's economy. The key industry-sectors are in turn examined through the lens of different options for implementing the STZ charge.

Findings from the baseline analysis suggest that:

- Many industries with the highest share of business counts in the Cambridge area, such as science and technology and information and digital technology, are future-facing and indicate the new emerging sectors that drive Cambridge's economy. The workforce in Cambridge also has particular specialisms in research and experimental development in natural sciences and engineering, post-secondary non-tertiary education, and first-degree level higher education sectors. These are industries that may be potentially less negatively impacted by the STZ charge.
- Micro businesses, comprising 0-9 employees, make up 89% and 86% of enterprises in the Travel to Work Area and in the Cambridge area, respectively. The split between the different industries that are micro enterprises is similar to the overall business make-up in the Cambridge area.
- According to ONS data from early 2023, 54% of the workforce within the wider East of England report either working from home, hybrid working, or having the option to work from home; while 46% can only work on site. This indicates some variability around whether or not employees will always incur the STZ charge.

Findings from the business impacts assessment suggest that:

- Overall, there are some parts of Cambridge's economy that may be more vulnerable to the introduction of the STZ charge, and it is anticipated that adverse impacts will be mitigated through the design of the scheme, and discounts and exemptions therein.
- Several sectors relating to **retail and wholesale trade, health, hospitality, construction, and manufacturing** may potentially be more negatively impacted by the introduction of the STZ charge. **Small business owners may be more exposed compared to larger businesses.** The **logistics sector** is integral to supply chains of the above sectors and is therefore also assessed to be potentially more negatively impacted by the STZ charge in the short term.
- The **education sector** may be potentially less likely to be negatively impacted by the STZ charge. However, education sub-sectors are likely to be differently impacted, with higher-paid university employees potentially being able to absorb the cost of the STZ charge more easily than lower-paid university employees and those employed in schools or early years provision.
- The **scientific research and technology sector** may be potentially less likely to be impacted by the STZ charge. Despite the sector's reliance on deliveries, science-oriented businesses may have more capacity to absorb the cost of the STZ charge. Furthermore, although the work-from-home metric suggests this is a sector where employees tend to work on-site, higher-paid employees in this sector may be more likely to absorb the cost of the charge.
- **Precedent examples** from other geographies that have implemented STZ charge schemes suggest that businesses – especially in the **retail sector** – have not been negatively impacted by the introduction of a STZ charge, and that adverse impacts are likely to be short term in nature as businesses, customers and employees adjust to new operating, expenditure and working patterns. Many businesses may benefit in the longer term from reduced traffic congestion and improved urban experience.

Analysing key industry-sectors against each of the charging scenarios 1, 1A, 2 and 3, suggests that, of the four scenarios, Scenario 2 may have potentially the highest negative impact on small businesses even though the objectives of the scheme are met. **Scenario 1A is the recommended option** that would minimise adverse business impacts, in particular for small, locally-owned businesses. In the absence of Scenario 1A, Scenario 3 may present the next best alternative.

Introduction

This document presents a **business impacts assessment (BIA)** of the potential impacts to businesses as a result of the proposed Sustainable Travel Zone (STZ) under the Cambridge Making Connections Programme. The BIA focuses on the impact of the STZ in terms of business activity (workforce, customers and supply chains) in the Cambridge area. The BIA draws on benchmarking examples and a baseline analysis of high-level business characteristics in the travel to work area (TTWA) and, in more detail, for businesses within the STZ. The BIA comprises both qualitative and quantitative analysis. Deep dive analysis is conducted for a selection of key industry-sectors that are pertinent to Cambridge's economy, and these are in turn examined through the lens of different options for implementing the STZ charge.

The quantitative and qualitative analysis is underpinned by official data (Census 2011 and 2021, the Business Register and Employment Survey, other official data from the Office for National Statistics), industry and research reports, and findings from the extensive public consultations process that took place under Making Connections in 2022.

This report is structured as follows:

1. **Baseline analysis:** coverage of demographics, employment concentration, business characteristics, business trends, micro-business trends, business turnover, employment trends, insights from The Data City, commuter trends, location quotients, and job density;
2. **Business impacts analysis:** detailed explanation of approach and methodology, BIA analysis, examination of key sectors through the lens of proposed STZ options;
3. **Summary and conclusions; and**
4. **Appendix A.**

1. BASELINE ANALYSIS



Baseline Analysis

The key aims of the baseline analysis are to provide a:

1. High-level description of business characteristics in the travel to work area;
2. In-depth study of business characteristics in the sustainable travel zone
 - a) Analysis of key sectors and their size and composition within the sustainable travel zone, as well as a description of current and future trends in the local business base;
3. Comparison of trends observed in Cambridge with respect to the concentration of industries, with other proximate and/or comparably-sized cities and schemes.

Summary Of Baseline Analysis Insights (1/3)



Key sectors and trends in the Sustainable Travel Zone (STZ)

- The industry groups that have the highest share of business counts in Cambridge area are in the fields of **science and technology, information and digital technology, motor vehicles, administrative and support service activities, hospitality and construction** – constituting 70% of the business counts in Cambridge area. This is broadly in line with trends from non-standard market data (The Data City), that show that **the industries with the highest share of business counts in the Cambridge area are all future-facing and indicate the new emerging sectors that feature in Cambridge's economy**. These industries have grown over the period 2016-2021 in line with the overall increase in business counts in the Cambridge area, likely indicating that they have competitive advantage.
- The top 10 companies in the STZ in terms of turnover in 2021 operate in the **science, high-tech, computing and digital, motor vehicles, construction, and consultancy sectors**.
- The largest increases in the local employment over 2016-2021 are observed in the fields of **science and technology, hospitality, healthcare, and information and digital technology** (while the food production sector is considered an outlier). These industries have an average growth in employment of 32% between 2016 and 2021, which is higher than the total employment increase in the same period (10%) in the Cambridge area, likely indicating high-growth industries with competitive advantage.
- A number of industries have seen a net decrease in their employee count between 2016 and 2021, particularly associated with **trades, administration and manufacturing**.

Summary Of Baseline Analysis Insights (2/3)



Size of sectors and businesses in the Sustainable Travel Zone

- **Micro businesses, comprising 0-9 employees, make up 89% and 86% of enterprises in Travel to Work Area and the Cambridge area respectively.** The split between the different industries that are micro enterprises is similar to the overall business make-up in the Cambridge area. The growth of the number of micro enterprises in the Cambridge area is positive between 2016 and 2021, despite the fact that microbusinesses were more impacted by the COVID-19 pandemic than businesses of any other size.



Comparison of business trends in Cambridge with other proximate and/or comparably-sized UK cities

- **In 2021, industries with high location quotients (LQ)¹ based on business counts for Cambridge are related to education, manufacturing and professional, scientific and technical activities.**
- **Similar to business count LQ scores, in 2021 Cambridge has high employment LQ scores for the research and experimental development on natural sciences and engineering, post-secondary non-tertiary education, and first-degree level higher education industries.** Therefore, there is a concentration of both business counts and large local workforce associated with these industries, indicating Cambridge's comparative advantage in these industries.



¹ A location quotient (LQ) for business counts of 1 indicates that a region's share of total businesses in a particular industry is the same as in the wider UK. A LQ greater than 1 indicates that there is a concentration of businesses in that area, with no concentration if the LQ is below 1.

Summary Of Baseline Analysis Insights (3/3)

Employment and commuter trends in the Travel to Work Area and Sustainable Travel Zone



- Employment is concentrated within the city of Cambridge and a few areas surrounding the city, indicating the need for good transport connections to/from a few specific areas in the TTWA. Of the 836,000 people living in the TTWA, 50% are economically active.
- There is a relatively low dependence on cars for commuting purposes in the Cambridge area, with 19% of people driving a car or van to work, based on Census 2021 data. This is significantly lower compared to 2011 levels and compared to England as a whole (45% based on Census 2021) – these results need to be treated with caution, given the Census 2021 was carried out during national lockdowns due to the COVID-19 pandemic.
- While it is reasonable to assume that the Census 2021 data on working from home trends will have been influenced by COVID-19, the ONS data from 2023 show that as recently as the period September 2022 to January 2023, 54% of the workforce within the wider East of England report either working from home, hybrid working, or having the option to work from home; while 46% can only work on site.
- In terms of job vacancy rates, research from HR software provider Ciphre showed that, of 50 locations with city status, Cambridge ranks highest for job vacancies (396 job postings per 10,000 people of working age, compared to 183 job postings per 10,000 working-age people on average in the UK as a whole). The study also cites Cambridge as being among the cities where housing is the least affordable.¹ Similarly, employer surveys in Cambridge suggest challenges around recruitment that relate to unaffordable housing coupled with high costs of living, against a backdrop of a perceived unattractive commute to work due to outdated roads which cause congestion and that add as much as one hour onto what should be 20 to 30-minute commutes. Problems around traffic congestion notwithstanding, the perception is that highly-paid workers are more able to consider taking up jobs in Cambridge.²

¹ [New study reveals the best cities in the UK for job opportunities](#)

² [The Surprising Difficulty of Hiring with the Booming Cambridge Economy \(August 2019\)](#)

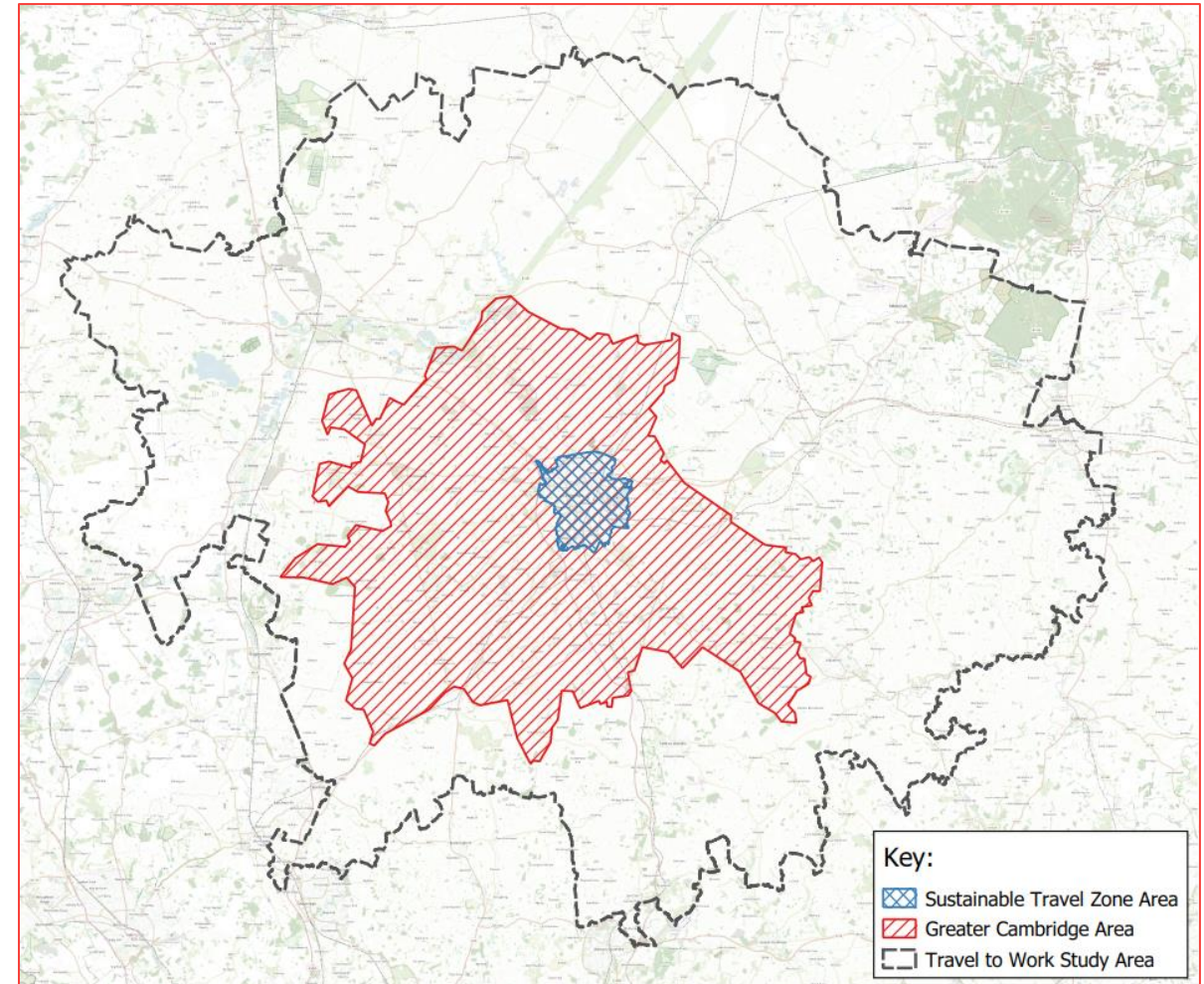
Demographic Background

People travel from a wide area to work in and around Cambridge, which is referred to as the **Cambridge Travel to Work Area (TTWA)** and is defined by the Office for National Statistics (ONS)². The TTWA covers areas from 12 local authorities.

Greater Cambridge includes both the city of Cambridge and the surrounding district of South Cambridgeshire – encompassing much of the scientific technology parks, as well as the Cambridge Biomedical Campus including Addenbrookes and Royal Papworth hospitals. The **Sustainable Travel Zone (STZ)** encompasses almost exclusively the Cambridge area area, extending only at its edges into the South Cambridgeshire area.

The table below summarises the economically active demographic for the three defined regions. The economically active share of the population decreases as the region concentrates on the urban centre of Cambridge.

Region	TTWA	Greater Cambridge	Cambridge area (STZ proxy)
Population	836,000	308,000	146,000
Economically-active population (exc. Students)	421,000	151,000	68,000
Economically active population share (%)	50%	49%	47%
Economically active population share-working age (%)	60%	59%	54%



Sources:

1. [Census 2021](#)
2. [TTWAs in the UK 2011](#)

Employment Concentration

Within the STZ, employment is focused on six main areas of the city:

Cambridge City Centre

Cambridge Station, CB1 and Hills Road

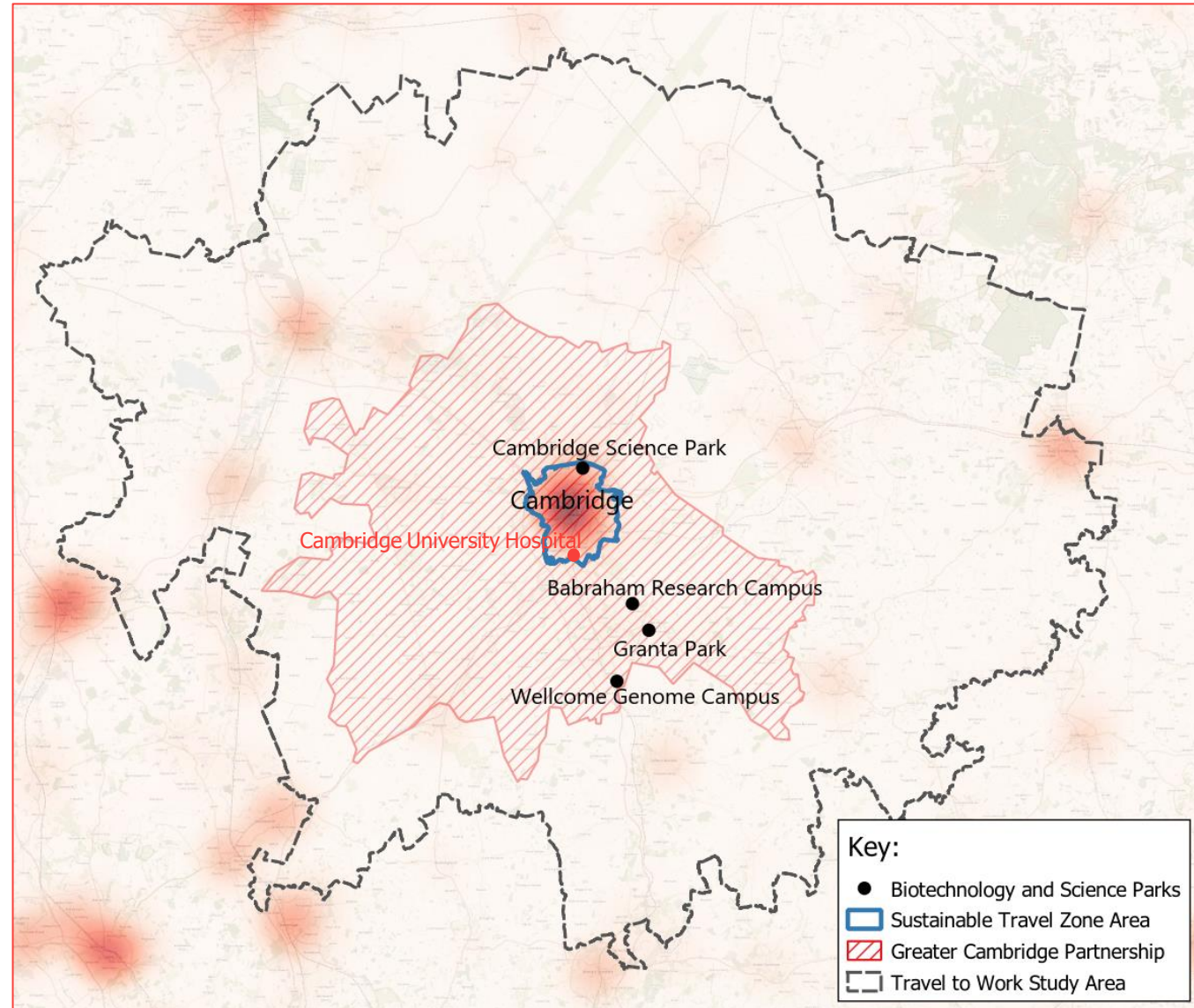
Cambridge Biomedical Campus and the 'Southern Fringe'

North East Cambridge, including Cambridge Science Park

West Cambridge and North West Cambridge (Eddington)

Cambridge East

The heatmap indicates in darker red the clusters of workplace zones that are population-weighted based on available data (Census 2011).¹



Sources:

1. Census 2011

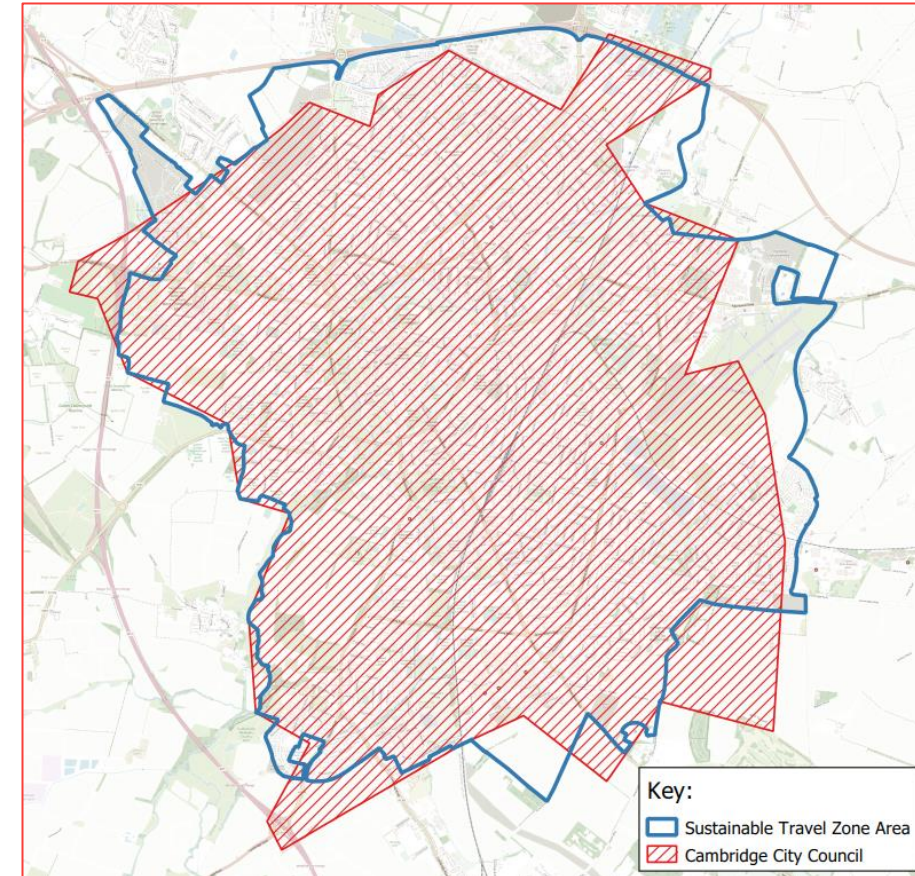
Business Characteristics Definitions and Spatial Level

The study areas that have been analysed in terms of their business characteristics are the Travel to Work Area (TTWA) and the Sustainable Travel Zone (STZ), allowing for comparison.

Due to lack of spatial granularity of the ONS Business Counts and Business Register and Employment Survey (BRES) data that can capture the exact extent of the STZ, the business characteristics analysis was performed on a Cambridge area spatial scale. This was considered appropriate given the substantial overlapping of areas between the Cambridge area and the proposed STZ.

To describe the business characteristics in the area, the following terms have been used:

Term	Definition
Enterprise	An enterprise can be thought of as the overall business, made up of all the individual sites or workplaces. It is defined as the smallest combination of legal units (generally based on VAT and/or PAYE records) that has a certain degree of autonomy within an enterprise group. ¹
Industry activity	The industry activity is defined based on the UK Standard Industrial Classification (SIC) of economic activities, which is a five-digit classification providing the framework for collecting and presenting a large range of statistical data according to economic activity. UK SIC codes feature in the Business Count data and the Business Register and Employment Survey (BRES) data, which are used within this analysis. ²
Legal structure of enterprises	Enterprises can be divided based on their legal structure, namely: <ul style="list-style-type: none"> • Public sector – owned, controlled and managed by the government or other state-run bodies. • Private – owned, controlled and managed by individuals, groups or business entities.
Size	Enterprises can be divided based on their size: <ul style="list-style-type: none"> • Micro – 0 to 9 employees • Small – 10 to 49 employees • Medium – 50 to 250 employees • Large – 250+ employees



Sources:

1. Business Counts
2. ONS

Business Characteristics in the Travel to Work Area

The TTWA is characterised by approximately 38,000 enterprises registered in 2021, with 99% of these being private and only 1% public. Based on Business Counts data, enterprises can be broken down by employment size band. For the TTWA, businesses are characterised as¹:

89% micro (0-9 employees)

9% small (10-49 employees)

1.7% medium (50-249 employees); and

0.3% large (250+ employees)

The top industries with the largest share based on business counts in the TTWA (from Business Count data 2021) contribute to almost 20% of all enterprises in the area.

