

TOWARDS A BUSINESS STORY FOR GLASGOW

Preliminary Analysis
and Benchmarking

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1. Introduction

This paper assesses Glasgow's current and future business and jobs advantages and appeal in the global economy. The aim is to understand how well the world understands and recognises Glasgow's economic assets and capabilities, and reveal how Glasgow stands vis-à-vis other cities. These insights can then inform a subsequent story telling exercise that adds a clearer and sharper business, economy, and jobs chapter to the city's overall story.

This project includes:

- i. A thorough review of all existing analysis, audits, reports and evaluations of Glasgow, especially those focusing on economic performance, sectoral competitiveness, business climate, innovation assets, skills and specialisation.
- ii. Analysis of Glasgow's competitiveness performance across all global benchmarks and databases, focusing on the absolute and relative strengths of the city's business base, economic climate, trading links, scientific and technology acumen, entrepreneurial capabilities, and business and talent appeal.
- iii. Examination of Glasgow's visibility, reputation, and perceptions across different market segments.
- iv. Identification of relevant 'peer groups' of cities for Glasgow in terms of urban economy and potential for competition/collaboration.

For this paper we have reviewed over 25 locally generated studies, papers and reports spanning the last decade, including:

- 'City Prospectus', Invest Glasgow, 2018¹
- 'Tourism Strategy 2018-2023', Glasgow City Region, 2018²
- 'Glasgow's Innovation Districts', Invest Glasgow, 2018³
- 'Scottish Property Review', Ryden, March 2018
- 'Attractiveness Survey: Scotland', EY, June 2018
- 'Glasgow 2014 Commonwealth Games Legacy: Final Evaluation Report', Morrison, A., and Thompson, A., 2018⁴
- 'Connectivity Commission: Call for Evidence – Submission', Glasgow Chamber of Commerce, 2018
- 'Skilled Cities', Deloitte and Hays, 2017⁵
- 'Enabling Technologies in Scotland's Central Belt', Glasgow Economic Leadership, Scottish Enterprise and Glasgow City Council, 2017⁶
- 'Glasgow Case Study Report', Pike, A., 2017⁷
- 'Final Report', Glasgow Economic Commission, 2017⁸
- 'Glasgow City Region Economic Action Plan', Glasgow City Region, 2017⁹
- 'Glasgow Regional Office Report Q4', Cushman & Wakefield, 2017¹⁰
- 'As good as it gets? UK hotels forecast 2018', PwC, 2017¹¹
- 'Good Growth for Cities 2017', PwC, 2017¹²
- 'Brexit and the Glasgow Economy: impacts, actions and asks', Glasgow Chamber of Commerce, Glasgow Economic Leadership and Glasgow City Council, 2016¹³
- 'Strategic Development Plan', Clydeplan Strategic Development Planning Authority, 2016¹⁴

- 'Glasgow Economic Strategy 2016-2023', Glasgow Chamber of Commerce, Glasgow Economic Leadership and Glasgow City Council, 2016¹⁵
- 'Glasgow City Region Skills Investment Plan: Final Report', Sutherland, V., McTier, A. and McGregor, A., 2016¹⁶
- 'Circular Glasgow', Glasgow Chamber of Commerce and Circle Economy Netherlands, 2016¹⁷
- 'Glasgow City Region Economic Strategy 2017-2035', Glasgow City Region, 2016¹⁸
- 'Tomorrow's City Centre: Glasgow Agenda', Prof Clark, G., and Maxwell, A. J., 2015¹⁹
- An Economic Analysis of Glasgow, Oxford Economics, 2015
- 'Scotland's Economic Powerhouses', Fraser of Allander Institute, 2014
- 'International Financial District Brochure', Invest Glasgow, 2014²⁰
- 'Getting Ahead of Change: City Centre Strategy and Action Plan 2014-19', Glasgow City Council, 2014²¹
- 'City Centre and Merchant City', Understanding Glasgow, 2013²²
- 'Building a Future City', MRUK

We have also reviewed more than 450 comparative studies of city performance – benchmarks, indices and reports that evaluate how well cities are performing and perceived across every aspect of development. We have combined these with assessment of the latest statistical and algorithmic databases that track business, investment and innovation trends in cities. The idea is to provide a comprehensive 'outside in' perspective of how Glasgow is really performing, and where it is heading, in the context of a rapidly globalising and urbanising economy.

Why is a business story needed for Glasgow?