Simultaneously, based on Business Register and Employment Survey (BRES) data 2021, the top five industries with the largest pool of labour total to almost 20% of the total workforce in TTWA. The top industries based on number of employees are in the healthcare, education, food and beverage, and computer consultancy sectors.

Sources:

1. [Business Counts \(2021\)](#)

2. [BRES \(2021\)](#)

Industry Type in TTWA based on Business Counts (based on 5-digit SIC code)	Percentage (%)
Management consultancy activities (other than financial management)	6.24%
Computer consultancy activities	3.92%
Other business support service activities, not elsewhere classified	3.30%
Growing of cereals (except rice), leguminous crops and oil seeds	2.63%
Letting and operating of own or leased real estate (other than Housing Association real estate and conference and exhibition services) n.e.c.	2.03%
Other category (comprises of the rest of the business industries based on 5-digit SIC codes that have less than the top 5 industries of the business counts in the area)	81.88%
Industry Type in TTWA based on Number of Employees (based on 5-digit SIC code)	Percentage (%)
Hospital activities	6.42%
First-degree level higher education	3.78%
Primary education	3.12%
Public houses and bars	2.07%
Computer consultancy activities	1.71%
Other category (comprises of the rest of the business industries based on 5-digit SIC codes that have less than the top 5 industries of the number of employees in the area)	82.90%

Note: Both Business Count data and BRES data include values rounded down to zero to avoid disclosure, so some zeros might not be true zeros.

Business Characteristics in the Cambridge Area

Cambridge area is characterised by approximately 5,100 enterprises registered in 2021 (14% of the total in the TTWA), with 100% of these being private. Similar to the TTWA, the employment size bands in the Cambridge area are divided between¹:

86% micro (0-9 employees)

11% small (10-49 employees)

2.7% medium (50-249 employees); and

0.7% large (250+ employees)

The top five industries based on the number of enterprises registered in the Cambridge area (from Business Count data 2021) contribute to almost 23% of all companies in the area.¹ **The industries with the largest share based on business count in the Cambridge area fall under the broader sectors of ‘Professional, scientific and technical activities’, ‘Information and communication industry’ and ‘Administrative and supportive service activities, associated with consulting, high-tech research and innovation.** As it could be anticipated, even the micro and small enterprises are largely related with these sectors (25% of the micro and 6% of the small enterprises). **On the other hand, the large enterprises in the Cambridge area are predominantly within the first-degree level higher education industry (29% of all large enterprises), which is due to the presence of two world-class universities.**

The top industries with the highest employment total almost 40% of the total employment in the Cambridge area. The structure of the workforce also indicates the knowledge-based economic character of the area, as **at least 40% of the local workforce is employed within education, health, research and innovation, and high-tech activities.**

Sources:

1. [Business Counts \(2021\)](#)

2. [BRES \(2021\)](#)

Industry Type in the Cambridge area based on Business Counts (based on 5-digit SIC code)	Percentage (%)
Management consultancy activities (other than financial management)	7.67%
Computer consultancy activities	5.51%
Business and domestic software development	3.74%
Other business support service activities nec	3.64%
Other professional, scientific and technical activities (not including environmental consultancy or quantity surveying)	2.26%
Other category (comprises of the rest of the business industries based on 5-digit SIC codes that have less than the top 5 industries of the business counts in the area)	77.19%

Industry Type in the Cambridge area based on Number of Employees (based on 5-digit SIC code)	Percentage (%)
First-degree level higher education	13.90%
Hospital activities	13.19%
Other research and experimental development on natural sciences and engineering	5.26%
Engineering design activities for industrial process and production	3.61%
Business and domestic software development	3.02%
Other category (comprises of the rest of the business industries based on 5-digit SIC codes that have less than the top 5 industries of the number of employees in the area)	61.03%

Note: Both Business Count data and BRES data include values rounded down to zero to avoid disclosure, so some zeros might not be true zeros.

Business Trends in the Cambridge Area

The business count data has been analysed in further detail on a sector-level to provide insights for the business trends in the Cambridge area. The analysis is based on the number of businesses across different industry types:¹

In 2021, **almost half of the businesses in the Cambridge area are in the fields of science and high-tech technology (Category M), information and digital technology (J), and motor vehicles (G).**

The top shares of business counts for the ‘Professional, scientific and technical activities’ (24%), ‘Information and communication industry’ (14%) and ‘Wholesale and retail trade; repair of motor vehicles and motorcycles’ (9%), ‘Administrative and support service activities’ (8%), ‘Accommodation and food service activities’ (8%) and ‘Construction’(7%) industries make up 70% of business counts. These have seen **an average increase of 4%** between 2016 and 2021 in the Cambridge area, likely demonstrating industries with **competitive advantage**. This is **in line with the increase in the total number of enterprises** in the Cambridge area between 2016 and 2021, which was by approximately 4%.

The industries with the lowest or zero business counts in 2021 in the Cambridge area are **largely associated with self-employed workers (T), electricity, gas, water supply, waste management (D and E), and public administration (O).**

The ‘**Transportation and storage**’ and the ‘**Financial and insurance activities**’ could be **emerging industries in the Cambridge area**. Startups such as Rnwl, a digital insurance wallet software company founded in 2019¹ and SesoGlobal a Fintech founded in 2017² are a few examples among many that demonstrate the increase in business counts in ‘Finance & Insurance’ sector.

The ‘**Agriculture, forestry and fishing**’ industry has seen the largest decrease (15%) of business count numbers in the Cambridge area between 2016-2021, indicating that this is a **declining industry in the Cambridge area**.

Sources:

1. [Rnwl - Crunchbase Company Profile & Funding](#)
2. [Seso Global - Crunchbase Company Profile & Funding](#)
3. [Business Counts \(2021\)](#)

Industry Type based on Sector SIC Data	2016	2021	% of total business counts in 2021	% change between 2016-2021
A : Agriculture, forestry and fishing	100	85	2%	-15%
B : Mining and quarrying	0	0	0%	0%
C : Manufacturing	170	180	4%	6%
D : Electricity, gas, steam and air conditioning supply	5	0	0%	0%
E : Water supply; sewerage, waste management and remediation activities	5	5	0%	0%
F : Construction	325	345	7%	6%
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	485	475	9%	-2%
H : Transportation and storage	55	100	2%	82%
I : Accommodation and food service activities	355	385	8%	8%
J : Information and communication	755	735	14%	-3%
K : Financial and insurance activities	80	110	2%	38%
L : Real estate activities	175	190	4%	9%
M : Professional, scientific and technical activities	1,150	1,225	24%	7%
N : Administrative and support service activities	360	390	8%	8%
O : Public administration and defence; compulsory social security	0	0	0%	0%
P : Education	190	210	4%	11%
Q : Human health and social work activities	255	255	5%	0%
R : Arts, entertainment and recreation	155	150	3%	-3%
S : Other service activities	240	230	5%	-4%
T : Activities of households as employers; undifferentiated goods-and services-producing activities of households for own use	0	0	0%	0%
U : Activities of extraterritorial organisations and bodies	0	0	0%	0%
Column Total	4,860	5,075	100%	4%

Micro Business Trends in the Cambridge Area

Micro enterprises in the Cambridge area are 86% of all businesses and hence it was deemed important to outline the business trends on a sector-level:¹

The **growth of the number of micro enterprises in the Cambridge area is positive between 2016 and 2021**, but lower (3%) when compared to the growth rate of all enterprises (4%). This growth is despite the fact that during the pandemic microbusinesses were more impacted than businesses of any other size.²

The split between the different industries that are micro enterprises is **similar to the overall business makeup in the Cambridge area**, with almost 50% of these being in the fields of **science and high-tech (Category M), digital (J) and automotive (G) technology**.

The industries with the lowest or zero business counts in the Cambridge area are **largely associated with self-employed workers (T), electricity, gas, water supply, waste management (D and E), and public administration (O)**.

The **‘Transportation and storage’** and the **‘Financial and insurance activities’** could be seen as **emerging industries in the Cambridge area**, as they have the greatest increase in enterprise numbers.

The **education** industry (P) has increased its micro business counts by 25% in the period 2016-2021, indicating that it is a **growing industry**.

The **‘Agriculture, forestry and fishing’** industry has seen the largest decrease (11%) of micro business count numbers in the Cambridge area between 2016-2021, indicating that this could be a **declining industry in the Cambridge area**.

Sources:

1. [Business Counts \(2021\)](#)
2. [How well do you know your microbusinesses?](#)

Note: Both Business Count data and BRES data include values rounded down to zero to avoid disclosure, so some zeros might not be true zeros.

Industry Type based on Sector SIC Data	2016	2021	% of total business counts in 2021	% change between 2016-2021
A : Agriculture, forestry and fishing	95	85	2%	-11%
B : Mining and quarrying	0	0	0%	0%
C : Manufacturing	135	155	4%	15%
D : Electricity, gas, steam and air conditioning supply	5	0	0%	0%
E : Water supply; sewerage, waste management and remediation activities	5	5	0%	0%
F : Construction	310	320	7%	3%
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	440	430	10%	-2%
H : Transportation and storage	50	95	2%	90%
I : Accommodation and food service activities	250	265	6%	6%
J : Information and communication	680	635	15%	-8%
K : Financial and insurance activities	70	100	2%	43%
L : Real estate activities	155	175	4%	13%
M : Professional, scientific and technical activities	1,060	1,105	25%	4%
N : Administrative and support service activities	310	340	8%	10%
O : Public administration and defence; compulsory social security	0	0	0%	0%
P : Education	100	125	3%	25%
Q : Human health and social work activities	190	185	4%	-3%
R : Arts, entertainment and recreation	130	125	3%	-4%
S : Other service activities	220	200	5%	-9%
T : Activities of households as employers; undifferentiated goods-and services-producing activities of households for own use	0	0	0%	0%
U : Activities of extraterritorial organisations and bodies	0	0	0%	0%
Column Total	4,210	4,355	100%	3%

Business Turnover in the Sustainable Travel Zone in 2021

The table presents business turnover results from Grant Thornton's Cambridgeshire Ltd Report (2022).¹ There is substantial, but not exact overlapping of areas between the Cambridge area and the proposed STZ. Therefore, we draw on trends relating to both spatial scales (Cambridge area and STZ).

The top 10 companies in the STZ in terms of their turnover in 2021 operate in the science, high-tech, computing and digital, motor vehicles, construction, and consultancy sectors. Most of these sectors can be considered as future-facing industries.

AstraZeneca ranks #1 in terms of business turnover. It is headquartered in Cambridge and has opened its new Research & Development (R&D) centre – the DISC – on Cambridge Biomedical Campus. The global biopharmaceutical company's £19.5bn turnover is so large that the Grant Thornton's Report has excluded it from its own analysis because it would have a disproportionate impact in relation to the other businesses.²

Excluding companies that are owned by overseas businesses, Brookgate Limited, Marshall of Cambridge, Napp Pharmaceutical Holdings Limited, Abcam PLC, and Mick George Limited also feature in the top most profitable businesses in the STZ.

All three companies that are outside the Cambridge area boundary, but within the STZ are located in the Cambridge Science Park.

Sources:

1. [Grant Thornton's Cambridgeshire Ltd Report \(2022\)](#)
2. [Top 100 businesses in Cambridgeshire for 2021 revealed](#)

Rank	Company	Activities***
1	AstraZeneca Plc**	Pharmaceutical company
2	Marshall of Cambridge (Holdings) Limited*	Aerospace company
3	Abcam PLC*	Biotechnology company
4	Vindis Group Limited*	Wholesale and retail trade; repair of motor vehicles and motorcycles
5	Napp Pharmaceutical Holdings Limited**	Pharmaceutical company
6	Darktrace Holdings Limited*	Software company
7	Mick George Limited*	Construction company
8	Frontier Developments PLC**	Video game industry company
9	Raspberry PI Foundation*	Charity (computing and digital technologies)
10	Brookgate Limited*	Real estate developer

* Businesses within both the Cambridge area and the STZ area; ** Businesses located outside the Cambridge area, but within the STZ; *** Activities defined according to primary SIC codes – all companies are in Companies House.

Employment Trends in the Cambridge Area

The industries in the Cambridge area have been analysed in further detail to provide insights in the employment trends. The analysis is based on the number of employees across different industry types:

The workforce in the Cambridge area increased by 10% in the period 2016-2021.

In 2021, the **highest proportion of employees** are seen in 'Education' (22%), 'Professional, scientific and technical activities' (17%), 'Human health and social work activities' (17%), 'Information and communication' (9%), 'Accommodation and food service activities' (8%), and 'Wholesale and retail trade; repair of motor vehicles and motorcycles' (8%) – contributing to approximately **82% of the local workforce**.

Excluding 'Agriculture, forestry and fishing', the **largest increases of local workforce over 2016-2021** are observed in the 'Professional, scientific and technical activities' (46%), 'Accommodation and food service activities' (29%), 'Human health and social work activities' (28%) and 'Information and communication' (25%) industries. These industries have an average growth in employment of 32% between 2016 and 2021, which is higher than the total workforce increase in the same period (10%), likely indicating high-growth industries with competitive advantage.

A number of industries have seen a **net decrease** in their employee count between 2016 and 2021, particularly associated with **electricity, gas, water supply, waste management (Categories D and E), administration (N and O) and manufacturing (C)**.

Whilst the '**Administrative and support service activities**' has indicated an increase in the number of enterprises registered in the Cambridge area between 2016 and 2021, the local workforce has declined by about 36% in the same period, indicating that this industry could be **reliant on the external workforce**.

Source: 1. [BRES \(2021\)](#)

Industry Type based on Sector SIC Data	2016	2021	% of total number of employees in 2021	% change between 2016-2021
A : Agriculture, forestry and fishing	5	20	0%	300%
B : Mining and quarrying	0	0	0%	0%
C : Manufacturing	1,750	1,250	1%	-29%
D : Electricity, gas, steam and air conditioning supply	100	10	0%	-90%
E : Water supply; sewerage, waste management and remediation activities	450	300	0%	-33%
F : Construction	1,250	1,250	1%	0%
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	11,000	9,000	8%	-18%
H : Transportation and storage	1,750	1,750	2%	0%
I : Accommodation and food service activities	7,000	9,000	8%	29%
J : Information and communication	8,000	10,000	9%	25%
K : Financial and insurance activities	1,250	1,250	1%	0%
L : Real estate activities	1,500	1,750	2%	17%
M : Professional, scientific and technical activities	13,000	19,000	17%	46%
N : Administrative and support service activities	7,000	4,500	4%	-36%
O : Public administration and defence; compulsory social security	3,500	2,500	2%	-29%
P : Education	22,000	24,000	22%	9%
Q : Human health and social work activities	15,000	19,000	17%	27%
R : Arts, entertainment and recreation	2,500	2,500	2%	0%
S : Other service activities	2,500	2,500	2%	0%
T : Activities of households as employers; undifferentiated goods-and services-producing activities of households for own use	0	0	0%	0%
U : Activities of extraterritorial organisations and bodies	0	0	0%	0%
Column Total	99,555	109,580	100%	10%

Note: Both Business Count data and BRES data include values rounded down to zero to avoid disclosure, so some zeros might not be true zeros.

The Data City – Overview

Cambridge has an economy where new emerging sectors related to cutting edge technologies are critical to its role as an international knowledge hub. In this analysis, WSP complements the use of SIC codes data with non-standard datasets – in particular The Data City. This dataset captures the latest emerging economies that may otherwise be categorised as 'Other' or 'Not Elsewhere Classified' (nec) under traditional SIC categories.

The Data City database relies on Companies House data and contains approximately 5.1 million active companies. The Data City platform introduces Real-Time Industrial Classifications (RTICs) to discover over 250 emerging economy sectors, including Net Zero, AgriTech, FinTech, Artificial Intelligence, going beyond the limitations of the SIC codes.

The Data City database can provide users with the following information:

Business counts

Business size

Turnover

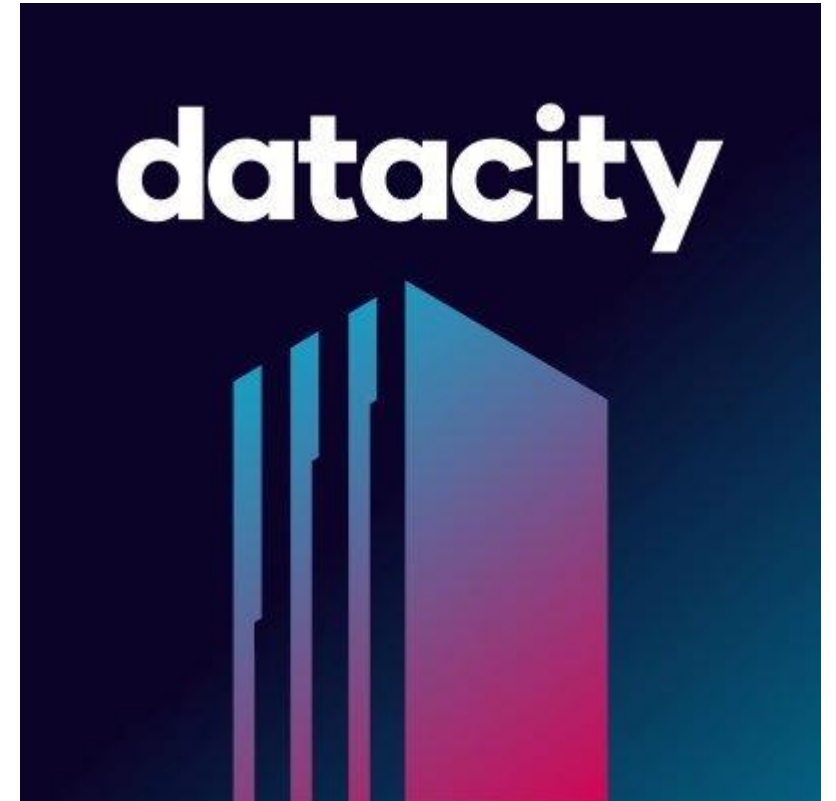
Employees

Keyword enrichment

A caveat is that The Data City data is likely to overestimate the number of businesses in a given area, as it is based on Companies House data, which may include, for example, businesses such as housing management companies that may not be heavily impacted by the STZ. Therefore, the analysis with Data City data concentrates on the percentage changes and splits between the different data elements, rather than providing specific values.

Sources:

1. [Welcome to The Data City](#)
2. [Real-Time Industrial Classifications](#)



The Data City Insights – Business Count and Size

The Data City platform demonstrates that in the Cambridge area, the **business counts have been historically increasing**.

Based on The Data City, in 2022 **81% of companies in the Cambridge area are start-ups**, followed by 15% that are established.

Based on the RTIC codes, in 2022 the ‘Life Sciences’ industry was the most significant in terms of its share of business counts in the Cambridge area. It is observed that all industries are **future-facing**.

These results are broadly **in line with the results from the UK Business count data**: when considering the industries based on SIC codes, The Data City indicates that the **top industries with the largest share of business counts** in the Cambridge area are ‘Professional, scientific and technical activities’ (18%), ‘Information and communication industry’ (12%), ‘Wholesale and retail trade; repair of motor vehicles and motorcycles’ (12%).

The bottom SIC code sector industries based on the share of business counts in 2022 were associated with **electricity, gas, water supply, waste management** (Categories D and E) and public administration (O) sectors.

Industry Type based on RTIC Codes	% of business counts in 2022*
Life Sciences	16%
Research and Consulting - Physical Sciences and Engineering	6%
Artificial Intelligence	6%
Net Zero	4%
CleanTech	4%
Data Infrastructure	4%
FinTech	4%
Business Support Services	4%
Sensors	4%
Media and Publishing	4%
Pharma	3%
Agency Market	3%
Digital Creative Industries	3%
Cyber	3%
Advanced Manufacturing	3%
Legal Services	2%
Computer Hardware	2%
Electronics Manufacturing	2%
AgriTech	2%
Design and Modelling Technologies	2%
Software Development	2%
Other category (comprises of the rest of the business industries based on the RTIC codes that have less than 2% of the business counts in the area)	19%
Column Total	100%

*The percentage of business counts in 2022 based on the RTIC codes is based on the number of companies within the top 48 industry types, so it does not reflect all companies in the Cambridge area.

Industry Type based on SIC Codes**	% of business counts in 2022
A : Agriculture, forestry and fishing	1%
B : Mining and quarrying	1%
C : Manufacturing	5%
D : Electricity, gas, steam and air conditioning supply	0%
E : Water supply; sewerage, waste management and remediation activities	0%
F : Construction	5%
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	12%
H : Transportation and storage	1%
I : Accommodation and food service activities	5%
J : Information and communication	12%
K : Financial and insurance activities	4%
L : Real estate activities	9%
M : Professional, scientific and technical activities	18%
N : Administrative and support service activities	6%
O : Public administration and defence; compulsory social security	0%
P : Education	4%
Q : Human health and social work activities	4%
R : Arts, entertainment and recreation	3%
S : Other service activities	4%
T : Activities of households as employers; undifferentiated goods-and services-producing activities of households for own use	6%
Column Total	100%

**Note that companies could be counted in more than one category.

The Data City Insights – Turnover

The projected annual turnover across all companies in the Cambridge area has historically increased.

There is a significant increase of approximately £12 billion observed between 2020 and 2021, partly from AstraZeneca’s turnover, which increased as a result of the Covid-19 vaccine revenues.

The highest share of turnover in 2022 was observed in the ‘Professional, scientific and technical activities’ (42%) industry, followed by ‘Manufacturing’ (22%) and ‘Wholesale and retail trade; repair of motor vehicles and motorcycles’ (20%). **Based on The Data City dataset, these three industries have contributed to 84% of the total turnover in the Cambridge area in 2022.** This could indicate that the business turnover in the Cambridge area is concentrated on a specific set of industry types.

Industry Type based on SIC Codes*	Share of turnover in 2022 (%)
A : Agriculture, forestry and fishing	0%
B : Mining and quarrying	0%
C : Manufacturing	22%
D : Electricity, gas, steam and air conditioning supply	0%
E : Water supply; sewerage, waste management and remediation activities	0%
F : Construction	1%
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	20%
H : Transportation and storage	0%
I : Accommodation and food service activities	0%
J : Information and communication	6%
K : Financial and insurance activities	1%
L : Real estate activities	1%
M : Professional, scientific and technical activities	42%
N : Administrative and support service activities	5%
O : Public administration and defence; compulsory social security	0%
P : Education	1%
Q : Human health and social work activities	0%
R : Arts, entertainment and recreation	0%
S : Other service activities	0%
T : Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	0%
U : Activities of extraterritorial organisations and bodies	
Column Total	100%

*Note that companies’ turnover could be counted in more than one category.

The Data City Insights – Sector Keywords

Data from The Data City on sector keywords enable an understanding of new, emerging sectors feature in Cambridge’s economy. This allows us to better understand the current composition of businesses in the STZ and allows us to consider whether and how these businesses and sectors are impacted by the STZ.

The Data City platform provides statistics on sector keywords that are over-represented and under-represented among the enterprises in the Cambridge area compared to the average UK company. For example, a value of “Regenerative Medicine +1,830%” means that the companies in the Cambridge area are 1,830% more likely to mention the phrase “Regenerative Medicine” on their website than the average UK company.

The main sector keywords are primarily associated with sciences, technology, healthcare and medicine, and digitalisation – suggesting that these are key sectors in Cambridge’s economy that need to be considered in the impacts analysis.

Sector Keyword	Percentage (%)
Regenerative Medicine	1,830%
RegTech	1,814%
Human Machine	1,727%
HealthTech	1,591%
Agri-tech	1,549%
Health Tech	1,416%
Graphene	1,370%
Neural Networks	1,364%
Precision Medicine	1,036%
AgriTech	1,000%
InsurTech	967%
Bioscience	900%
Digital Health	891%
Small Molecule	885%
Land Manager	869%
MedTech	830%
Building Technology	712%
Materials Science	684%
Deep Learning	676%
Data Architecture	634%

Commuters: Journey To Work Data in the Cambridge Area

Analysis of journey to work data is presented here. It should be noted that data for Census 2021 was collected during the nationwide lockdown as a consequence of the Covid-19 pandemic, with government guidance requiring people to work from home wherever possible.¹ As such, the results are likely to be impacted by these restrictions, and a comparison against the commuting mode shares from Census 2011 is useful to understand the impact of the Covid-19 pandemic³. It is expected that the new equilibrium will be somewhere in the range of these two censuses.

Given the Census 2021 data is likely to be heavily impacted by the survey period having coincided with the COVID-19 lockdowns, homeworking data from before and after the height of the pandemic was collected. **Data from the ONS Labour Force Survey show that homeworking in the East of England (which covers Cambridge area) increased from 16.3% during Q4 2019 to 31.1% in Q1 2022;** while non-homeworking decreased from 76.3% to 62.5% during the same two time periods.⁴ This is in comparison to more recent ONS data that shows the percentage of homeworking only was 14% in the East of England during September 2022 to January 2023. It is notable that 30% of respondents respond as hybrid working. The overall figures suggest that up to 54% of the respondents are able to work from home, while 46% must travel to work.

Travelling to work by mode – Cambridge area

Method	Cambridge area: Census 2021	Cambridge area: Census 2011	East Region: Census 2021	England: Census 2021
Work mainly at or from home	45%	6%	32%	32%
Underground, metro, light rail, tram	0%	0%	1%	2%
Train	1%	5%	2%	2%
Bus, minibus or coach	4%	6%	2%	4%
Taxi	1%	0%	1%	1%
Motorcycle, scooter or moped	1%	1%	0%	0%
Driving a car or van	19%	32%	48%	45%
Passenger in a car or van	2%	3%	4%	4%
Bicycle	17%	30%	2%	2%
On foot	10%	16%	7%	8%
Other method of travel to work	1%	1%	1%	1%

Share of workers homeworking

Responses from those who have worked in the last 7 days ⁵	England	East of England
Homeworking only	16%	14%
Hybrid working only	28%	30%
Travelled to work only (not homeworked but able to)	10%	10%
Travelled to work only (not able to homework)	46%	46%

Sources:

- [Travel to work quality information for Census 2021 - Office for National Statistics \(ons.gov.uk\)](#)
- [Census 2021](#)
- [Census 2011](#)
- [ONS 2023 Characteristics of homeworkers, Great Britain](#)
- [ONS 2023 Opinions and Lifestyle Survey](#)

Location Quotient in Cambridge – Business Counts

Location quotient (LQ) analysis was performed for Cambridge City against other proximate and/or comparable cities in terms of size and their economic composition.

Thriving communities typically aim to have multiple industries with a LQ greater than 1.0, because it means that the area is not too reliant on any one industry.

A high LQ score for business counts in a particular industry indicates a competitive and comparative advantage in this industry, creating a lower likelihood that businesses will relocate to other areas. This is due to the comparative advantage firms can gain from business clusters, such as faster growth, market recognition and linked supply chains.

In 2021, industries (selected listed in the table) with high business LQ for Cambridge are related to education, manufacturing and professional, scientific and technical activities. This indicates a concentration of competitive future-facing industries in Cambridge.

When analysing these industries with the highest LQ score in Cambridge against the comparable cities, Cambridge is most comparable with Oxford in terms of its business counts, particularly when it comes to education and professional, scientific and technical activities.

Selected industries	Cambridge		Oxford		Bath		Norwich		Chester		P'borough		York	
	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.
First-degree level higher education	29.3	16000	42.9	26000	-	4000	-	4000	-	2000	-	50	5.0	6000
Research and experimental development on biotechnology	22.9	800	20.0	1000	-	0	1.7	45	-	0	-	0	2.1	225
Manufacture of optical precision instruments	19.7	100	11.2	50	-	10	-	0	-	0	-	0	-	0
Post-secondary non-tertiary education	13.9	1250	7.9	700	4.6	75	3.3	200	-	20	-	200	4.2	800
Other research and experimental development on natural sciences and engineering	13.2	8000	9.2	1500	2.3	150	1.1	20	1.0	20	1.0	45	2.1	35
Manufacture of non-electronic instruments and appliances for measuring, testing and navigation, except industrial process control equipment	10.3	100	-	0	-	0	-	0	-	0	-	0	-	0
Manufacture of pharmaceutical preparations	9.9	400	-	250	-	10	-	100	-	0	-	0	-	0
Post-graduate level higher education	9.8	500	22.4	700	-	0	-	10	-	0	8.7	25	-	0

**A location quotient (LQ) for business counts of 1 indicates that a region's share of total businesses in a particular industry is the same as in the wider UK. A LQ greater than 1 indicates that there is concentration of businesses in that area, with no concentration if the LQ is below 1. Some data is suppressed due to confidentiality rounding by ONS.

High Business Count Location Quotient Sectors in Cambridge

Cambridge's status as an international knowledge hub is demonstrated by the first-degree level higher education sector that has both a relatively high business count LQ score (29.3) and number of employees in 2021. The LQ score of the industry has been increasing between 2016 and 2021, suggesting that Cambridge has a high amount of concentration and specialisation, when compared to other industries in the city as well as across the UK. However, while first-degree level higher education is the top industry for Cambridge, Oxford has the highest LQ score (42.9) among the comparator cities.

Overall, the increasing LQ suggests there has been and remains a low incentive for businesses related to the higher education sector to relocate away from Cambridge, given the comparative advantage that the city has over most other areas in the UK. These advantages arise from agglomeration spill-overs such as reduced transport costs, access to a specialised labour market pool, innovation spill-overs and linked supply chains.

Industry/City	2016		2017		2018		2019		2020		2021	
	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.
First-degree level higher education												
Cambridge	19.9	14000	21.8	14000	22.9	15000	24.3	15000	29.2	15000	29.3	16000
Oxford	33.5	25000	32.5	25000	35.1	26000	36.4	27000	37.5	27000	42.9	26000
Bath	-	4000	4.9	4000	5.1	4000	-	4000	-	4000	-	4000
Norwich	3.3	6000	3.6	6000	3.7	6000	3.9	5000	4.0	4000	-	4000
Chester	-	2000	-	2000	-	1500	-	1500	-	1500	-	2000
Peterborough	-	30	-	40	-	50	-	40	-	30	-	50
York	3.9	5000	4.3	5000	4.5	6000	4.8	6000	4.8	6000	5.0	6000

*Some data is suppressed due to confidentiality rounding by ONS.

Location Quotient in Cambridge – Employment

High LQ employment scores indicate that an area has a specialisation in an industry and locating in this area for a business can bring benefits such as greater access to desirable skilled labour.

Industries with high LQs based on employment counts are presented in the table. Similar to the business count LQ scores, in 2021 Cambridge had high employment LQ scores for the **research and experimental development on natural sciences and engineering, post-secondary non-tertiary education, and first-degree level higher education industries**. This indicates that there is a **concentration of both business counts and large local workforce** associated with these activities which creates comparative advantage.

Whilst Cambridge’s ready-made interactive leisure and entertainment software development, engineering design activities for industrial process and production and research and experimental development on biotechnology employment LQs are larger than the other city comparators, this is not the case for these industries’ business count score. This suggests that even with low business count LQs, businesses may be incentivised to not re-locate to other regions due to the benefits they gain from having access to a large local workforce.

The book publishing, research and experimental development on biotechnology, and first-degree level higher education are 3 of the top industries with highest employment LQ in Cambridge.

**A location quotient (LQ) for employment counts of 1 indicates that a region’s share of total employment in a particular industry is the same as in the wider UK. A LQ greater than 1 indicates that there is concentration of employment in that area, with no concentration if the LQ is below 1. Some data is suppressed due to confidentiality rounding by ONS.

Selected industries	Cambridge		Oxford		Bath		Norwich		Chester		Peterborough		York	
	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.	LQ	Emp.
Ready-made interactive leisure and entertainment software development	20.6	1500	3.7	250	0.3	10	0.50	30	-	0	-	0	0.38	20
Book publishing	15.2	1500	21.8	2000	3.9	175	0.37	30	0.92	35	0.06	5	0.14	10
Other research and experimental development on natural sciences and engineering	13.9	8000	2.8	1500	0.6	150	0.04	20	0.09	20	0.09	45	0.08	35
Engineering design activities for industrial process and production	13.2	4000	0.4	100	0.2	35	0.80	200	0.86	100	1.92	500	1.35	300
Research and experimental development on biotechnology	12.5	800	16.7	1000	-	0	0.85	45	-	0	-	0	4.78	225
Post-secondary non-tertiary education	9.1	1250	5.5	700	1.2	75	1.77	200	0.38	20	1.70	200	7.97	800
First-degree level higher education	8.2	16000	14.3	26000	4.4	4000	2.48	4000	2.66	2000	0.03	50	4.19	6000
Research and experimental development on social sciences and humanities	7.3	250	4.7	150	0.6	10	-	0	-	0	1.36	40	1.00	25

Job Density

The job density analysis was performed on a Local Authority (LA) level, which is the most granular level available for that dataset. It is noted that in the case of Bath and North East Somerset, Cheshire West and Chester, Peterborough and York, the Local Authorities' boundaries capture a bigger area when compared to the urban area of the cities.

The number of jobs in the Cambridge area have increased in the period 2016-2021, while the job density indicates a decrease over the same period. This indicates that the population of economically active age has increased over the same period by more than the increase in jobs available.

Although the job density for Cambridge has decreased the most when compared to other LAs between 2016 and 2021, the job density ratio remains above 1.0. This is only the case for Cambridge and Oxford LAs.

Local Authority	2016		2021		% Change between 2016-2021	
	Density	Jobs	Density	Jobs	Density	Jobs
Cambridge	1.30	115,000	1.10	118,000	-15.4%	2.6%
Oxford	1.25	137,000	1.10	128,000	-12.0%	-6.6%
Bath and North East Somerset	0.84	102,000	0.90	110,000	7.1%	7.8%
Norwich	1.10	104,000	0.99	97,000	-10.0%	-6.7%
Cheshire West and Chester	0.96	199,000	0.87	192,000	-9.4%	-3.5%
Peterborough	1.02	127,000	0.93	128,000	-8.8%	0.8%
York	0.86	117,000	0.97	128,000	12.8%	9.4%

Note: Jobs density is defined as the number of jobs in an area divided by the resident population aged 16-64 in that area. For example, a job density of 1.0 would mean that there is one job for every resident aged 16-64. The total number of jobs is a workplace-based measure and comprises employee jobs, self-employed, government-supported trainees and HM Forces.

Note: Some data is suppressed due to confidentiality rounding by ONS

Summary of Findings From Selected Benchmarking Examples

London Congestion Charge: ex post findings

- **Business performance and count:** Analysis of business performance (sales and profitability) and business start-up (VAT registrations) shows stronger – both absolute and relative – growth in the original central London charging zone five years after the introduction of the charge than prior to it.¹
- **Retail businesses:** Despite concerns expressed by retailers in the ‘original’ London congestion charge zone, retail businesses in the central London charging zone have outperformed retail businesses in inner and outer London since the introduction of charging in terms of sales, profitability as well as employment growth.¹
- **Revenue and sales:** Some businesses even saw an increase in revenue due to the improved accessibility for customers and employees. One such study published by GLA suggests that the charge had a significant impact on sales (a decrease of approximately 7% as a result of the charge) at the John Lewis store in Oxford Street (inside the charging zone) over the period studied, but had no effect on overall retail sales in central London, an area larger than but encompassing the congestion charging zone.²
- **Commercial property:** Five years following the implementation of the congestion charge, office and retail commercial property analysis shows stronger rental growth performance in the central London charging zone post charging compared to before the introduction of charging.

Sources:

1. [Impacts Monitoring, Sixth Annual Report \(2008\)](#)
2. [The impact of the congestion charge on the retail business in London: An econometric analysis](#)
3. [1. FULLTEXT01.pdf \(diva-portal.org\)](#)
4. [working-paper-no.-134.-sven-olov-daunfeldt-niklas-rudholm-and-ulf-ramme-2009.-congestion-charges-in-stockholm-how-have-they-affected-retail-revenues.pdf \(ratio.se\)](#)
5. [A cost–benefit analysis of the Stockholm congestion charging system \(hubspotusercontent30.net\)](#)

Gothenberg Congestion Charge: ex post findings

- **Shifting consumer patterns:** The Innerstaden AB cooperation of 620 members (restaurants, shops, other retailers) asserted losing customers during the hours when the congestion charge was active. However, they witnessed an increase in the number of visitors on Saturdays by 10% following the introduction of the congestion charge in 2013, compared to 2012.³ This could be attributed in part to weekend exemptions. IKEA also reported that in general customer footfall occurs at different times than before the charge was introduced, i.e. later in the evening and increased visits at weekends. This resulted in a 13% decrease in the number of customers during weekdays, and a 12% increase on weekends. Customers are also less willing to pay the SEK 18 for smaller spontaneous purchases compared to planned and more expensive purchases.
- **Extended opening hours:** Retailers are expanding their opening hours on weekends which saw labour costs increase, disproportionately impacting small retail businesses.
- **Urban experience:** The congestion charge reduced traffic congestion and has improved the attractiveness of the city centre, which in turn implies more economic activity in the region. Gothenburg has used the majority of the revenues from the congestion charge towards improving transport infrastructure in the city.

Stockholm Congestion Charge: ex post findings

Retail impacts:

- A study analysed data collected by a Swedish retail Institute (HUI), covering the period January 2004 to September 2008. The study comprised a total of 20 shopping malls/complexes (8 within the toll area, 12 outside) as well as an aggregated revenue measure from a sample of shops in the inner city.⁴
- A small decrease was observed during the trial period for retailers both inside and outside the toll area. Mean revenues increased during the period after the trial and remained at approximately the same level after permanent congestion charges were introduced.
- Congestion charges do not seem to have had any effect on aggregated retail revenues inside the toll area. Only PUB (one of the major departmental store in city centre) was affected negatively by the introduction of congestion charges, whereas a positive effect was found for Faltoversten (shopping complex in the city centre).
- The congestion charge in Stockholm has been hailed as a success in literature. According to Eliason et al. (2009), not only were congestion reduced and mobility improved within the city, but also carbon emissions were lowered and perceived air-quality was improved.⁵

2. Business Impacts Analysis



Business Impacts Analysis

The following section describes the detailed methodology used to conduct the business impacts assessment (BIA) before presenting the analysis itself. The analysis comprises ranking of business sectors in Cambridge as either most, less or least likely to be impacted by the STZ charge. Deep dive analysis is then conducted for specific sectors that are relevant to Cambridge's economy. The various strands of the quantitative and qualitative analysis relate to:

- how far the potential revenue burden of the scheme falls on businesses versus consumers and employees;
- an understanding of the overall parameters of demand and supply side effects of the scheme and how they might play out across different industry sectors;
- an understanding of Cambridge as an international knowledge hub, and the disaggregation of local business base into sectors (e.g. from retail businesses through to high-end, high-value enterprises and science parks);
- employment and wider labour market impacts
- wider impacts on business environment (including economic and socioeconomic effects, retail impacts, supply chain impacts)
- distributional effects on businesses (business functions requiring road use, business operating costs of SMEs)

The BIA then examines each of the selected sectors through the lens of the different options for implementing the STZ charge (consultation and Scenarios 1, 1A, 2 and 3).

Approach And Methodology: Detailed Four-stage Process

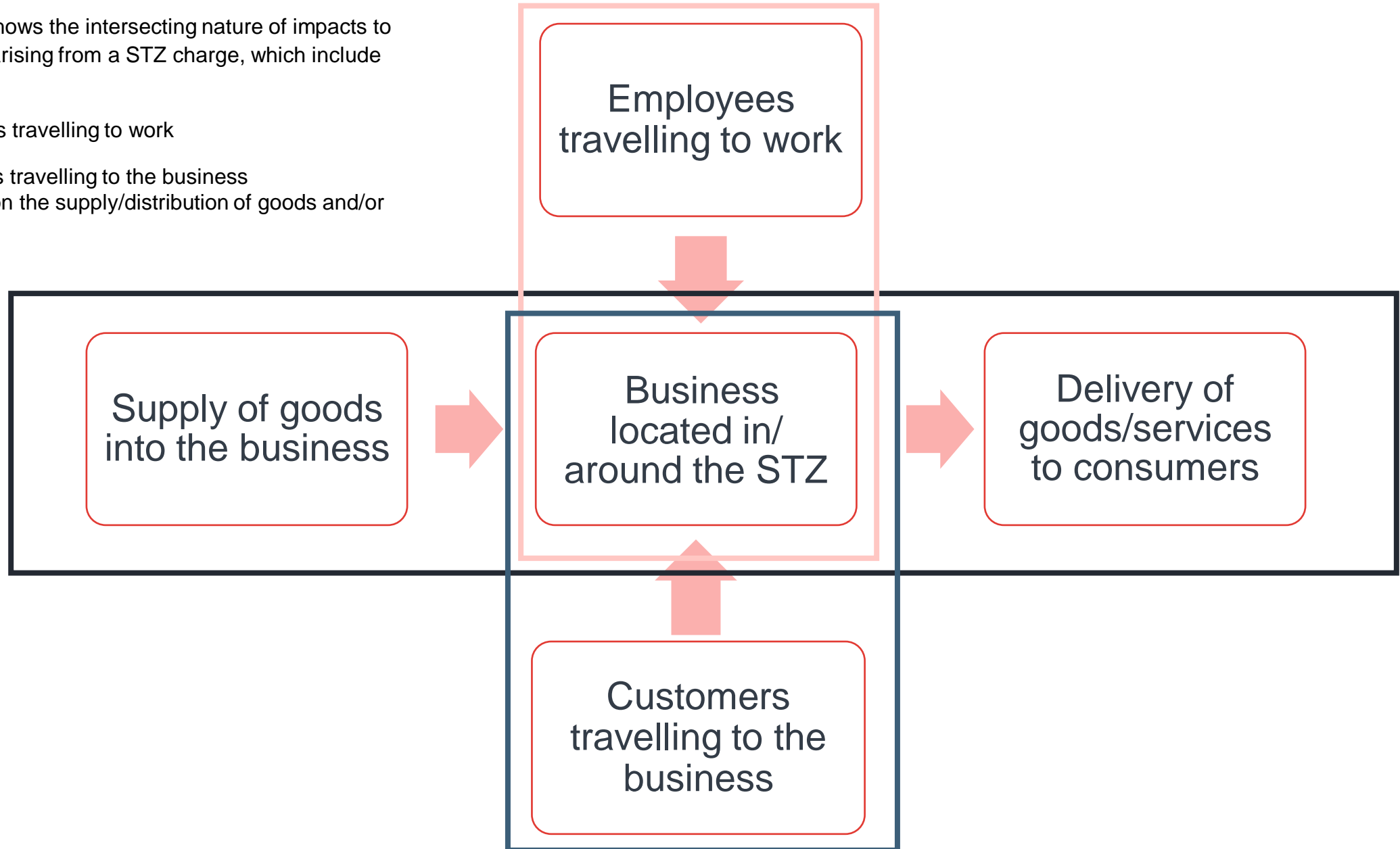
The methodology for undertaking the business impacts assessment comprises four key stages. First, a conceptual framework for analysing business dependencies has been developed (Stage 1). A longlist of businesses in the Cambridge area is analysed and ranked according to business size, operations and specialisms (Stage 2). A combination of quantitative and qualitative data is used to assess business dependencies for key sectors that may be potentially impacted by the STZ (Stage 3). Finally, the longlist of sectors are ranked according to whether they are most/less/least likely to be impacted by the STZ, with deep dive analyses conducted for a selection of industries (Stage 4). The table below expands on these four key stages for conducting the business impacts assessment.

Stage	Aim	Method
1	Identifying business dependencies	<p>Three main dependencies that businesses need to account for in relation to the Making Connections programme are:</p> <ul style="list-style-type: none"> • Employees travelling to work • Customers travelling to the business • Reliance on the supply/distribution of goods and/or services <p>The ability of the business sector to absorb the costs to employees/ suppliers/ customers cuts across all three key dependencies.</p>
2	Analysing sectoral concentration and employment	<p>Using ONS data covering the Cambridge area business sectors are ranked according to:</p> <ul style="list-style-type: none"> • Size of business sector operations within the STZ (by employee count) • Specialist business sectors for Cambridge (by location quotient for employee counts) • Average size of the business (by business count data) and what sectors of retail/manufacturing are exposed.
3	Assessing key sectors potentially impacted by the STZ	<ul style="list-style-type: none"> • Assess business dependencies outlined in Stage 1 using quantitative and qualitative data to gain insight into key sectors' ability to absorb costs. • Data sources include capital intensity, propensity to work from home, GHG emissions, median wages, insights from public consultation.
4	Assessing exposure of key sectors potentially impacted by STZ	<ul style="list-style-type: none"> • The analysis conducted in Stages 2 and 3 is used to assess whether business sectors are potentially more, less or least likely to be negatively impacted by the STZ charge. • Key sectors are ranked as potentially "most likely", "less likely" or "least likely" to be negatively impacts according to their perceived level of exposure to the STZ charge. • Levels of exposure are also assessed according to each charging structure scenario (all day charge, AM and PM peak only, consultation proposal plus Free Days). • Deep dive analysis is conducted on a selection of sectors that are pertinent to Cambridge's economy.

Stage 1. Identifying Business Dependencies (1/2)

This figure shows the intersecting nature of impacts to businesses arising from a STZ charge, which include impacts to:

- Employees travelling to work
- Customers travelling to the business
- Reliance on the supply/distribution of goods and/or services.



Stage 1. Identifying Business Dependencies (2/2)

Supply of goods into the business



Business located in/ around the STZ



Delivery of goods to consumers

If a business depends on supplies of goods into the business, then the STZ charge may increase business costs if suppliers pass on the cost of the charge. If a business depends on physically delivering goods/services to customers, then the STZ charge may increase business costs. The business may pass this cost onto customers.

If the business depends on customers travelling by car to the business to buy goods and services, then the STZ charge may impact on consumer footfall, and hence sales. The size of the impact will depend on the extent to which customers travel by car, what other alternative transport is available, and how reliant the business is on these customers.

Business located in/ around the STZ



Customers travelling to the business

Employees travelling to work



Business located in/ around the STZ

If the business is dependent on employees travelling into work, and there is a high proportion of employees travelling to work by car, then the STZ charge may impact on workers. The size of the impact may depend on the size of the labour force travelling into work by car, and how reliant the business is on employees being physically present on the business premises.

Stage 2. Analysing Sectoral Concentration and Employment (1/4)

Business sectors were shortlisted according to size of business operations and the degree of specialism compared to the rest of the UK

Detailed methodology

To The top 100 business sectors for Cambridge were shortlisted based on:

- Employee count
- Employee location quotient

Employee count is a proxy for the size of business operations within Cambridge for the respective sector.

The location quotient identifies any specialised business sectors where there is a high concentration relative to the UK. These are weighted to produce an indicator that will identify the level of importance of each business sector to the Cambridge economy.

As previously mentioned, the weights were adjusted to include those with the largest business operations in Cambridge, while also including smaller specialist business sectors in Cambridge with a substantial amount of employees (>30).

$$I = w_1 \cdot E_c + w_2 \cdot E_{LQ}$$

The above equation was used, and the explanations of the values are provided in the table.

The top 100 sectors ranked by importance to the Cambridge economy are shortlisted using the equation. The top 100 list can be found in full in Appendix A. These sectors are then assessed according to whether they are “most-”, “less-” or “least-likely” impacted by the STZ charge.

Variable	Explanation
I	Indicates the level of importance to the Cambridge economy
w_1, w_2	Weight values of between 0-100% such that $w_1 + w_2 = 100\%$
E_c	Employment count, a proxy for the size of business operations in the Cambridge area
E_{LQ}	Employment location quotient, used to identify speciality business sectors for the Cambridge economy.

Stage 2. Analysing Sectoral Concentration and Employment (2/4)

The largest employers are in the education, healthcare, and scientific research industries

Employment – employee headcount

Employee headcount at the sectoral level is a key metric for measuring sectoral exposure to the STZ charge as it **indicates the level of business operations within the STZ.**

Based on ONS data, **the top 100 sectors in the dataset for Cambridge account for 90% of all employees in the Cambridge area.** This is the primary measure of the relative importance of each business sector to the Cambridge economy and is supplemented by the location quotients discussed on the following page.

The table shows the top 20 sectors in terms of **average employee count between 2016 and 2021.** Key sectors highlighted in the list in terms of employee headcount include education, hospitals, research facilities, retail outlets, restaurants, pubs and bars. Sectors with the highest employee count are likely to have significant operations within the Cambridge area, and as such **are likely to have the highest level of business activity within the STZ.**

Rank	SIC	SIC description	Employee count (2016 - 2021 avg.)	Employment share
1	85421	First-degree level higher education	14,833	11.90%
2	86101	Hospital activities	13,500	10.83%
3	72190	Other research and experimental development on natural sciences and engineering	7,500	6.02%
4	62012	Business and domestic software development	3,250	2.61%
5	71121	Engineering design activities for industrial process and production	3,250	2.61%
6	47110	Retail sale in non-specialised stores with food, beverages or tobacco predominating	2,833	2.27%
7	85310	General secondary education	2,625	2.11%
8	56290	Other food service activities	2,333	1.87%
9	85590	Other education nec	2,333	1.87%
10	56101	Licensed restaurants	2,292	1.84%
11	62020	Computer consultancy activities	2,292	1.84%
12	85200	Primary education	2,125	1.71%
13	78200	Temporary employment agency activities	2,000	1.60%
14	56302	Public houses and bars	1,583	1.27%
15	47710	Retail sale of clothing in specialised stores	1,542	1.24%
16	58110	Book publishing	1,500	1.20%
17	62090	Other information technology and computer service activities	1,500	1.20%
18	69201	Accounting, and auditing activities	1,417	1.14%
19	86900	Other human health activities	1,400	1.12%
20	70100	Activities of head offices	1,288	1.03%

Stage 2. Analysing Sectoral Concentration and Employment (3/4)

Specialist business sectors in Cambridge include research, engineering, software development and education

Location quotient – employment concentration

Location quotients are estimated using employee headcount data to provide insights into the business sectors highly concentrated within the Cambridge area relative to the UK, thus, are likely **specialist sectors for Cambridge**.

The table shows the list of the top 20 sectors in the Cambridge area ranked by location quotient. Corresponding figures for employee headcount and the sector's rank in terms of employee headcount have also been included to highlight the sector's importance in terms of the number of employees.

Sectors with 500 or more employees have been highlighted to show the specialist business sectors for Cambridge that also have a significant level of employment share and business operation within the STZ. For reference, business sectors with less than 500 employees account for less than c. 0.4% of employment share in the Cambridge area.

Rank	SIC	SIC description	LQ employees (2016 - 2021 avg.)	Employee count	Rank employee count
1	28230	Manufacture of office machinery and equipment	16.97	267	83
2	62011	Ready-made interactive leisure and entertainment software development	16.39	950	31
3	58110	Book publishing	15.56	1,500	16
4	72190	Other research and experimental development on natural sciences and engineering	14.47	7,500	3
5	72110	Research and experimental development on biotechnology	12.28	583	44
6	71121	Engineering design activities for industrial process and production	11.84	3,250	5
7	58290	Other software publishing	9.14	492	52
8	74300	Translation and interpretation activities	9.12	217	92
9	72200	Research and experimental development on social sciences and humanities	9.01	296	78
10	85421	First-degree level higher education	7.96	14,833	1
11	77210	Renting and leasing of recreational and sports goods	7.25	200	97
12	85410	Post-secondary non-tertiary education	7.18	1,108	24
13	26200	Manufacture of computers and peripheral equipment	6.82	200	95
14	77341	Renting and leasing of passenger water transport equipment	6.82	15	>100
15	85422	Post-graduate level higher education	6.24	379	64
16	26701	Manufacture of optical precision instruments	5.18	96	>100
17	47591	Retail sale of musical instruments and scores in specialised stores	4.77	57	>100
18	94120	Activities of professional membership organisations	4.69	583	45
19	21200	Manufacture of pharmaceutical preparations	4.67	617	42
20	62012	Business and domestic software development	4.34	3,250	4

Stage 2. Analysing Sectoral Concentration and Employment (4/4)

Specialised business sectors outside of the top 100 employers were also identified

High business counts with low employment share

The table shows those business sectors with a high LQ or high business count that are not captured in the top 100 business sectors by employment, which forms the basis of the analysis.

These sectors, primarily the sale and manufacture of specialised goods, are highly represented in the Cambridge area. They also likely feed into the larger sectors such as professional, scientific, and technical activities; as well as higher education, which are integral to the Cambridge economy.

These micro-businesses are identified as being of high importance to Cambridge. They are highlighted here to ensure they are still captured in the analysis, given that the baseline showed that micro-businesses make up almost 90% of businesses in the travel-to-work area. The top 100 shortlist weighting was adjusted so that the sectors highlighted with >30 employees are also included in the top 100 shortlist.

LQ Rank	SIC	SIC description	LQ	Employee count	Business count	Average business size (employees)
14	77341	Renting and leasing of passenger water transport equipment	6.82	15	-	-
16	26701	Manufacture of optical precision instruments	5.18	96	6	17.5
17	47591	Retail sale of musical instruments and scores in specialised stores	4.77	57	5	11.3
23	77400	Leasing of intellectual property and similar products, except copyrighted works	3.31	42	4	8.2
24	38310	Dismantling of wrecks	3.24	3	-	-
25	79901	Activities of tourist guides	3.21	15	5	3.0
26	64306	Activities of real estate investment trusts	3.13	13	-	-
27	26513	Manufacture of non-electronic instruments and appliances	3.07	45	3	7.3
29	50300	Inland passenger water transport	2.95	18	-	-
35	58210	Publishing of computer games	2.52	24	3	4.0
36	47610	Retail sale of books in specialised stores	2.49	125	5	25.0
38	27400	Manufacture of electric lighting equipment	2.21	125	1	6.7
41	74901	Environmental consulting activities	2.15	108	24	4.5
43	55202	Youth hostels	2.12	20	-	-
44	47410	Retail sale of computers, peripheral units and software in specialised stores	2.08	125	6	22.5
46	46610	Wholesale of agricultural machinery, equipment and supplies	2.06	158	3	21.7
47	10612	Manufacture of breakfast cereals and cereals-based foods	2.00	43	-	-
48	46750	Wholesale of chemical products	1.99	150	2	11.7
49	26520	Manufacture of watches and clocks	1.91	3	-	-
51	58141	Publishing of learned journals	1.73	18	2	1.0

Stage 3. Assessing Key Sectors Potentially Impacted by the STZ – Overview (1/7)

Criteria for analysis of sectors

Having shortlisted the top 100 business sectors to identify key sectors, quantitative and qualitative analysis was used to assess the business dependencies (identified in Stage 1) of each sector:

- Reliance on deliveries from suppliers into the business and/or outgoing deliveries to onward suppliers/consumers;
- Reliance on consumer footfall into the business; and
- Employees commuting to and from work.

As well as these three dependencies, we also analyse the ability of each business sector to be able to absorb the extra costs incurred owing to the STZ charge.

Quantitative analysis

Where available, sectoral data for Cambridge is analysed, followed by regional and national level data. Sectoral data at the regional and national levels rely on strong assumptions that they are representative of the Cambridge context. Where applicable, this is stated as a limitation of the analysis.

Throughout the analysis, SIC code data is used to differentiate between business sectors. Where a greater degree of granularity is available (5-digit SIC), each section is referred to as a business sector. Where more aggregated data is available (2-digit SIC), each section is referred to as an industry.

Most available data was at the 2-digit level and, as such, the majority of the quantitative analysis and classification was conducted at the industry level. Where appropriate, more granular insights are given for critical industries such as education.

The limitations of the quantitative analysis include some industries being better captured by certain metrics and not well by others. For example, the hospitality sector is not well captured by the capital intensity metric, but it scores very high on the wages metric. As a result, WSP provides final adjustments based on qualitative insights for key industries in Cambridge.

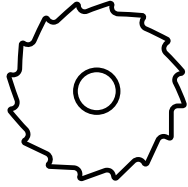
Qualitative analysis

Key industries highlighted through the quantitative analysis are analysed and reclassified where needed. Reclassification may be based on any insights found in analogous case studies or high-level analysis that gives further insight into the listed dependencies and additional criteria.

“Most likely” indicates sectors that may be highly exposed to the STZ charge. Note that the final “most/less/least-likely” classification is intended to show the relative exposure of the respective industries. A “least-likely” classification is not intended to suggest these industries are not exposed.

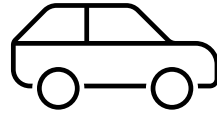
Stage 3. Assessing Key Sectors Potentially Impacted by the STZ (2/7)

Quantitative ONS data, complemented by qualitative insights and professional judgement, is used to shortlist sectors that may be potentially impacted by the STZ charge to varying degrees. The four key quantitative variables are presented below.



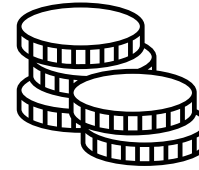
Capital intensity

- Capital intensity is included in the analysis as it suggests sectors where there is reliance on the supply and delivery of capital goods.
- Industries such as **manufacturing** and **retail trade** are more capital intensive, compared to **service activities** and **arts & entertainment**.



Carbon intensity

- Carbon intensity is included in the analysis as it suggests which sectors may be more reliant on road use.
- Industries such as **land transport, specialised construction, wholesale trade** and **manufacturing** are assessed to be relatively highly carbon intensive.
- Manufacturing and trade sectors are intrinsic to other sectors, and it is therefore important this is captured in the analysis as final goods are likely to be impacted by the STZ charge at every stage of the supply chain.



Median wages

- The median wages indicator suggests which sectors are relatively high(low)-paying and therefore more(less) able to absorb the cost of the STZ charge.
- Industries such as **food and beverage service activities, building and landscape services, retail trade, residential care and social work activities** are associated with lower wages (high wage metric).
- **Scientific research, computer programming and consultancy activities** are associated with higher wages (lower wage metric).



Homeworking capability

- The 2023 Characteristics of Homeworking Report and ONS data shows that industries such as **waste collection, manufacturing, food and beverage services activities, human health and residential care activities, and retail and wholesale trade** are more likely to rely on employees commuting into work.
- **Financial services, computer programme and consultancy, and management consultancy activities** are more likely to have the flexibility of employees working from home.

Stage 3. Assessing Key Sectors Potentially Impacted by the STZ – Capital Intensity (3/7)

Manufacturing was by far the most capital intensive using this method of estimation

Capital intensity is an important parameter to consider in the analysis as it suggests sectors where there is reliance on the supply and delivery of capital goods. The turnover to employee ratio proxies for capital intensity. The rationale is that **sectors with a higher turnover per employee are less reliant on labour** as a means of revenue generation and **more reliant on the sale, production, distribution and/or leasing of capital stock**.

Industries such as **manufacturing** and **retail trade** have a **high score**, while other less capital-intensive jobs such as **service activities** and **arts & entertainment** have **lower scores**. The capital intensity metric gives more weight to business sectors more reliant on capital to generate revenue. The metric is normalised to between 0-5 for ease of comparison.

Limitations:

1. Capital intensity data was only available at the aggregated SIC level (A-T) corresponding to the respective industries.
2. The metric does not capture the exposure of the hospitality industry or public sector. Some qualitative adjustments are made regarding these sectors.

SIC	SIC range (2 dig.)	SIC Description	Turnover £'m (2021)	Employee count (2021)	Turnover per employee £'k	Normalised metric (0-5)
A*	01 to 03	Agriculture, Forestry and Fishing (<i>excluded</i>)	78	10	7,765	5.00
B	05 to 09	Mining and Quarrying	1	-	0	-
C	10 to 33	Manufacturing	11,754	2,400	4,897	5.00
D	35	Electricity, gas, steam and air conditioning supply	3	10	287	0.29
E	36 to 39	Water supply, sewerage, waste management and remediation activities	1	340	4	0.00
F	41 to 43	Construction	484	1,805	268	0.27
G	45 to 47	Wholesale and retail trade; repair of motor vehicles and motorcycles	10,666	11,475	929	0.95
H	49 to 53	Transportation and storage	31	2,020	15	0.01
I	55 to 56	Accommodation and food service activities	188	9,525	20	0.02
J	58 to 63	Information and communication	3,093	14,385	215	0.22
K	64 to 66	Financial and insurance activities	464	1,670	278	0.28
L	68	Real estate activities	508	1,795	283	0.29
M	69 to 75	Professional, scientific and technical activities	22,239	23,260	956	0.97
N	77 to 82	Administrative and support service activities	2,695	5,385	500	0.51
O	84	Public administration and defence; compulsory social security	5	3,120	1	-
P	85	Education	384	25,765	15	0.01
Q	86 to 88	Human health and social work activities	164	21,495	8	0.01
R	90 to 93	Arts, entertainment and recreation	82	2,675	31	0.03
S	94 to 96	Other service activities	239	2,935	81	0.08
T	97	Activities of households as employers	14	-	n/a	-

*Agriculture was excluded due to the very low employee count and high turnover per employee skewing the scale of the metric.

Stage 3. Assessing Key Sectors Potentially Impacted by the STZ – Carbon Intensity (4/7)

Carbon intensity gave a different approach to estimating the reliance on supplies or distribution

GHG emissions data provides additional insight into the exposure of these industries to the STZ charge as these industries are likely to be capital-intensive or rely on road use.

To obtain a metric that accounts for the GHG emission relative to the size of the business, the absolute emissions were divided by the employee count for the respective industry. Finally, this value was normalised to between 0-5 for ease of comparison.

Notice the industries at the top of the scale are likely to require employees to commute into work, or the transportation of goods and supplies to function. The manufacturing and trade sectors are intrinsic to other sectors, and it is therefore important this is captured in our analysis as final goods are exposed to the STZ charge at every stage of the supply chain.

Limitations

1. This analysis was performed at the 2-digit SIC level as this was the most granular data available for the GHG emissions.
2. Data is at the national level, not Cambridge-specific.

Rank	SIC	SIC description	Employee count	Carbon intensity metric
1	49	Land transport and transport via pipelines	977	5.00
2	43	Specialised construction activities	1,007	5.00
3	46	Wholesale trade; except of motor vehicles and motorcycles	2,160	3.14
4	28	Manufacture of machinery and equipment n.e.c.	339	3.13
5	53	Postal and courier activities	481	2.65
6	41	Construction of buildings	775	2.57
7	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	972	1.87
8	84	Public administration and defence; compulsory social security	2,890	1.45
9	55	Accommodation	1,237	0.73
10	47	Retail trade; except of motor vehicles and motorcycles	8,971	0.72
11	81	Services to buildings and landscape activities	1,246	0.69
12	93	Sports activities and amusement and recreation activities	939	0.65
13	26	Manufacture of computer; electronic and optical products	935	0.56
14	87	Residential care activities	1,284	0.55
15	82	Office administrative; office support and other business support activities	1,237	0.52

Stage 3. Assessing Key Sectors Potentially Impacted by the STZ – Median Wages (5/7)

Wage analysis captured the sectors likely to be disproportionately affected by the STZ in terms of income

Median wages provide valuable further insight into the nature of the business sector. It is reasonable to assume that high-paying sectors are lucrative business sectors, and therefore more likely to be able to bear the cost of the STZ charge.

The wages metric should be interpreted as the higher the overall risk metric value, the lower the median wage for that industry.

Industries such as **food and beverage service activities, building and landscape services, retail trade, residential care and social work activities** are associated with lower wages (high wage metric). **Scientific research, computer programming and consultancy activities** are associated with higher wages (lower wage metric).

Limitations:

1. Weekly wage data is available at the 2-digit SIC level, and they are at the regional level of the East of England.

Rank	SIC	SIC description	Employee count	Wages metric
1	56	Food and beverage service activities	8,596	5.00
2	96	Other personal service activities	1,613	4.21
3	81	Services to buildings and landscape activities	1,246	4.15
4	78	Employment activities	2,685	4.09
5	47	Retail trade; except of motor vehicles and motorcycles	8,971	4.08
6	55	Accommodation	1,237	4.05
7	88	Social work activities without accommodation	2,400	3.67
8	87	Residential care activities	1,284	3.64
9	82	Office administrative; office support and other business support activities	1,237	3.09
10	94	Activities of membership organisations	1,388	3.01
...
25	58	Publishing activities	2,417	1.86
26	84	Public administration and defence; compulsory social security	2,890	1.77
27	61	Telecommunications	795	1.60
28	71	Architectural and engineering activities; technical testing and analysis	5,244	1.59
29	26	Manufacture of computer; electronic and optical products	935	1.55
30	41	Construction of buildings	775	1.36
31	28	Manufacture of machinery and equipment n.e.c.	339	0.66
32	62	Computer programming; consultancy and related activities	7,993	0.44
33	72	Scientific research and development	8,379	0.32
34	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	628	-

Stage 3. Assessing Key Sectors Potentially Impacted by the STZ – Homeworking Capability (6/7)

Employees in higher-paying, highly-skilled jobs were more likely to be able to work from home, decreasing exposure to the STZ

The latest 2023 Characteristics of Homeworking Report showed data on the percentages of workers that have the following working environments:

- Homeworking only
- Hybrid working
- Travelled to work only

According to the report, employees in high-paying, high-skilled and office-based jobs were more likely to be able to work from home. Conversely, employees in manual labour-based jobs were likely to consistently commute to work.

The data was categorised by ‘Job type’ (see table) and these were subsequently matched against corresponding industries at the 2-digit SIC code level. Examples are included in the ‘SIC description’ column, although the examples are not exhaustive for every category.

There is an overall consistent mapping of the 9 different job types in the Characteristics of Homeworkers Report with the industries at the 2-digit SIC code level. This provides a good proxy for exposure of a sector in terms of reliance on employees to commute into work.

Rank	Job type – Homeworkers Report (2023)	SIC examples	WFH metric
1	Elementary occupations	Waste collection; treatment and disposal activities; materials recovery	5.00
		Postal and courier activities	
2	Process plant and machine operatives	Manufacture of basic pharmaceutical products and pharmaceutical preparations	4.43
		Manufacture of other non-metallic mineral products	
		Manufacture of computer; electronic and optical products	
3	Caring, leisure and other service occupations	Food and beverage service activities	4.32
		Human health activities	
		Residential care activities	
4	Skilled trades occupations	Wholesale and retail trade and repair of motor vehicles and motorcycles	4.15
		Education	
		Telecommunications	
5	Sales and customer service occupations	Wholesale trade; except of motor vehicles and motorcycles	3.76
		Retail trade; except of motor vehicles and motorcycles	
		Rental and leasing activities	
6	Administrative and secretarial occupations	Office administrative; office support and other business support activities	1.37
		Public administration and defence; compulsory social security	
7	Associate professional occupations	Publishing activities	0.83
		Activities auxiliary to financial services and insurance activities	
8	Managers Directors and Senior Officials	Activities of head offices; management consultancy activities	0.80
9	Professional occupations	Computer programming; consultancy and related activities	-
		Financial service activities; except insurance and pension funding	
		Legal and accounting activities	

Note: The WFH metric ranges from 0 (flexibility to work from home) to 5 (no working from home).
Source: [Characteristics of Homeworkers](#)



Stage 3. Summary Of Sectors Assessed As “Most”, “Less” Or “Least” Likely Impacted by the STZ (7/7)

The table provides a summary of the sectors rated as potentially more, less, and least likely to be negatively impacted by the STZ charge. This assessment is based on quantitative and qualitative analysis, and professional judgement.


Most likely	Less likely	Least likely
Human health activities	Education	Scientific research and development
Retail trade; except of motor vehicles and motorcycles	Publishing activities	Architectural and engineering activities; technical testing and analysis
Food and beverage service activities	Other personal service activities	Computer programming; consultancy and related activities
Manufacture of machinery and equipment n.e.c.	Real estate activities	Employment activities
Social work activities without accommodation	Rental and leasing activities	Legal and accounting activities
Accommodation	Libraries; archives; museums and other cultural activities	Activities of head offices; management consultancy activities
Manufacture of basic pharmaceutical products	Services to buildings and landscape activities	Public administration and defence; compulsory social security
Manufacture of computer; electronic and optical products	Residential care activities	Other professional; scientific and technical activities
Services to buildings and landscape activities	Creative; arts and entertainment activities	Activities of membership organisations
Wholesale trade; except of motor vehicles and motorcycles	Security and investigation activities	Telecommunications
Postal and courier activities	Construction of buildings	Activities auxiliary to financial services and insurance activities
Wholesale and retail trade and repair of motor vehicles and motorcycles	Sports activities and amusement and recreation activities	Office administrative; office support and other business support activities
Manufacture of electrical equipment		Land transport and transport via pipelines
Waste collection; treatment and disposal activities; materials recovery		Financial service activities; except insurance and pension funding
Specialised construction activities		Travel agency; tour operator and other reservation service and related activities
Manufacture of food products		Programming and broadcasting activities
Manufacture of other non-metallic mineral products		Civil engineering

Stage 4. Approach And Methodology: Analysis (“Most Likely Impacted” Classification)

Following qualitative analysis, the list was as we would expect, with only additional adjustments made to the education and social work sectors. Below are the industries classified as “most likely” impacted by the STZ charge, using both quantitative analysis and professional judgement. As already stated, the quantitative analysis offered a good base to build on using the qualitative insights. In some cases, the qualitative insights were concurrent with the classification from the quantitative analysis; in other cases, a manual adjustment was made, denoted by the arrows (i.e. ‘human health activities’ and ‘social work activities without accommodation’ were upgraded from “less likely” to “most likely” impacted). In the slides that follow, deep dive analysis is conducted on a selection of industries categorised as “most likely impacted” by the STZ charge.

SIC	SIC description	Capital intensity	Carbon intensity	Wage metric	WFH capability
86	Human health activities 	0.01	0.25	2.60	4.30
47	Retail trade; except of motor vehicles and motorcycles	0.95	0.72	4.08	3.78
56	Food and beverage service activities	0.02	0.30	5.00	4.30
28	Manufacture of machinery and equipment n.e.c.	5.00	3.13	0.66	4.46
88	Social work activities without accommodation 	0.01	0.29	3.67	4.30
55	Accommodation	0.02	0.73	4.05	4.30
21	Manufacture of basic pharmaceutical products	5.00	0.97	0.00	4.46
26	Manufacture of computer; electronic and optical products	5.00	0.56	1.55	4.46
81	Services to buildings and landscape activities	0.51	0.69	4.15	4.14
46	Wholesale trade; except of motor vehicles and motorcycles	0.95	3.14	2.29	3.78
53	Postal and courier activities	0.02	2.65	2.11	5.00
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	0.95	1.87	2.52	4.14
27	Manufacture of electrical equipment	5.00	3.28	1.82	4.46
38	Waste collection; treatment and disposal activities; materials recovery	-	5.00	1.66	5.00
43	Specialised construction activities	0.27	5.00	1.98	4.14
10	Manufacture of food products	5.00	5.00	2.35	4.46
23	Manufacture of other non-metallic mineral products	5.00	5.00	1.94	4.46

 Denotes an upgrade was made based on our qualitative adjustments

 Denotes a downgrade was made based on our qualitative adjustments.

NB: where a “-” is shown there was no available data for this industry, WSP accounts for this in the qualitative adjustments.

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Retail (1/3)

Summary: This slide provides evidence to support the classification of the retail sector as being potentially more likely negatively impacted by the STZ compared to other sectors. The impacts of the STZ may be felt disproportionately by smaller compared to larger businesses. While the proportion of online retail sales relative to in-store sales remains significant (approximately 37% in Cambridge by Q3 2022), some sectors typically see a larger proportion of online sales compared to others (higher for general retail and fashion; versus lower for food and drink, and groceries). Furthermore, retail businesses still rely to a large extent on incoming supplies via LGVs and HGVs, and employees commuting to work to provide customer service – all of which may be potentially impacted by the STZ charge. The consultation findings highlight concerns from retailers regarding staff recruitment and retention, charging hours, the nature of goods being purchased, and the impact on edge-of-town retail parks.

Depending on the operational hours of the STZ, consumer shopping patterns may shift to outside the charging periods as was observed within the first three months of the Gothenburg and Stockholm’s congestion charges. Even so, businesses may encounter additional costs to staffing their premises at more unsociable hours to cater to the night-time economy. As with congestion charging schemes elsewhere, the impacts may be felt more strongly during the initial stages of the STZ implementation, and may ease over time as retailers and consumers adjust to new shopping patterns.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none"> • Scores intermediate on the carbon and capital intensity metrics designed to capture this business dependency. • Analysis shows retail is dependent on this factor, but not as much wholesale trade or manufacturing industries. • The risk highlighted in consultations is that home deliveries charges increase across the board due to the STZ charge. 	<ul style="list-style-type: none"> • The largest retail business sectors within Cambridge are food & beverage, clothing, and sports equipment. Most of these are continuing the trend of switching to online shopping. However, some sectors such as groceries shopping still rely heavily on in-person visits (16% online) compared to general retail (~60%) and fashion (~40%).¹ • Consultation findings also suggest challenges in customers carrying heavy shopping items by public transport compared to by car. • Conversely, it is anticipated that the PT improvements supported by the STZ may also enable more customers to travel in more easily. 	<ul style="list-style-type: none"> • Scores high on the working-from-home capability metric as employees typically need to be onsite to provide customer service. • Scores high on the wage metric (i.e. lower-wage sector) which suggests employees may be disproportionately affected by the STZ charge. • Conversely, it is anticipated that the PT improvements supported by the STZ may also make it easier to recruit low paid staff who are disproportionately reliant on modes other than car.

Source:

1. [Three years on from lockdown: has the pandemic changed the way we shop? | Centre for Cities](#)

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Retail (2/3)

Wider Business Impacts and benchmarking insights

- Analysis of Cambridge City centre shows retail accounts for the majority of the town centre: Retail units account for 74% of all retail and leisure units in the centre, compared with 54% for the UK¹.
- Median wage analysis suggests that the retail sector is a relatively lower-paying sector, scoring 4.08 out of 5 on the wage risk metric. Low-pay, low-skill employees may be incentivised to switch to jobs outside of the STZ. This being said, there are those low-paid, low-skilled employees who may not own cars and who are reliant on public transport.
- In an already declining job market, the STZ charge makes online shopping even more attractive, which may catalyse further job destruction in some sectors over others. A Centre for Cities 2023 report² highlights Cambridge as being an online shopping hub, with a substantial portion of retail spend being made online – approximately 34% of sales in 2019 to 37% by Q3 2022. Reliance on online shopping in 2022 differed by sector: general retail (~60%), fashion (~40%), food & drink (~22%), and groceries (~16%). These trends are broadly aligned with high streets evolving from being traditionally reliant on retail, and evolve into the ‘experience’ leisure economy that promotes bars, restaurants, cafes, cinemas or leisure centres, for example.³
- Ex-post impact assessments for the **London Congestion Charge** showed that growth in business performance (sales and profitability) and business start-up (VAT registrations) was stronger – both absolute and relative – in the original central London charging zone five years after the introduction of the charge than prior to it.⁴ Despite concerns expressed by retailers in the ‘original’ London congestion charge zone, retail businesses in the central London charging zone outperformed retail businesses in inner and outer London since the introduction of charging in terms of sales, profitability as well as employment growth.⁴
- Furthermore some businesses in London even saw an increase in revenue due to the improved accessibility for customers and employees. One such study published by GLA suggest that the charge had a significant impact on sales (down about 7% as a result of the charge) at the John Lewis (JL) store in Oxford Street (inside the charging zone) over the period studied but had no effect on overall retail sales in central London, an area larger than but encompassing the congestion charging zone.⁵
- Case studies from **Sweden (Stockholm, Gothenburg)** suggest consumers may adjust their in-store shopping to non-charging times. In Gothenburg, where the congestions charge was introduced in 2013, IKEA reported 13% reduction of customer footfall during the week and 12% increase at weekends. Retailers also expanded their opening hours on weekends.⁶ In Gothenburg, consumers adjusted their trip patterns due to less willingness to pay the charge for smaller spontaneous purchases compared to planned, more expensive ones – in the Cambridge context, this may encourage reduced congestion and reduced travel times.
- While this is positive, a potential drawback could be that businesses may have to adjust their operating times to accommodate this – disproportionately affecting smaller businesses via increased labour costs for staff working relatively more unsociable hours.

Sources:

1. [Cambridge named UK's healthiest retail location – Housewares \(housewareslive.net\)](https://housewareslive.net)
2. [Three years on from lockdown: has the pandemic changed the way we shop? | Centre for Cities](#)
3. [What does a future proof high street look like? | Centre for Cities](#)
4. [Impacts Monitoring, Sixth Annual Report \(2008\)](#)
5. [The impact of the congestion charge on the retail business in London: An econometric analysis](#)
6. [FULLTEXT01.pdf \(diva-portal.org\)](#)

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Retail (3/3)

Wider Business Impacts and benchmarking insights (cont'd)

- In **Stockholm**, a congestion charge was trialled in 2006 before full implementation in 2007. A study looked into the data collected by Swedish retail Institute (HUI), covering the period Jan 2004 to September 2008. A total of 20 shopping malls/complexes were considered for the study (8 within the toll area, 12 outside) as well as an aggregated revenue measure from a sample of shops in the inner city.¹ A small decrease was observed during the trial period for retailers both inside and outside the toll area. Mean revenues increased during the period after the trial and remained at approximately the same level after permanent congestion charges were introduced.
- According to the paper, Stockholm's congestion charge does not seem to have had any effect on aggregated retail revenues inside the toll area. This result was also confirmed for seven of the nine units estimated individually. Only PUB (one of the major departmental store in city centre) was affected negatively by the introduction of congestion charges, whereas a positive effect was found for Faltoversten (shopping complex in the city centre).
- The congestion charge in Stockholm has been hailed as a success in literature. According to Eliason et al. (2009), not only were congestion reduced and mobility improved within the city, but also carbon emissions were lowered and perceived air-quality was improved.² The results of the study here indicate that congestion charges had **no negative effect on retail businesses**, probably **because in Sweden most stores and shopping malls are open evenings and weekends**, making it **easy to avoid congestion charges** by shopping at another time or by using public transport, which is plentiful.
- Evidence also shows that well-planned improvements to public spaces, such as those being proposed as part of Making Connections, can boost footfall and trading. For example in Piccadilly, Stoke-on-Trent, a £10 million investment to make the area more pedestrian-friendly led to 30% more footfall. Schemes promoting more space for walking and cycling and less for cars have in some cases led to increased shop revenues, such as a scheme in Shoreditch, London which saw shop takings increase by 20%. Similar effects were also observed with public realm improvements in Ealing, London, in the early 2000s, showing that, by 2007/08 footfall had performed better than the national benchmark over the year, and had experienced a 60% reduction in late-night town centre violence, year-on-year.³

Consultation Findings

- **Staff:** Concerns from retail businesses include staff recruitment and retention issues if staff potentially choose to work outside Cambridge. There is a further potential issue that staff shifts are currently incompatible with public transport use, which may force some staff to be charged for at least one trip into the STZ with no real alternative until other aspects of the Making Connections Programme materialise.
- **Charging hours:** Two organisations operating shopping centres also raised a concern that the relatively late (7 pm) ending of the charge could deter people from travelling into town for the night-time economy. John Lewis & Partner and Waitrose & Partners assert that the 07:00-19:00 charging hours could create a new evening peak as people travel to shop outside of the charging hours – the concern being that produce lingers on the shelf throughout the day.
- **Nature of goods being purchased:** A related concern raised by some shops was that their stores necessitated car visits to pick up either large quantities of shopping or bulky items (e.g. furniture).
- **Edge-of-town retail parks:** Several businesses and retail parks note that they may be bearing the cost of the STZ without the enjoying the benefits of sustainable transport modes that come with being a centrally-located business. This point was reinforced by several councils (Great Shelford PC, Milton PC and Teversham PC).

Sources:

1. [working-paper-no.-134.-sven-olov-daunfeldt-niklas-rudholm-and-ulf-ramme-2009.-congestion-charges-in-stockholm-how-have-they-affected-retail-revenues.pdf \(ratio.se\)](#)
2. [A cost-benefit analysis of the Stockholm congestion charging system \(hubspotusercontent30.net\)](#)
3. [pedestrian-pound-2018.pdf \(livingstreets.org.uk\)](#)

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Human Health & Social Work Activities (1/3)

Summary: This slide provides evidence to support the classification of the human health and social work sectors as being potentially more negatively impacted by the STZ charge compared to other sectors. The healthcare sector relies on suppliers delivering medical and laboratory supplies onto the premises. Employees who need to be on site in order to provide their services will incur the STZ charge. Hospitals located on the Cambridge Biomedical Campus (CBC) are estimated to provide approximately 9,000 jobs, a large proportion of which require employees to work on site. Together with businesses located on the CBC, the number of jobs are estimated at 20,000 by FY21-22.¹

Importantly, it is worth noting that the introduction of the STZ charge may impact public sector institutions and businesses related to the healthcare sector differentially, depending on business turnover and employee wage levels. High-paid, high-skill workers in the private healthcare and related research business (e.g. senior management, research scientists, etc.) may be more likely to be able to absorb the cost of the STZ through higher wage levels compared to other healthcare workers (e.g. nurses). Moreover, there will be differing capacities to work from home, depending on the extent to which jobs are lab-based or in-person patient-focused. Consultation findings suggest concerns surrounding the impact on staff, patients/visitors, working patterns, and the administrative burden of reimbursements for trips to hospitals located on the CBC.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none"> • Scores low on both the carbon intensity and capital intensity metrics. However, it is caveated that the public sector is not well-captured by the quantitative analysis for this business dependency. • The reliance on medical and pharmaceutical supplies onto and off of CBC suggests the proposed charge will impact supply chains. 	<ul style="list-style-type: none"> • Customers are patients here in this context. Patients and visitors that travel to the hospital will be impacted, though this may be mitigated through exemptions or reimbursements. 	<ul style="list-style-type: none"> • Scores high on the WFH metric as employees typically must travel to work. • Scores intermediate on the wage metric as there is typically a large salary range for a hospital worker. Low-paying jobs will be affected disproportionately.

Source:

1. [“Economic impact assessment of the Cambridge Biomedical Campus”](#) (Centre for Economics and Business Research (August 2022))

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Human Health & Social Work Activities (2/3)

Wider Business Impacts

- Cambridge Biomedical Campus (CBC) houses a range of institutions, from businesses such as AstraZeneca, GlaxoSmithKline's (GSK) Experimental Medicine and Clinical Pharmacology Unit, Abcam PLC Headquarters, to key NHS institutions such as Cambridge University Hospital (high employee count and high LQ), and key research institutions within the University of Cambridge – all of which will be differently impacted by the STZ.
- A 2022 Centre for Business and Economic Research report estimates that the CBC generated approximately 16,000 full-time equivalent jobs in FY20-21, and in total almost 31,000 FTE jobs when taking the whole of the UK into account. Related supply chains to the CBC will be impacted if the STZ charge impacts on supplies in and deliveries out.
- AstraZeneca's headquarters being located on the CBC and the perceived clustering and agglomeration benefits from the wider biomedical research industry suggest that decisions to relocate to other sites outside of the STZ should not be assumed.
- In the public sector, occupations such as nurses and junior doctors, who are already negotiating for higher pay, may be further incentivised to relocate to other hospitals where an STZ charge is not in operation.

Consultation Findings

- **Potential impacts on patients:** There is a concern that the STZ will charge patients who frequently visit hospitals in the STZ on a regular basis for treatment, and those who need door-to-door service
- **Administrative burden:** Consultations with Cambridge University Hospital show significant opposition to proposed STZ discounts and exemptions, largely due to the perceived additional burden on hospital administrative staff and patients given the proposal to offer reimbursements rather than discounts or exemptions.
- **Potential impacts on staff:** There is a concern that the STZ charge may have a disproportionately negative impact on the lowest paid staff, in particular from staff travelling in from deprived areas such as Hunts and Wisbech. Even where there are proposed discounts, there is concern as to how 'low-income' will be defined and enforced. Furthermore, while flat bus fares are being proposed, it was noted that not all areas are currently accessible by bus. At Royal Papworth Hospital, a staff survey undertaken on the proposals found that 85% of respondents said that if a road user charge were introduced it would affect their decision to work at CBC.
- **Working patterns:** Many staff members work nightshifts, during hours where public transport does not currently operate, so it may not be viable for commuting where shift start and end times coincide with the STZ charging hours.
- **Cambridge Biomedical Campus (CBC)** as a whole signalled concerns over specialist equipment not fitting easily on buses, thus mandating car usage. This is supported by consultations with the Taxi Forum and SERV Suffolk & Cambridge who identified that private vehicles are sometimes used to carry medical samples and other perishables.

Stage 4. Cambridge Biomedical Campus (CBC) (3/3)

Cambridge Biomedical Campus (CBC) comprises a range of different entities across the healthcare, education, research and business sectors. Each of these sectors has a workforce of varying skill levels (e.g. doctors and nurses versus research scientists), who work for varying wage levels, and therefore have varying capacities to absorb the cost of the STZ charge. The clustering and agglomeration benefits to businesses suggest that any decisions around relocating their operations due to the STZ will not be taken lightly, especially given that companies such as AstraZeneca have recently relocated their headquarters there.

In terms of **key businesses** that are located on the CBC, these include AstraZeneca, GlaxoSmithKline's (GSK) Experimental Medicine and Clinical Pharmacology Unit, Abcam PLC Headquarters and IOTA Pharmaceuticals. Major **NHS institutions** including Cambridge University Hospital are also located on the CBC. **Educational and research institutions** include the University of Cambridge School of Clinical Medicine, which is housed in multiple buildings across the CBC and comprises twelve Academic Departments, four Research Institutes and five Medical Research Council units.

A 2022 report by the Centre for Economics and Business Research that investigates the economic contribution of Cambridge Biomedical Campus (CBC) to the UK and regional economies between 2019 and 2021 estimates the number of full-time equivalent jobs on the CBC in FY20-21 to be approximately 16,000, with an estimated total of 20,000 in FY21-22 once AstraZeneca's operations are accounted for. CBC cite that 21,000 researchers, industry and clinicians work onsite as of 2022 and that investment in the three years leading up to end-2022 was more than £0.75 billion. Average gross pay for employees within the CBC is estimated at £40,590 but this is likely to vary substantially across sectors and levels of seniority. Furthermore, the average gross pay in sectors indirectly related to the CBC (e.g. suppliers of healthcare or research goods and services) is lower, at £27,640.

Aside from the direct economic benefits, businesses located on the CBC attribute wider benefits of the Campus to clustering and agglomeration effects, given the number of firms producing similar or complementary goods. The majority of organisations located on the CBC believe that they would have been less effective or significantly less effective in improving health outcomes had they not been located on the CBC.

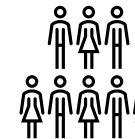
Sources:

1. [“Economic impact assessment of the Cambridge Biomedical Campus”](#) (Centre for Economics and Business Research (August 2022))
2. [Our people | CUH](#)

KEY FACTS



16,041 FTE
EMPLOYEES ON
CBC



30,762 FTE
EMPLOYEES UK-
WIDE



1,993
ADDITIONAL FTE
JOBS IN EAST
OF ENGLAND



4,337
ADDITIONAL FTE
JOBS IN CBC
LOCAL
AUTHORITIES

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Hospitality (Bars, Restaurants and Accommodation) (1/2)

Summary: This slide provides evidence to support the classification of the hospitality sector as being potentially more negatively impacted by the STZ compared to other sectors. The hospitality sector relies on suppliers delivering food, beverages and other related goods onto business premises. Suppliers may pass on the cost of the STZ onto businesses in the hospitality sector, who may in turn pass the cost of the charge onto customers. Until the transport improvements of the Making Connections are implemented, customers relying on car travel may need to pay the charge if they rely on travelling in by car to dine at bars, restaurants, and stay at hotels and other accommodation – in addition to paying potentially higher prices. Hospitality sector employees typically need to provide their services on site and may incur the charge if shift patterns coincide with STZ operating hours. However, there may be low-paid workers who may be less likely to own cars and rely more on public transport. It is likely that the cost of the STZ will impact smaller, independent bars, restaurants and hotels more significantly than larger chains. The potential negative impacts of the STZ charge are likely to be more pronounced in the early stages of the introduction of the STZ whilst public transport network improvements are underway.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none">As this is a service-based industry, goods supplies in are not well captured by the capital intensity metric. Intuitively, this industry is heavily reliant on supplies. In light of this, classification was changed from 'less likely' to 'most likely impacted'.	<ul style="list-style-type: none">This business sector is heavily reliant on consumer footfall into bars, pubs, restaurants, hotels and other accommodation.Cambridge is seen as a significant historical centre, which suggests that the gross value added for the hospitality industry is relatively high.	<ul style="list-style-type: none">The work-from-home metric was high for this industry as employees typically work on site to provide customer service.Median wages for the food and beverage service industry were lowest in the East of England region at £200/week, scoring a maximum of 5 on the wage risk metric. Median wages for accommodation for the same region were £318/week – slightly higher than for the food and beverage industry, but still at the lower end. The STZ charge may potentially negatively impact these workers more so than in other sectors.

Source:

- [Three years on from lockdown: has the pandemic changed the way we shop? | Centre for Cities](#)

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Hospitality (Bars, Restaurants and Accommodation) (2/2)

Wider Business Impacts

- Cambridge attracts 8.2 million visitors annually, worth about £849 million to the local economy. The visitor economy also accounts for around 22 per cent of jobs in the city.¹
- A 2021 study by Colliers showed that revenue per establishment when factoring in the occupancy rate (including empty establishments) in 2021 was approximately 45-65% of its pre-COVID levels in 2019.²
- The occupancy rate for business establishments in the Cambridge area in 2021 dropped to 65-70% of pre-pandemic levels.² An already demand-shocked industry may be more heavily exposed to the STZ and there is a potential negative impact on whether hospitality establishments will stay open more easily and continue to provide jobs for students or other low-pay employees.
- The impact on the hospitality sector may affect higher education institutes which are interconnected with the hospitality sector. For example, the University of Cambridge has a significant economic impact on restaurants and hotels through the catering facilities it provides.

Consultation findings

- **Passing the cost of the STZ charge onto customers:** In their written response the **Federation of Small Businesses (FSB)** submitted a response which comprised case studies from businesses that they had engaged with in December 2022, during the consultation period. Almost all of the comments received from the business case studies mentioned that the STZ would result in them having to pass on the cost for the charge (be it for deliveries or services) on to their customers. This increase in price led to concerns that customers would take their business elsewhere, while there was also concern that this, alongside the cost of paying the charge would threaten the long-term viability of their businesses (6 businesses). Two of the businesses commented that they may potentially look to relocate outside of Cambridge in order to avoid the STZ, while one respondent said that they had already done so.

Sources:

1. [£850m Cambridge tourism industry 'won't recover from Covid-19 pandemic for three years'](https://www.cambridgeindependent.co.uk/news/850m-cambridge-tourism-industry-wont-recover-from-covid-19-pandemic-for-three-years/) (cambridgeindependent.co.uk)
2. [Ranking – UK Submarkets - Recovery of the UK Hotel Market](https://www.brandcast.io/news/ranking-uk-submarkets-recovery-of-the-uk-hotel-market) (brandcast.io)

Stage 4. Sectors Most Likely Impacted by the STZ Charge: Wholesale Trade

Summary: This slide provides evidence to support the classification of the wholesale trade sector as being potentially negatively impacted by the STZ compared to other sectors. The industry heavily relies on road use for both inbound supplies and outbound deliveries in the supply chain, and working from home may not be possible for many employees. Research suggests that approximately 60% of wholesale trade consists of high-paying sectors like pharmaceuticals and chemicals. However, the remaining portion of wholesale trade primarily comprises tradespeople and construction, which are not classified as high-paying sectors.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none"> This is a key industry in the supply chain for many sectors Scored intermediate on the capital intensity metric and high on the carbon intensity metric. Overall, this was a relatively high score and a fair representation of wholesale trade which is reliant on supplies in as well as distribution to customers. 	<ul style="list-style-type: none"> Wholesale trade may be less exposed to consumer footfall patterns. Nonetheless, the probably high dependency on supplies and distribution still classified this industry as being “most likely impacted”. 	<ul style="list-style-type: none"> Based on the work-from-home metric, this sector may potentially rely on more employees needing to be on-site. The reduced likelihood for employees to work from home suggests low-paid workers are disproportionately affected. The sector scored intermediate on the median wages metric.

Wider Business Impacts

- This industry is a key step in the supply chain for many retail sectors, suggesting it may be heavily exposed to the STZ charge. The data for Cambridge suggests many of the wholesale business sectors supply wood and other hardware (c. 45% of the wholesale market trade). If wholesalers pass on the burden of the STZ charge to customers, this may have an adverse effect on small businesses in the specialised construction industry (tradespeople).
- Another significant portion of wholesale trade in Cambridge is pharmaceuticals and chemicals, accounting for approximately 60% of wholesale trade. This may feed into the scientific research sectors – a critical industry for Cambridge, among others.
- The decreased congestion owing to the STZ charge may benefit the sector considerably given that this industry relies on road use.

Stage 4. Sector Most Likely Impacted by the STZ Charge: Specialised Construction Activities (Tradespeople)

Summary: This slide provides evidence to support the classification of the specialised construction sector as being potentially more negatively impacted by the STZ compared to other sectors. This industry comprises tradespeople – primarily plumbers, electricians, and other tradespeople in the construction sector in Cambridge, as opposed to large-scale property developments (which are categorised separately). This sector primarily consists of small businesses with an average business size ranging from 2 to 16 employees. The median wage analysis for this industry indicates that wages are ranked as intermediate. These businesses rely on materials from wholesale trade, which necessitates road use and may increase delivery costs due to the new STZ. The specialised construction activities industry scored high on the carbon intensity metric but low on the capital intensity metric. The combination of these scores still suggests a relatively high level of dependency on road transportation for material deliveries and equipment movement. Employees in this industry are likely to travel frequently to and from job sites and suppliers, as suggested by a high-risk score on the working-from-home metric.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none"> Scored high on the carbon intensity but low on the capital intensity metric. Combining the two this was still a relatively high score. This industry tends to rely on the delivery of materials/supplies and businesses are required to frequently use the roads to transport equipment/tools to and from jobs. 	<ul style="list-style-type: none"> Consumer footfall may not be a critical factor to be prioritised for this sector, beyond tradespeople who own business premises that customers frequent. The emphasis is more on tradespeople travelling out to business premises and to visit customers. 	<ul style="list-style-type: none"> Employees are continuously required to use the roads to travel to customers. This is supported by a high WFH metric score. The wages metric was intermediate. However, given that the sector is typified by smaller businesses (avg. business size range 2-16 employees), these businesses and their employees are likely to be disproportionately impacted by the STZ charge.

Wider Business Impacts

The supply chain impacts are such that tradespeople rely on wholesale traders. If wholesale traders incur the STZ charge, some of the charge may be passed onto tradespeople. The data shows that tradespeople in Cambridge are typically micro- to small-sized businesses (avg. size 2-16 employees). They are likely to rely on van transport and may not be able to absorb the cost of the STZ charge, in turn passing this cost to customers. This is corroborated by perspectives shared in the consultation findings.

Consultation findings

- Adjusting delivery timings: Discussions in stakeholder meetings were held over the potential to consolidate delivery timings across Cambridge, which would enable business vehicles to avoid the STZ charge. Despite this suggestion, other businesses (Madingley Mulch and Madmix) stated that this was not possible, as they would be unable to deliver after 7pm when it is dark.

Stage 4. Sector Most Likely Impacted by the STZ Charge: Manufacturing*

Summary: This slide provides evidence to support the classification of the manufacturing sector as being potentially more negatively impacted by the STZ compared to other sectors. The manufacturing sector is closely related to the science and technology sectors, which are vital to the Cambridge economy. Manufacturing is heavily reliant on supplies of raw materials, playing a key role in supply chains. It has a high capital intensity and the carbon intensity risk level varies across different types of manufacturing. Working from home is challenging for manufacturing employees, resulting in a consistently high work-from-home metric. Wage levels vary across manufacturing sectors, with higher pay in the pharmaceuticals sector, and relatively lower pay in sectors like food product manufacturing. Adverse effects on manufacturing may have an impact along the entire supply chain where the cost burden may be passed down to consumers in the form of final goods supplied.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none">• Manufacturing is heavily dependent on the supplies in of raw materials, as well as onward deliveries down the supply chain.• Manufacturing is considered capital intensive across all sub-categories for this analysis. There is variation in carbon intensity of operations depending on the sub-sector of manufacturing, with high carbon intensity in manufacturing of machinery and equipment and food, and low intensity in pharmaceutical products.	<ul style="list-style-type: none">• This industry may not be typically dependent on consumer footfall onto business premises.	<ul style="list-style-type: none">• Employees may typically be unable to work from home, as corroborated by a high work-from-home metric.• The wage metric varied across different types of manufacturing. For example, there are high-paying sectors such as pharmaceuticals (£822 per week), machinery and equipment manufacturing (£740), and computer, electronic and optical products (£629); compared to the lower-paying food product manufacturing sector (£522).

Wider Business Impacts

Large parts of the manufacturing sector are likely intrinsic to other key sectors which underpin the economy of Cambridge. The potential adverse impacts of the STZ charge on the manufacturing industry may be passed down the supply chain.

* In this analysis, this particular category of 'manufacturing' refers to: machinery and equipment; basic pharmaceutical products; computer; electronic and optical products; electrical equipment; food products; of other non-metallic mineral products.

Stage 4. Sector Most Likely Impacted by the STZ Charge: Logistics (1/2)

Summary: The logistics sector is integral to all other sectors that have been categorised as being potentially more negatively impacted by the proposed STZ charge. While it does not feature formally in the sector shortlisting, its integral nature means that it has the potential to be significantly impacted by the proposed STZ charge. Potential negative impacts may arise from the sector relying heavily on road transportation in the transportation of goods in and around Cambridge, and hence incurring the charge. On the other hand, industries such as logistics with constant road use may also benefit from reduced congestion over time – especially as key interventions in the Making Connections programme progress and improve alternative transportation, ultimately improving operational efficiency.

Due to the nature of the work, employees are more likely to be needed on site, which is corroborated by a high work-from-home metric. Concerns from the consultation include about the ability to deliver to key sectors such as hospitals, life sciences, and financial services. Furthermore, logistics operators argue that goods vehicles are charged more despite private cars contributing more to congestion. AICES International Express claims that HGVs contribute only 2% to traffic flows, which is broadly in line with traffic monitoring data for 2019.¹ These concerns are being considered in the various options for LGV and HGV daily charges.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none">• The sector is heavily reliant on road use for the transportation of goods.• Consultation findings also cite concerns that charges may be levied on refuse collection vehicles in addition to deliveries, further adding to costs.	<ul style="list-style-type: none">• This industry is not typically dependent on consumer footfall.	<ul style="list-style-type: none">• Employees are less likely to work from home, and the work-from-home metric is consistent with this. Given this, and the assumption that median wages may resemble that of the postal and courier service (i.e. intermediate), it is potentially low-paid employees that may be most impacted by the STZ charge.

Source:

1. <https://cambridgeshireinsight.org.uk/wp-content/uploads/2022/09/Traffic-Monitoring-Report-2019.pdf>

Stage 4. Sector Most Likely Impacted by the STZ Charge: Logistics (2/2)

Wider Business Impacts





- The logistics sector is critical to the function of many different business sectors. The nature of the business naturally implies that logistics serves a wide range of other industries, and there is potential that the some of the cost of the STZ charge may be passed onto consumers via industries such as manufacturing, wholesale trade, and retail trade – all of which are reliant on distribution.
- Industries that rely heavily on road travel, however, may benefit from the reduced congestion arising from the Making Connections programme, as this will decrease journey times and increase the efficiency of business operations.


Consultation Findings


- The logistics sector expressed concerns regarding deliveries to key sectors such as hospitals, life sciences, and financial services.
- **Passing on costs to the customer:** Logistics UK noted that they understand the overall aims of the scheme but raised concern over the “unintended consequences” of the STZ on deliveries and businesses, with potential rising costs being passed onto the consumer. From the customer perspective, Cambridge Consultants notes: “Delivery drivers, skip removal lorries and all manner of business partners are going to see their costs increase because they need to travel a few hundred metres from the A14 to visit Cambridge Consultants. None of these partners will enter the city, but all will have to pass on their costs to us somehow.”
- **Private cars and goods vehicles:** There are concerns from the logistics operators over the charging structure imposed on goods vehicles compared to private cars. The argument is that private cars contribute more to congestion yet goods vehicles may have a larger daily charge. These factors are being considered in the development of options and phasing of the STZ charge.
- **Modal shift:** Key actors in Cambridge’s logistics sector noted that whilst many passengers car journeys could be “re-moded” to public transport and benefit from bus network investment, no such option exists for freight nor delivery vehicles, apart from the option to discount electric vehicles. In stakeholder meetings Logistics UK raised general traffic displacement concerns, which they noted could lead to added journey times, more vehicles using the roads, which would add costs to operators and congestion in the area. Again, these factors are being taken in consideration in the charging options and phasing of the STZ charge.
- **Timing of deliveries:** AICES International Express members stated that “express operations are essential to keeping the city’s businesses and consumers connected to vital services and because of the time critical nature of these deliveries, they cannot be retimed”. This is being considered in the options for the timing of chargeable hours.

Stage 4. Approach And Methodology: Analysis (“Less Likely Impacted” Classification)

Below are the industries classified as “less likely impacted” using both our quantitative and qualitative analysis. Notice there was missing data for wages for some of the recreational, creative arts, entertainment, and sports service-based industries; in light of this, plus the exposure to footfall, these categories were reclassified from “least likely” to “less likely” impacted by the STZ charge. In the slides that follow, deep dive analysis is conducted on a selection of industries categorised as “less likely impacted” by the STZ charge.

SIC	SIC description	Capital intensity	Carbon intensity	Wage metric	WFH capability
85	Education	0.02	0.10	2.08	4.14
58	Publishing activities 	0.22	0.03	1.41	0.81
96	Other personal service activities	0.08	0.40	3.19	4.30
68	Real estate activities	0.29	0.51	2.19	3.78
77	Rental and leasing activities	0.51	2.02	1.42	3.78
91	Libraries; archives; museums and other cultural activities 	0.03	0.04	-	4.30
81	Services to buildings and landscape activities	0.51	0.69	3.14	4.14
87	Residential care activities	0.01	0.55	2.76	4.30
90	Creative; arts and entertainment activities 	0.03	0.25	-	4.30
80	Security and investigation activities	0.51	0.45	1.68	4.14
41	Construction of buildings	0.27	2.57	1.03	4.14
93	Sports activities and amusement and recreation activities 	0.03	0.65	-	4.30

 Denotes an upgrade was made based on our qualitative adjustments

 Denotes a downgrade was made based on our qualitative adjustments.

NB: where a “-” is shown there was no available data for this industry, WSP accounts for this in the qualitative adjustments.

Stage 4. Sector Less Likely Impacted by the STZ Charge: Education (1/2)

Summary: This slide provides evidence to support the classification of the education sector as being relatively less impacted by the STZ compared to other sectors such as retail and wholesale trade, hospitality, healthcare and related research. The education spans primary and secondary education through to first degree and postgraduate education. These education sub-sectors are likely to be differently impacted by the proposed STZ charge. Differences are likely to be seen in terms of how much median wages can absorb the STZ charge if employees need to travel in by car; and the extent to which customer footfall by car occurs.

There are also potential supply chain impacts arising from the STZ charge owing to universities, in particular, interfacing with other potentially highly-impacted sectors such as retail and hospitality. Furthermore, institutions such as the University of Cambridge provide a fertile ground for business start-ups and spin-out companies. Views on the STZ vary among institutions, with concerns about staff retention and suggestions for higher car charges. Coach hire companies anticipate limitations on educational trips due to the STZ charge and rising costs of living.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none">• It is likely that the education sector relies on supplies onto their premises. This may be more prevalent with higher education institutions, such as the University of Cambridge, that rely on laboratory, catering and other supplies for multiple departments and colleges.• While supplies in should indicate high levels of carbon and capital intensity, the data shows both of these measures as scoring low. This may be because public sector industries are not well-captured by the capital intensity metric as it is based on turnover.	<ul style="list-style-type: none">• Consumers in this sector are students. Higher education students are more likely to use active travel methods such as travelling on foot or by bicycle, especially if they study and live in the city centre (e.g. in University of Cambridge colleges). An additional point is that even those students who do own and drive a car may need special permission to park on University premises.• The cost of the STZ charge may fall on parents of younger students at primary and secondary school level who may be less able to rely on active travel.	<ul style="list-style-type: none">• The work-from-home risk metric was high for education, which is likely consistent with the need to be in school classrooms, lecture theatres, and laboratories, for example.• While the wage metric scores intermediate, it is worth noting that there is likely a substantial amount of variation in wages between, for example, University professors and lecturers and primary and secondary school teachers. The propensity to absorb the cost of the STZ charge will therefore also be varied.

Stage 4. Sector Less Likely Impacted by the STZ Charge: Education (2/2)

Wider Business Impacts

- A 2023 report by London Economics estimates the University of Cambridge creates a net economic impact of approximately £29.8 billion, reinforcing its position as a major contributor to the economy of the region and the UK as a whole.¹ The impacts on the education sector (in particular first-degree higher education institutions such as University of Cambridge), are likely to be less severe than for other sectors (e.g. such as retail trade).
- The University supports more than 86,000 jobs across the UK, of which 52,000 jobs are in the East of England. In terms of sector, the University of Cambridge's activities resulted in particularly large impacts within the professional and support activities sector (£8.9 billion, 37%), the government, health, and education sector (£3.3 billion, 14%), the distribution, transport, hotel, and restaurant sector (£3.3 billion, 14%), and the production sector (£3.1 billion, 13%).¹ It is therefore possible that there will supply chain impacts for any sectors supplying goods and services to the University as a result of the proposed charge.
- The University of Cambridge generates significant economic activity in Cambridge, contributing to many other industries and helping fund many start-ups. For example, £23bn of the net economic impact generated by the University of Cambridge comes from helping nearly 400 start-ups and spin-out companies associated with the University. If the STZ has a significant negative impact on the higher education institutions, this may have a knock-on effect by hampering new business growth.¹
- Primary and secondary school students from low-income households with no other means of transport may be subject to an additional cost of transportation through the STZ charge which may result in adverse socioeconomic effects. This may be mitigated through public transport improvements being proposed in the Making Connections programme.

Consultation Findings

- Institutions within the University of Cambridge provided mixed views on the STZ charge, on the one hand citing potential future issues with staff retention owing to the proposed STZ; versus the Student's Union suggesting the daily charge for cars could be higher to discourage car use. Consultations with Anglia Ruskin University suggest some support for the STZ daily charge, and of bus improvements.
- Coach hire companies that facilitate educational trips, such as Private coach hire C&C Coach Services Ltd, suggest that, in addition to already rising costs of living, the daily STZ charge would stop schools from running swimming lessons and school trips to museums.

Source:

1. [The Economic Impact of the University of Cambridge](#) – London Economics (2023)

Stage 4. Approach And Methodology: Analysis (“Least Likely Impacted” Classification)

Below are the industries classified as relatively “least likely impacted” by the STZ charge. These industries are identified as being relatively less significantly impacted by the STZ compared to other sectors in Cambridge, such as those rates “less likely” (e.g. education) or “most likely” (e.g. retail, hospitality-related sectors). Note there are some downgrades including employment activities; the working-from home metric is not representative of other office-based industries; SIC 74 was downgraded to match other professional and scientific industries; land transport and transport via pipelines, adjusted from “most likely” to “least likely” as this was primarily rail and transport n.e.c. However, there are other business sectors within this industry such as taxis that are would maintain a “most likely” classification. In the slides that follow, a deep dive analysis is conducted on a selection of industries categorised as “least likely impacted” by the STZ charge compared to other industries.

SIC	SIC description	Capital intensity	Carbon intensity	Wage metric	WFH capability
72	Scientific research and development	0.98	0.03	0.24	4.14
71	Architectural and engineering activities; technical testing and analysis	0.98	0.08	1.21	0.81
62	Computer programming; consultancy and related activities	0.22	0.05	0.33	0.00
78	Employment activities ↓	0.51	0.07	3.10	3.78
69	Legal and accounting activities	0.98	0.09	2.07	0.00
70	Activities of head offices; management consultancy activities	0.98	0.32	1.50	0.74
84	Public administration and defence; compulsory social security	0.00	1.45	1.34	1.40
74	Other professional; scientific and technical activities ↓	0.98	0.13	1.86	4.14
94	Activities of membership organisations ↓	0.08	0.18	2.28	4.30
61	Telecommunications	0.22	0.35	1.21	4.14
66	Activities auxiliary to financial services and insurance activities	0.28	0.16	1.91	0.81
82	Office administrative; office support and other business support activities	0.51	0.52	2.34	1.40
49	Land transport and transport via pipelines ↓	5.00	5.00	1.49	4.14
64	Financial service activities; except insurance and pension funding	0.28	0.15	1.67	0.00
79	Travel agency; tour operator and other reservation service and related activities	0.51	0.49	0.91	3.78
60	Programming and broadcasting activities	0.22	0.2	-	4.14
42	Civil engineering	0.27	5.00	0.51	0.81

↑ Denotes an upgrade was made based on our qualitative adjustments

↓ Denotes a downgrade was made based on our qualitative adjustments.

NB: where a “-” is shown there was no available data for this industry, WSP accounts for this in the qualitative adjustments.

Stage 4. Sector Least Likely Impacted by the STZ Charge: Research And Hi-tech (1/2)

Summary: This slide provides evidence to support the classification of the research and hi-tech sector as being relatively less (the "least") impacted by the STZ compared to other sectors such as education (rated "less likely impacted") and retail and wholesale trade, hospitality, healthcare and related research (rated "most likely impacted"). The research and hi-tech sector is crucial to the Cambridge economy, with numerous firms and employees generating significant revenue. While the scientific research sector relies on supplies, it is more likely that science-oriented businesses may be able to absorb the cost of the STZ charge. Furthermore, although the work-from-home metric suggests this is a sector where employees tend to work onsite, higher-paid employees in this sector may have more capacity to absorb the cost of the charge, and/or may have more flexibility to work from home when needed. Concerns raised during the consultation process related to increased journey times for staff accessing facilities at Cambridge Science Park via public transport and Park & Ride options.

Business dependencies and exposure to the STZ

Supplies in / deliveries out / distribution	Consumer footfall / customers travelling to the business	Employees travelling to work
<ul style="list-style-type: none"> The scientific research side of the sector will likely still be reliant on supplies in but may have the capacity to absorb the cost of the STZ charge, especially among more profitable science-oriented businesses. Scored intermediate on the capital intensity and low on the carbon intensity metric. 	<ul style="list-style-type: none"> Consumer footfall does not typically apply to this business area in the same way as for retail or hospitality. 	<ul style="list-style-type: none"> This sector scored high risk on the working-from-home metric as employees are typically needed onsite. There is, however, a degree of flexibility for some employees to work from home. However, the median wage metric corroborates the fact that higher-paid employees may have more capacity to absorb the cost of the STZ charge compared to employees in lower-paid sectors.

Wider Business Impacts

- The Cambridge Life Science Cluster comprises 627 firms and 23,000 employees. It generates £7.4bn annual turnover, which is a significant proportion of Cambridge's economy and workforce.¹ Indeed, the Life Sciences Cluster in the Cambridge city region experienced employment growth of 10.3% in 2020/21, followed by 6.9% in the Information Technology and Telecommunications sector. These rates contrast sharply with a picture of almost no net employment growth across all non-KI industries (0.2%) during the same period.¹

Stage 4. Sector Least Likely Impacted by the STZ Charge: Research And Hi-tech (2/2)

Wider Business Impacts (cont'd)

- Cambridge Science Park is home to over 100 technology companies, over 30 life sciences companies, and business support services, among others. Taken together, the Park hosts approximately 7,230 employees across over 130 companies, about 60% of which originated in Cambridge.² Some of these business sectors are highly integrated with the University. Therefore, the STZ charge has the potential to impact employees in this sector. However, the sector is characterised as being high-paying – for example, 2020 data shows that the median salary for digital tech roles within the UK was £39,000 while the average advertised salary for open IT positions in Cambridge was £51,225.³

Consultation Findings

- **Increased journey times:** Several organisations with facilities at Cambridge Science Park, such as Cambridge Consultants, raised concerns that reaching their sites via public transport would lead to significantly longer journey times for staff of between two and three times, “no matter how optimistic one is about public transport availability. Other respondents cite that, to access their site by public transport, someone from outside the STZ would likely need to briefly travel away from Cambridge to reach a Park and Ride site, only to come back in.

Sources:

1. [Science and innovation sectors in Cambridge drive growth in regional employment despite pandemic turbulence - Cambridge Ahead](#)
2. [About Cambridge Science Park](#)
3. [Cambridge tech salaries some of the highest in the UK as demand for skilled workers surges | Cambridge Network](#)

- **Disproportionate impacts on staff:** Some organisations, such as Cambridge Consultants, suggested that the STZ charge could encourage staff to return to working from home, with subsequent impacts on mental health, company loyalty and staff development. However, they also cite that the STZ charge would also have a disproportionate impact on employees who do not have the flexibility to work from home: “Many of our engineers and project managers will be able to successfully work from home when they need to. Our Executive Assistants, receptionists, workshop staff, lab technicians, building services staff, cleaners and kitchen staff have to come to the office every day to carry out their roles, The STZ charge is a particularly brutal tax on the lower paid.”
- **Staff retention and recruitment decisions:** Cambridge Consultants cites that their current and future employees will factor into their decision-making whether they are prepared to accept the longer and more inconvenient travel times, or pay the additional £1175 travel costs a year, or change their office/home based working patterns to offset these costs and inconveniences. Cambridge Consultants expects that it will be harder to recruit and retain staff when some of their major competitors for the same talent have premises either outside of the STZ or in the city centre where there are superior transport links, people can cycle or walk to work, and where they will experience many of the direct benefits of these proposals, such as better cycle ways and attractive walking routes within the city centre. Similarly, 31/49 of Cambridge Ahead’s responded to the consultation survey, of which 73% strongly supported the package of proposals. However, Specific concerns were expressed around the impact of the charge on business’ abilities to retrain and attract talent and the potential of a charge acting as a disincentive for businesses to locate in Cambridge. Others felt that including areas with large numbers of start-ups or small businesses in the zone would encourage them to move to a working from home model, potentially impacting innovation and collaboration.

Stage 4. Recap of Sectors Assessed As “Most”, “Less” or “Least” Likely Impacted by the STZ

The table provides a summary of the sectors rated as potentially more, less, and least likely to be negatively impacted by the STZ charge. This assessment is based on quantitative and qualitative analysis, and professional judgement.

Most likely	Less likely	Least likely
Human health activities	Education	Scientific research and development
Retail trade; except of motor vehicles and motorcycles	Publishing activities	Architectural and engineering activities; technical testing and analysis
Food and beverage service activities	Other personal service activities	Computer programming; consultancy and related activities
Manufacture of machinery and equipment n.e.c.	Real estate activities	Employment activities
Social work activities without accommodation	Rental and leasing activities	Legal and accounting activities
Accommodation	Libraries; archives; museums and other cultural activities	Activities of head offices; management consultancy activities
Manufacture of basic pharmaceutical products	Services to buildings and landscape activities	Public administration and defence; compulsory social security
Manufacture of computer; electronic and optical products	Residential care activities	Other professional; scientific and technical activities
Services to buildings and landscape activities	Creative; arts and entertainment activities	Activities of membership organisations
Wholesale trade; except of motor vehicles and motorcycles	Security and investigation activities	Telecommunications
Postal and courier activities	Construction of buildings	Activities auxiliary to financial services and insurance activities
Wholesale and retail trade and repair of motor vehicles and motorcycles	Sports activities and amusement and recreation activities	Office administrative; office support and other business support activities
Manufacture of electrical equipment		Land transport and transport via pipelines
Waste collection; treatment and disposal activities; materials recovery		Financial service activities; except insurance and pension funding
Specialised construction activities		Travel agency; tour operator and other reservation service and related activities
Manufacture of food products		Programming and broadcasting activities
Manufacture of other non-metallic mineral products		Civil engineering

Stage 4. Analysis of Key Sectors Potentially Impacted by the STZ (1/4)

Industry and assessment	Potential negative impacts	Potential positive impacts
<p>Retail trade “MOST LIKELY”</p>	<ul style="list-style-type: none"> • Disproportionate impact on smaller businesses. • Reliance on incoming supplies via LGVs and HGVs • Home delivery charges may increase for consumers. • Short-term impact on low-skilled, low-paid employees commuting by car. • Consultations: concerns about staff recruitment and retention, charging hours, impact on edge-of-town retail parks. • Additional wage bill to staff premises for night-time economy. • Continued switching to online shopping may not be favourable to some businesses. 	<ul style="list-style-type: none"> • Continued switching to online shopping (37% online in Cambridge in Q3 2022, compared to 27% for the UK as a whole), in particular within the food & beverage, clothing, and sports equipment categories – may be beneficial for some, but not necessarily all, businesses. • Over time, consumer shopping patterns may shift to outside the charging periods as demonstrated by Gothenburg and Stockholm’s congestion charges. In Gothenburg, IKEA reported 13% reduction of customer footfall during the week and 12% increase at weekends. Retailers also expanded their opening hours on weekends. Customers also adjusted their trip patterns due to less willingness to pay the charge for smaller spontaneous purchases compared to planned, more expensive ones – in the Cambridge context, would lead to reduced congestion and reduced travel times. • In the long term, reduced traffic and journey times, potentially increasing the number of deliveries per trip for LGV/HGVs.
<p>Hospitality (bars, restaurants, accommodation) “MOST LIKELY”</p>	<ul style="list-style-type: none"> • Disproportionate impact on smaller, independent bars, restaurants and hotels. • Reliance on deliveries: LGV/HGVs may pass on the cost to businesses and hence consumers. • Reliance on customer footfall: Short-term disproportionate impact on customers relying on car travel. • Disproportionate impact on employees who rely on cars and work shift patterns coinciding with STZ operating hours. • Potential impact on higher education institutes (e.g. University of Cambridge) connected with the hospitality sector, e.g. catering. 	<ul style="list-style-type: none"> • Cambridge attracts 8.2 million visitors annually, worth about £0.8 billion to the local economy. Improved transport networks through the Making Connections Programme may contribute to a more sustainable hospitality sector long term. • Improved bus networks with longer operating hours, as well as reduced time spent in traffic, may sustain and grow the tourism sector further. • Over time, consumer shopping patterns may shift to outside the charging periods as demonstrated by Gothenburg and Stockholm’s congestion charges.

Stage 4. Analysis of Key Sectors Potentially Impacted by the STZ (2/4)

Industry and assessment	Potential negative impacts	Potential positive impacts
<p>Human health & social work activities “MOST LIKELY”</p>	<ul style="list-style-type: none"> Impact on supply chains related to CBC (which generates circa 31,000 FTE jobs across the UK as a whole). Disproportionate impact on patients, visitors and lower-paid onsite healthcare workers and residential care workers who rely on car use. Consultations: concerns about impact on staff, patients/visitors, shift workers, and admin burden of reimbursements. 	<ul style="list-style-type: none"> High-paid, high-skill workers in private healthcare and research who rely on cars may be more able to absorb STZ charge compared to lower-paid workers relying on cars (e.g. nurses). Perceived clustering and agglomeration benefits from the wider biomedical research industry on CBC may offset any potential negative impacts. In the long term, a more integrated and sustainable transport network may disproportionately impact lower-paid workers, and those relying on cars due to nightshifts.
<p>Wholesale trade “MOST LIKELY”</p>	<ul style="list-style-type: none"> Heavy reliance on road use for supplies in/ deliveries out. Disproportionate impact on likely low-paid workers who cannot work from home. Disproportionate impact on tradespeople and construction (40% of wholesale trade composition) that are not classified as high-paying sectors. 	<ul style="list-style-type: none"> High-paying sectors like pharmaceuticals and chemicals (approx. 60% of wholesale trade may be able to absorb the STZ charge more easily than others. Less exposure to consumer footfall patterns. Decreased congestion may reduce travel times – operational efficiency.

Stage 4. Analysis of Key Sectors Potentially Impacted by the STZ (3/4)

Industry and assessment	Potential negative impacts	Potential positive impacts
Specialised construction “MOST LIKELY”	<ul style="list-style-type: none">• Reliance on vans and roads to transport, deliver and receive materials and equipment, and provide customer service.• Disproportionate impact on tradespeople in Cambridge who are typically micro- to small-sized businesses (avg. size 2-16 employees).• Inability to absorb the charge may mean passing this cost to customers.	<ul style="list-style-type: none">• Consumer footfall may not be a critical factor to be prioritised for this sector, beyond tradespeople who own business premises that customers frequent.
Manufacturing* “MOST LIKELY”	<ul style="list-style-type: none">• Heavy reliance on raw material supplies, playing a key role in supply chains.• Burden of business cost may be passed down to consumers in the form of final goods supplied.• Homeworking is less likely (high WFH metric) and disproportionately impacts employees reliant on car use.• Disproportionate impact on lower-paid employees in food products manufacturing	<ul style="list-style-type: none">• Less negative impact on higher-paid employees in pharmaceuticals, machinery and equipment manufacturing, and computer, electronic and optical products.• Greater opportunities for manufacturing workers to commute in by alternative transport modes.

* This particular category of ‘manufacturing’ refers to: machinery and equipment; basic pharmaceutical products; computer; electronic and optical products; electrical equipment; food products; of other non-metallic mineral products.

Stage 4. Analysis of Key Sectors Potentially Impacted by the STZ (4/4)

Industry and assessment	Potential negative impacts	Potential positive impacts
Logistics “MOST LIKELY”	<ul style="list-style-type: none"> Logistics companies constrained by express delivery operations, cannot be re-timed. Heavy reliance on road transportation in goods deliveries. Homeworking less likely (high WFH metric), impacts on car users. Potentially low-paid employees may feel the burden disproportionately. Consultations: concerns about deliveries to key sectors (hospitals, life sciences, and financial services). Goods vehicles being charged more than private cars and earlier in the phasing structure with no real alternative mode of transport. 	<ul style="list-style-type: none"> Industry is not typically dependent on consumer footfall onto business premises. In the long-term, employees will have more modes of transport, reducing car reliance, and hence shorter journey times. Reduced traffic congestion over the long term through Making Connections may improve operational efficiency and increase the number of deliveries per trip. Potential for consolidation centres to be considered as part of the Freight Strategy
Education “LESS LIKELY”	<ul style="list-style-type: none"> Supply chain impacts owing to Universities and colleges interfacing with other potentially highly-impacted sectors, e.g. retail, hospitality, as well as hampering business growth of associated start-ups. Burden may disproportionately fall on parents of primary and secondary school children who are less able to rely on active travel. Disproportionate impact on staff who rely on cars and need to be onsite. Consultations: Coach hire companies anticipate limitations on educational trips due to the STZ charge and rising costs of living. 	<ul style="list-style-type: none"> Higher education (HE) students more likely to use active travel, especially if they study and live in the city centre (e.g. in University of Cambridge colleges). Consultations: Varied views from concern about staff retention, through to suggestions of a higher STZ charge for cars. University colleges clustered in the centre of Cambridge, therefore reduced vehicle use will reduce traffic congestion and hence journey times, and increase connectivity in and out of the city centre.
Research and hi-tech sector “LEAST LIKELY”	<ul style="list-style-type: none"> Cambridge Science Park: Highly integrated with University of Cambridge, therefore negative impacts on the University may spill over to businesses. Consultations: concerns about increased journey times for staff accessing facilities at Cambridge Science Park via public transport and Park & Ride options; and risk of staff returning to homeworking. 	<ul style="list-style-type: none"> While the scientific research sector relies on supplies, these businesses may be able to absorb the cost of the STZ charge. Although WFH metric suggests employees tend to work onsite, higher-paid employees may have more capacity to absorb the cost of the charge. Employees overall may have more flexibility for homeworking. Consumer footfall does not typically apply in the same way as for other sectors, e.g. retail, hospitality.

Examining Key Sectors Through the Lens of Proposed STZ Options (1/10)

This section aims to assess the implications of the proposed charging structure options (consultations, scenarios and do minimum) on each of the selected sectors highlighted as being potentially impacted by the STZ charge. To summarise, the key sector being assessed against the options are:

Most likely	Less likely	Least likely
Retail trade	Education	Scientific research and technology
Human health & social work		
Hospitality		
Wholesale trade		
Specialised construction		
Manufacturing (selected categories)		
Logistics		
Manufacture of computer; electronic and optical products		

In the slides that follow, each of the above key sectors are analysed and given an 'X' rating in terms of the extent to which they could potentially be positively/adversely impacted by the different proposed charging structure options. Justifications are based on findings from the benchmark examples and business impacts analyses.

Examining Key Sectors Through the Lens of Proposed STZ Options (2/10)

The proposed charging structure options are as follows. The options that are most pertinent to businesses and will therefore be analysed are: the consultation scheme, Scenario 1A (the impact of the SME discount), Scenario 3, and the Do Minimum scenario.

Scenario	Vehicle	Charge per Vehicle	Time	Ramp up	Additional exemptions
Consultation scheme	Car	£5	7am-7pm weekdays	AM only 2026	-
	LGV	£10			
	HGV	£50			
Scenario 1	Car	£5	AM/PM weekdays	No - starts 2027	Hospitals (patients and visitors) *LGVs that qualify as small vans will be charged £5 (£10 otherwise)
	LGV	£10*			
	HGV	£50			
Scenario 1A (recommended option)	Car	£5	AM/PM weekdays	No - starts 2027	**LGVs that qualify for the SME business discount will be charged at £5 (£10 otherwise) ***HGVs that qualify for the SME business discount will be charged at £25 (£50 otherwise) 50 free days indefinitely
	LGV	£10**			
	HGV	£50***			
Scenario 2	Car	£5	7am-7pm weekdays	AM only 2026	180 Free days 2026, 2027 100 Free days 2028 50 Free days 2029
	LGV	£10			
	HGV	£50			
Scenario 3	Car	£3	AM/PM weekdays	No - starts 2027	Hospitals (patients and visitors) 100 Free days 2027 100 Free days 2028
	LGV	£10			
	HGV	£50			
Do Minimum					

It should be noted that, regarding tax deductibility, employers covering the costs of congestion charges for their employees have certain tax, National Insurance and reporting obligations. Different rules will apply depending on whether or not the employee is travelling for business purposes, whether or not they use a company vehicle or their own vehicle, and who pays the congestion charge. Where the nature of the journey is business travel (using a company or private vehicle) and the employer pays the charge directly or reimburses the employee for the charge incurred, it is anticipated that the STZ charge is tax deductible (the employer does not pay tax or National Insurance on the charge).

Examining Key Sectors Through the Lens of Proposed STZ Options (3/10)

Industry	Consultation scheme	Scenario 1A	Scenario 2	Scenario 3
	X X X	X	X X X	X X
Retail trade "MOST LIKELY"	<ul style="list-style-type: none"> • Footfall and sales may be initially impacted, but may adjust over time. • Possible staff retention problems among car-reliant commuters. • Possible negative impacts on deliveries. • Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> • Footfall and sales may be impacted at peak times, but spending and working patterns may adapt over time. • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. • Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. • Free days beneficial for resident employees and customers who rely on car commuting. 	<ul style="list-style-type: none"> • Footfall and sales may be initially impacted, but may adjust over time. • Possible staff retention problems among car-reliant commuters. • Possible negative impacts on deliveries. • Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. • Tapered free days beneficial for resident employees and customers who rely on car commuting. 	<ul style="list-style-type: none"> • Footfall and sales may be impacted at peak times, but may adjust over time. • Car commuters may adjust travel times, also paying lower £3 charge during peak hours. • Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. • Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.
	X X X	X	X X X	X X
Hospitality "MOST LIKELY"	<ul style="list-style-type: none"> • Footfall and sales may be initially impacted, but may adjust over time. • Possible staff retention problems among car-reliant commuters. • Possible negative impacts on deliveries. • Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> • Footfall and sales may be impacted at peak times, but spending and working patterns may adapt over time. • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. • Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. • Free days beneficial for resident employees and customers who rely on car commuting. 	<ul style="list-style-type: none"> • Footfall and sales may be initially impacted, but may adjust over time. • Possible staff retention problems among car-reliant commuters. • Possible negative impacts on deliveries. • Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. • Tapered free days beneficial for resident employees and customers who rely on car commuting. 	<ul style="list-style-type: none"> • Footfall and sales may be impacted at peak times, but may adjust over time. • Car commuters may adjust travel times, also paying lower £3 charge during pak hours. • Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. • Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.

xxx = potentially larger negative impact, xx= potential negative impact, x= potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (4/10)

Industry	Consultation scheme	Scenario 1A	Scenario 2	Scenario 3
	XXX	X	XXX	XX
Human health & social work “MOST LIKELY”	<ul style="list-style-type: none"> Administrative burden of reimbursements for NHS and patients. Potential impacts on supply chains. Potential impact on low-paid onsite staff. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> Car commuters may adjust travel times. Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees and patients/visitors who rely on car commuting. 	<ul style="list-style-type: none"> Administrative burden of reimbursements for NHS and patients. Potential impacts on supply chains. Potential impact on low-paid onsite staff. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Tapered free days beneficial for resident employees and patient/visitors who rely on car commuting. 	<ul style="list-style-type: none"> Car commuters may adjust travel times, also paying lower £3 charge during peak hours. Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (5/10)

Industry	Scenario 1
Retail trade “MOST LIKELY”	<p style="text-align: center;">X X</p> <ul style="list-style-type: none"> • Sales and footfall may be impacted at peak times. • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.
Hospitality “MOST LIKELY”	<p style="text-align: center;">X X</p> <ul style="list-style-type: none"> • Sales and footfall may be impacted at peak times. • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.
Human health & social work “MOST LIKELY”	<p style="text-align: center;">X X</p> <ul style="list-style-type: none"> • 100% discount beneficial for hospital patients and visitors only. • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (6/10)

Industry	Consultation scheme	Scenario 1A	Scenario 2	Scenario 3
Wholesale trade “MOST LIKELY”	<p style="text-align: center;">X X X</p> <ul style="list-style-type: none"> LGV and HGV deliveries potentially impacted. Employees charged for daily car commute to business premises. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<p style="text-align: center;">X</p> <ul style="list-style-type: none"> Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Car commuters may adjust travel times. Free days beneficial for resident employees who rely on car commuting. 	<p style="text-align: center;">X X X</p> <ul style="list-style-type: none"> LGV and HGV deliveries potentially impacted. Employees charged for daily car commute to business premises. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Tapered free days beneficial for resident employees who rely on car commuting. 	<p style="text-align: center;">X X</p> <ul style="list-style-type: none"> Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.
Specialised construction “MOST LIKELY”	<p style="text-align: center;">X X X</p> <ul style="list-style-type: none"> Possible negative impacts on supplies/deliveries. Smaller businesses disproportionately impacted. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<p style="text-align: center;">X</p> <ul style="list-style-type: none"> Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Car commuters may adjust travel times. Free days beneficial for resident employees who rely on car commuting. 	<p style="text-align: center;">X X X</p> <ul style="list-style-type: none"> Possible negative impacts on deliveries. Smaller businesses disproportionately impacted. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Tapered free days beneficial for resident employees who rely on car commuting. 	<p style="text-align: center;">X X</p> <ul style="list-style-type: none"> Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.

'Manufacturing' refers to: machinery and equipment; basic pharmaceutical products; computer; electronic and optical products; electrical equipment; food products; of other non-metallic mineral products.
 xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (7/10)

Industry	Consultation scheme	Scenario 1A	Scenario 2	Scenario 3
	X X X	X	X X X	X X
Manufacturing (selected categories) "MOST LIKELY"	<ul style="list-style-type: none"> Possible negative impacts on supplies/ deliveries. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Car commuters may adjust travel times. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Possible negative impacts on supplies/ deliveries. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Tapered free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Possible negative impacts on supplies/ deliveries. Car commuters may adjust travel times, also paying lower £3 charge during peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days in 2027 and 2028 beneficial for resident employees and customers who rely on car commuting.
	X X X	X	X X X	X X
Logistics "MOST LIKELY"	<ul style="list-style-type: none"> Possible negative impacts on supplies/ deliveries. Smaller businesses disproportionately impacted. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Possible negative impacts on deliveries. Smaller businesses disproportionately impacted. Possible impacts on car-reliant commuters. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting.

'Manufacturing' refers to: machinery and equipment; basic pharmaceutical products; computer; electronic and optical products; electrical equipment; food products; of other non-metallic mineral products.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (8/10)

Industry	Scenario 1
X X	
Wholesale trade “MOST LIKELY”	<ul style="list-style-type: none"> • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times. • Car commuters may adjust travel times.
X X	
Specialised construction “MOST LIKELY”	<ul style="list-style-type: none"> • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.
X X	
Manufacturing (selected categories) “MOST LIKELY”	<ul style="list-style-type: none"> • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.
X X	
Logistics “MOST LIKELY”	<ul style="list-style-type: none"> • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times. • Car commuters may adjust travel times.

'Manufacturing' refers to: machinery and equipment; basic pharmaceutical products; computer; electronic and optical products; electrical equipment; food products; of other non-metallic mineral products.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (9/10)

Industry	Base case	Scenario 1A	Scenario 2	Scenario 3
	X X X	X	X X X	X
Education “LESS LIKELY”	<ul style="list-style-type: none"> Disproportionate impact on people travelling to educational institutions. Possible staff retention problems among car-reliant commuters. Possible negative impacts on supplies/ deliveries. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting. Commuters related to the education sector may be less likely to be able to adjust travelling times to outside of peak hours compared to other sectors. 	<ul style="list-style-type: none"> Disproportionate impact on people travelling to educational institutions. Possible staff retention problems among car-reliant commuters. Possible negative impacts on supplies/ deliveries. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Free Day benefits for STZ-resident workers/students. Car commuters may adjust travel times, also benefit from lower £3 charge. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting. Commuters related to the education sector may be less likely to be able to adjust travelling times to outside of peak hours compared to other sectors.
	X X	X	X X	X
Scientific research & technology “LEAST LIKELY”	<ul style="list-style-type: none"> Possible impacts on car-reliant commuters, potentially mitigated through work compensation packages. Possible negative impacts on supplies/ deliveries. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. 	<ul style="list-style-type: none"> Car commuters may adjust travel times. Reduced charge beneficial for LGVs and HGVs who pay to travel in peak hours. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Possible impacts on car-reliant commuters, potentially mitigated through work compensation packages. Possible negative impacts on supplies/ deliveries. Business impacts may be attenuated by AM peak only hours in 2026, before all-day charge imposed from 2027 onwards. Free days beneficial for resident employees who rely on car commuting. 	<ul style="list-style-type: none"> Car commuters may adjust travel times, also benefit from lower £3 charge. Beneficial for LGV/HGVs who adjust delivery times to inter-peak periods. Free days beneficial for resident employees who rely on car commuting.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Examining Key Sectors Through the Lens of Proposed STZ Options (10/10)

Industry	Scenario 1
<p data-bbox="186 411 422 479">Education “LESS LIKELY”</p>	<p data-bbox="937 258 996 287">X X</p> <ul data-bbox="512 297 1403 558" style="list-style-type: none"> • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times. • Commuters related to the education sector may be less likely to be able to adjust travelling times to outside of peak hours compared to other sectors.
<p data-bbox="147 658 466 768">Scientific research & technology “LEAST LIKELY”</p>	<p data-bbox="952 601 980 629">X</p> <ul data-bbox="512 644 1391 788" style="list-style-type: none"> • Car commuters may adjust travel times. • Reduced charge beneficial for LGVs, but HGVs still charged £50. • Beneficial for LGV/HGVs able to adjust delivery times.

xxx = potentially larger negative impact, xx=potential negative impact, x=potentially smaller negative impact

Summary (1/2)

- The business impacts analysis adopted a four-stage approach to analysing the sectors that may be more impacted by the proposed road user charge. The factors affecting business sectors (termed 'dependencies') are conceptualised and relate to the extent to which sectors depend on:
 1. Supplies in/onto business premises and deliveries out to onward suppliers and/or customers
 2. Customer footfall onto business premises
 3. Employees travelling to work
- The ranking of business sectors shows that several sectors relating to **retail and wholesale trade, health, hospitality, construction, and manufacturing** may potentially be more negatively impacted by the introduction of the STZ charge (rated 'most likely impacted'). **Small business owners may be more exposed compared to larger businesses.** The **logistics sector** is integral to supply chain of the above sectors and is therefore also assessed to be potentially more negatively impacted by the STZ charge in the short term.
- The **education sector** is assessed to be potentially less likely to be negatively impacted by the STZ charge ('less likely impacted'). However, education sub-sectors are likely to be differently impacted by the proposed STZ charge, with higher-paid university employees potentially being able to absorb the cost of the STZ charge more easily than lower-paid university employees, and those employed in schools or early years provision.
- The **scientific research and technology sector** is assessed to be potentially less likely to be impacted by the charge ('least likely impacted'). Despite the sector's reliance on deliveries, science-oriented businesses may have more capacity to absorb the cost of the STZ charge. Furthermore, although the work-from-home metric suggests this is a sector where employees tend to work onsite, higher-paid employees in this sector may be more likely to absorb the cost of the charge.
- Each of the selected key sectors has been analysed according to the parameters of the consultation scheme, and Scenarios 1, 1A, 2 and 3. Of the scenarios, Scenario 2 may have potentially the highest negative impact on small businesses even though the objectives of the scheme are met. **Scenario 1A is the recommended option** that serves to minimise any adverse business impacts. The analysis shows that a scenario that provides a specific discount for SMEs (such as in Scenario 1A) may be the most advantageous of all the options. In the absence of Scenario 1A, Scenario 3 may present a more optimal alternative to the consultation and Scenario 2.

Summary (2/2)

- Certain scenarios provide the potential for minimising the annual cost of the STZ charge for businesses. Businesses with small vans that qualify as cars may benefit from a reduced daily charge (Scenario 1); and businesses that qualify for the SME discount (under Scenario 1A) may qualify for reduced LGV and HGV charges (£25 and £25, respectively).
- Free Days are more likely to positively impact residents who may be employees and/or customers within the STZ and is not related to mitigating direct business costs.
- It is anticipated that the focus of the SME discount being for locally-owned businesses will incentivise local partnerships between local businesses and local suppliers. The rationale is that the benefit of the SME discount to local suppliers will increase the likelihood that a smaller proportion of the STZ charge will be passed onto local businesses.
- The Do Minimum scenario risks businesses incurring increased journey times due to ongoing traffic congestion; and longer waiting times for receiving goods from suppliers. This is especially true of sectors that rely on multiple suppliers that may need to travel around the STZ.

3. Summary and Conclusions



Summary & Conclusions (1/2)

- The business impacts analysis adopted a four-stage approach to analysing the sectors that may be impacted by the proposed road user charge. The three key factors affecting business sectors (termed 'dependencies') are conceptualised and relate to the extent to which sectors depend on:
 1. Supplies in/onto business premises and deliveries out to onward suppliers and/or customers
 2. Customer footfall onto business premises
 3. Employees travelling to work
- Sectors were then analysed in terms of their location quotient (the extent to which Cambridge has a specialism in a sectoral activity relative to the rest of the UK) and the number of people employed in the sector. Following this, additional indicators relating to carbon and capital intensity, propensity to work from home, and median wages are analysed at the sectoral level. This helps to assess the key sectors that may be potentially impacted by the STZ. Both qualitative and quantitative insights are then provided to assess the potential exposure of key sectors to the STZ.
- Several sectors relating to **retail and wholesale trade, health, hospitality, construction, and manufacturing** may potentially be more negatively impacted by the introduction of the STZ charge (rated 'most likely impacted'). **Small business owners may be more exposed compared to larger businesses.**
- The **logistics sector** is integral to supply chain of the above sectors and is therefore also assessed to be potentially more negatively impacted by the STZ charge in the short term.
- **Sectors classified as 'most likely impacted' tend to:** 1) be heavily reliant on the sale, distribution and/or leasing of material goods in a context where there are no alternatives than to use light and/or heavy goods vehicles; 2) require employees to work on-site; and, 3) rely on customer footfall.
- The **education sector** is assessed to be potentially less likely to be negatively impacted by the STZ charge ('less likely impacted'). However, education sub-sectors are likely to be differently impacted by the proposed STZ charge, with higher-paid university employees potentially being able to absorb the cost of the STZ charge more easily than those employed in schools or early years provision.

Summary & Conclusions (2/2)

- The **scientific research and technology sector** is assessed to be potentially less likely to be impacted by the charge ('least likely impacted'). Despite the sector's reliance on deliveries, science-oriented businesses may have more capacity to absorb the cost of the STZ charge. Furthermore, although the work-from-home metric suggests this is a sector where employees tend to work onsite, higher-paid employees in this sector may be more likely to absorb the cost of the charge.
- Each of the selected key sectors has been analysed according to the parameters of the consultation scheme, and Scenarios 1, 1A, 2 and 3. Of the scenarios, Scenario 2 may have potentially the highest negative impact on small businesses even though the objectives of the scheme are met. **Scenario 1A is the recommended option** that serves to minimise adverse business impacts. The analysis shows that a scenario that provides a specific discount for SMEs (such as in Scenario 1A) may be the most advantageous of all the options. In the absence of Scenario 1A, Scenario 3 may present a more optimal alternative to the consultation and Scenario 2.
- Certain scenarios provide the potential for minimising the annual cost of the STZ charge for businesses. Businesses with small vans that qualify as cars may benefit from a reduced daily charge (Scenario 1); and businesses that qualify for the SME discount (under Scenario 1A) may qualify for reduced LGV and HGV charges (£25 and £25, respectively).
- Free Days are more likely to positively impact residents who may be employees and/or customers within the STZ and is not related to mitigating direct business costs.
- It is anticipated that the focus of the SME discount being for locally-owned businesses will incentivise local partnerships between local businesses and local suppliers. The rationale is that the benefit of the SME discount to local suppliers will increase the likelihood that a smaller proportion of the STZ charge will be passed onto local businesses.
- The Do Minimum scenario risks businesses incurring increased journey times due to ongoing traffic congestion; and longer waiting times for receiving goods from suppliers. This is especially true of sectors that rely on multiple suppliers that may need to travel around the STZ.
- It should be noted that much of the business impacts analysis assumes that the impacts on businesses may be more severe with the introduction of the charge (as with the international precedents examples) compared to further into the Making Connections programme when transport network improvements have been made.



Source: WSP

4. Appendices



Appendix A: Granular Analysis Of Sectoral Concentration & Employment (1/5)

Rank	SIC	SIC description	Employment share	Employment LQ	Average business size (employees)	Relative Importance Indicator	Rating (most/less/least likely impacted)
1	85421	First-degree level higher education	11.90%	7.96	469.8	4.7	Less
2	86101	Hospital activities	10.83%	2.16	2,233.3	4.1	Most
3	72190	Other research and experimental development on natural sciences and engineering	6.02%	14.47	71.6	2.7	Least
4	71121	Engineering design activities for industrial process and production	2.61%	11.84	84.8	1.4	Least
5	62012	Business and domestic software development	2.61%	4.34	15.5	1.1	Least
6	58110	Book publishing	1.20%	15.56	55.0	1.0	Less
7	47110	Retail sale in non-specialised stores with food, beverages or tobacco predominating	2.27%	0.69	53.3	0.9	Most
8	56290	Other food service activities	1.87%	4.23	383.3	0.8	Most
9	85310	General secondary education	2.11%	1.07	248.6	0.8	Less
10	62011	Ready-made interactive leisure and entertainment software development	0.76%	16.39	95.0	0.8	Least
11	85590	Other education nec	1.87%	2.56	30.0	0.8	Less
12	62020	Computer consultancy activities	1.84%	1.39	5.9	0.7	Least
13	56101	Licensed restaurants	1.84%	1.18	21.7	0.7	Most
14	85200	Primary education	1.71%	0.50	212.5	0.7	Less
15	28230	Manufacture of office machinery and equipment (except computers and peripheral equipment)	0.21%	16.97	-	0.6	Most
16	78200	Temporary employment agency activities	1.60%	0.62	88.8	0.6	Least
17	72110	Research and experimental development on biotechnology	0.47%	12.28	12.6	0.6	Least
18	85410	Post-secondary non-tertiary education	0.89%	7.18	53.3	0.6	Less
19	62090	Other information technology and computer service activities	1.20%	2.63	16.3	0.5	Least
20	56302	Public houses and bars	1.27%	0.85	24.9	0.5	Most

Appendix A: Granular Analysis Of Sectoral Concentration & Employment (2/5)

Rank	SIC	SIC description	Employment share	Employment LQ	Average business size (employees)	Relative Importance Indicator	Rating (most/less/least likely impacted)
21	47710	Retail sale of clothing in specialised stores	1.24%	1.17	82.5	0.5	Most
22	69201	Accounting, and auditing activities	1.14%	1.32	24.1	0.5	Least
23	86900	Other human health activities	1.12%	0.79	23.9	0.4	Most
24	58290	Other software publishing	0.39%	9.14	17.1	0.4	Least
25	70100	Activities of head offices	1.03%	1.03	96.8	0.4	Least
26	84110	General public administration activities	1.03%	0.45	128.3	0.4	Least
27	70229	Management consultancy activities (other than financial management)	1.00%	0.70	2.6	0.4	Least
28	71129	Other engineering activities	0.96%	1.14	14.2	0.4	Least
29	96090	Other personal service activities nec	0.82%	2.70	23.5	0.4	Most
30	72200	Research and experimental development on social sciences and humanities	0.24%	9.01	59.2	0.4	Least
31	84120	Regulation of the activities of providing health care, education, etc.	0.80%	2.33	-	0.4	Least
32	74300	Translation and interpretation activities	0.17%	9.12	25.8	0.4	Least
33	88990	Other social work activities without accommodation nec	0.86%	0.63	15.6	0.3	Most
34	55100	Hotels and similar accommodation	0.84%	0.71	31.4	0.3	Most
35	47190	Other retail sale in non-specialised stores	0.82%	1.02	116.7	0.3	Most
36	21200	Manufacture of pharmaceutical preparations	0.49%	4.67	70.0	0.3	Most
37	85320	Technical and vocational secondary education	0.77%	1.38	88.9	0.3	Less
38	94120	Activities of professional membership organisations	0.47%	4.69	108.3	0.3	Least
39	85422	Post-graduate level higher education	0.30%	6.24	75.8	0.3	Less
40	68310	Real estate agencies	0.72%	1.42	17.8	0.3	Less

Appendix A: Granular Analysis Of Sectoral Concentration & Employment (3/5)

Rank	SIC	SIC description	Employment share	Employment LQ	Average business size (employees)	Relative Importance Indicator	Rating (most/less/least likely impacted)
41	69109	Activities of patent and copyright agents; other legal activities (other than those of barristers and solicitors) nec	0.62%	2.14	21.9	0.3	Least
42	77210	Renting and leasing of recreational and sports goods	0.16%	7.25	40.0	0.3	Less
43	56210	Event catering activities	0.66%	1.48	31.0	0.3	Most
44	91011	Library activities	0.40%	4.24	70.0	0.3	Less
45	26200	Manufacture of computers and peripheral equipment	0.16%	6.82	27.1	0.3	Most
46	81210	General cleaning of buildings	0.70%	0.57	27.4	0.3	Most
47	69102	Solicitors	0.66%	0.94	21.4	0.3	Least
48	56102	Unlicensed restaurants and cafes	0.67%	0.60	17.1	0.3	Most
49	61900	Other telecommunications activities	0.57%	1.11	35.4	0.2	Least
50	88910	Child day-care activities	0.56%	0.89	20.7	0.2	Less
51	66190	Other activities auxiliary to financial services, except insurance and pension funding	0.52%	1.04	21.8	0.2	Least
52	46460	Wholesale of pharmaceutical goods	0.42%	1.84	29.2	0.2	Most
53	88100	Social work activities without accommodation for the elderly and disabled	0.51%	0.51	37.2	0.2	Most
54	78109	Activities of employment placement agencies (other than motion picture, television and other theatrical casting) nec	0.48%	0.80	15.6	0.2	Least
55	74909	Other professional, scientific and technical activities (not including environmental consultancy or quantity surveying)	0.42%	1.40	3.8	0.2	Least
56	26701	Manufacture of optical precision instruments	0.08%	5.18	17.5	0.2	Most
57	94990	Activities of other membership organisations nec	0.42%	1.10	16.2	0.2	Least
38	94120	Activities of professional membership organisations	0.47%	4.69	108.3	0.3	Least
39	85422	Post-graduate level higher education	0.30%	6.24	75.8	0.3	Less

Appendix A: Granular Analysis Of Sectoral Concentration & Employment (4/5)

Rank	SIC	SIC description	Employment share	Employment LQ	Average business size (employees)	Relative Importance Indicator	Rating (most/less/least likely impacted)
61	26511	Manufacture of electronic instruments and appliances for measuring, testing, etc.	0.31%	2.07	26.3	0.2	Most
62	82200	Activities of call centres	0.37%	1.29	39.2	0.2	Least
63	47591	Retail sale of musical instruments and scores in specialised stores	0.05%	4.77	11.3	0.2	Most
64	82990	Other business support service activities nec	0.42%	0.40	2.5	0.2	Least
65	87100	Residential nursing care activities	0.39%	0.64	82.5	0.2	Less
66	49100	Passenger rail transport, interurban	0.30%	1.70	-	0.2	Least
67	49390	Other passenger land transport nec	0.32%	1.45	40.0	0.2	Most
68	91040	Botanical and zoological gardens and nature reserve activities	0.21%	2.66	28.3	0.2	Less
69	56103	Take away food shops and mobile food stands	0.37%	0.56	6.0	0.2	Most
70	90040	Operation of arts facilities	0.16%	2.98	39.2	0.2	Less
71	87300	Residential care activities for the elderly and disabled	0.37%	0.45	84.2	0.2	Less
72	85600	Educational support activities	0.21%	2.16	10.5	0.1	Less
73	47640	Retail sale of sporting equipment in specialised stores	0.28%	1.27	18.3	0.1	Most
74	53100	Postal activities under universal service obligation	0.33%	0.67	-	0.1	Most
75	45111	Sale of new cars and light motor vehicles	0.32%	0.71	68.3	0.1	Most
76	80100	Private security activities	0.33%	0.52	75.8	0.1	Less
77	41202	Construction of domestic buildings	0.32%	0.36	6.8	0.1	Less
78	96020	Hairdressing and other beauty treatment	0.29%	0.60	4.1	0.1	Most
79	47599	Retail sale of furniture, lighting equipment and other household articles	0.25%	0.79	18.3	0.1	Most
80	93120	Activities of sport clubs	0.27%	0.59	17.2	0.1	Less

Appendix A: Granular Analysis Of Sectoral Concentration & Employment (5/5)

Rank	SIC	SIC description	Employment share	Employment LQ	Average business size (employees)	Relative Importance Indicator	Rating (most/less/least likely impacted)
81	68320	Management of real estate on a fee or contract basis	0.26%	0.74	6.3	0.1	Less
82	77400	Leasing of intellectual property and similar products, except copyrighted works	0.03%	3.31	8.2	0.1	Less
83	47610	Retail sale of books in specialised stores	0.10%	2.49	25.0	0.1	Most
84	86230	Dental practice activities	0.25%	0.75	8.3	0.1	Less
85	46610	Wholesale of agricultural machinery, equipment and supplies	0.13%	2.06	21.7	0.1	Most
86	71122	Engineering related scientific and technical consulting activities	0.23%	0.88	7.9	0.1	Least
87	64191	Banks	0.28%	0.25	-	0.1	Least
88	26513	Manufacture of non-electronic instruments and appliances for measuring, testing and navigation, etc.	0.04%	3.07	7.3	0.1	Most
89	46730	Wholesale of wood, construction materials and sanitary equipment	0.24%	0.59	60.8	0.1	Most
90	56301	Licensed clubs	0.22%	0.88	22.4	0.1	Most
91	46750	Wholesale of chemical products	0.12%	1.99	11.7	0.1	Most
92	47520	Retail sale of hardware, paints and glass in specialised stores	0.23%	0.75	28.3	0.1	Most
93	27400	Manufacture of electric lighting equipment	0.10%	2.21	6.7	0.1	Most
94	58130	Publishing of newspapers	0.14%	1.70	25.0	0.1	Less
95	94910	Activities of religious organisations	0.20%	0.90	4.8	0.1	Less
96	47410	Retail sale of computers, peripheral units and software in specialised stores	0.10%	2.08	22.5	0.1	Most
97	77341	Renting and leasing of passenger water transport equipment	0.01%	6.82	-	0.2	Less
98	79901	Activities of tourist guides	0.01%	3.21	3.0	0.1	Least
99	38310	Dismantling of wrecks	0.00%	3.24	-	0.1	Most
100	64306	Activities of real estate investment trusts	0.01%	3.13	-	0.1	Least