Since the global financial crisis, the global economy has changed substantially and brought into being a new success model for cities. This cycle is characterised by:

- **Increased mobility and competition** as more economic sectors become globally traded, not only financial and professional services, and media, but also creative industries, clean technology, higher education, engineering and architecture.²³ More of the content of a city's economy has become footloose. Jobs, workers and capital have all become highly mobile and selective.
- **The urbanisation of capital.** Appetite for capital to invest in urban assets and real estate has soared. Global foreign investment has soared to well over \$1 trillion per year, with new and emerging cities capturing more of these inflows.²⁴
- **A new generation of technologies with disruptive impacts.** The impacts of exponential technologies and big data are transforming many aspects of how businesses operate, where they prefer to locate, how they look to cluster and the kinds of workplace they require. They are also giving rise to four new economies that are producing a big share of scaling companies, disrupting incumbent firms: (1) the sharing economy, (2) the experience economy, (3) the platform economy and (4) the circular economy. Critically the firms that thrive in these economies depend on the ability of cities to foster the scale, proximity and efficiency.
- **The global war for talent.** In the current cycle, businesses have observed that in the growing information-rich sectors of advanced urban economies, leading talent provide a very significant productivity advantage. The challenge to attract and retain top talent, especially of younger and mid-career ages, has emerged as one of the two or three leading issues of global CEOs. These challenges are growing due to demographic changes and skills shortages in key areas, including across the skills spectrum. This has presented demands on cities to become

as magnetic and 'sticky' as possible, and to ensure they have a technology edge to remain resilient to labour market changes.

- **Increased saturation and inflation in the big cities.** Many countries, including the UK, are nearing the end of a cycle where investment, talent and opportunities have concentrated in primary cities and 'prime' locations. The inability of many of these cities to successfully accommodate the demand, and to manage the externalities (inflation, unaffordability, congestion, infrastructure stress), is resulting in a period of saturation and increased interest in the proposition offered by competitive secondary cities. This process sets in train changes to the geography of talent, business and capital that well prepared cities can take advantage of.
- **New set of risks – geo-political, geo-economic, climatic.** Cities are growing and competing in a context of much bigger long-run changes. The ongoing shifts in economic gravity to the East and South, and the disruptions of trade wars, 'Brexit', political polarisation, energy shifts, and climate change, affect the environment in which urban businesses can develop and plan.

These factors together add up to a context for Glasgow where:

- **Many more cities are competing for contested opportunities and for attention.** There are now approximately 500 cities with a critical mass of industry and commerce that is globally traded, and nearly 100 cities with similar size, scale and prosperity to Glasgow, many emerging from China, South and East Asia, and Eastern Europe. Glasgow has advantages over these cities but the attention space to tell its story is increasingly crowded.
- **Cities must do more than have a good business climate.** The new equation for metropolitan competitiveness is less about competing on price, incentives or ease of doing business. In order to attract business and help firms grow and succeed, cities need to foster eco-systems, encourage clustered specialisation, and build a business reputation and brand.

What are the risks if Glasgow's business story is not told?

Previous efforts undertaken on behalf of key city stakeholders in Glasgow to highlight the city's core business assets – such as airport connectivity, high-quality conference centres and high-performing universities – have had only limited success at building a strong business message for the region. A renewed effort is now needed because:

- Glasgow's population is growing again but at the same time the workforce demographics are ageing. To serve this growth the city needs a growing jobs base. Population growth without jobs growth would increase hardship and inequality.
- Glasgow may miss out opportunities (new companies, investments, anchors, events, population) and gradually lose its momentum if its potential and capabilities are not known and understood.
- Glasgow may experience talent retention challenges as other cities provide a clearer narrative about current opportunities and their future.
- For Glasgow it takes time to build a new business reputation, and during this process its reputation lags performance. This means the story has to be especially strong to bridge the gap. Glasgow cannot afford to 'go quiet'.

- Glasgow's other brand edges will permanently crowd out the business brand. This poses the obvious threat that Glasgow will become known only for activities that are not the foundation for a competitive, jobs-producing city – e.g. as a 'party town', a 'shopping mecca', a 'football city'. Ensuring that Glasgow balances its consumption story with an enterprise and innovation story is essential.

In the next section, we review the role of the economy and business in existing perceptions of Glasgow.

2. Glasgow's Business Story: What the World Knows

Glasgow has many ingredients to develop a compelling business story. Among the most obvious include:

- The journey of post-industrial recovery after being one of the first cities in the world to de-industrialise.
- The many cycles of investment, innovation and leadership in the last 30 years to re-activate the economy, protect key assets and win catalytic opportunities.
- The development of a strong jobs base and the formation of a diversified economy.
- Re-connection with its DNA of engineering, design, entrepreneurship, trade, discovery, trans-continental reach, business and intellectual innovation, technical expertise, networked intelligence, adaptability and re-invention.

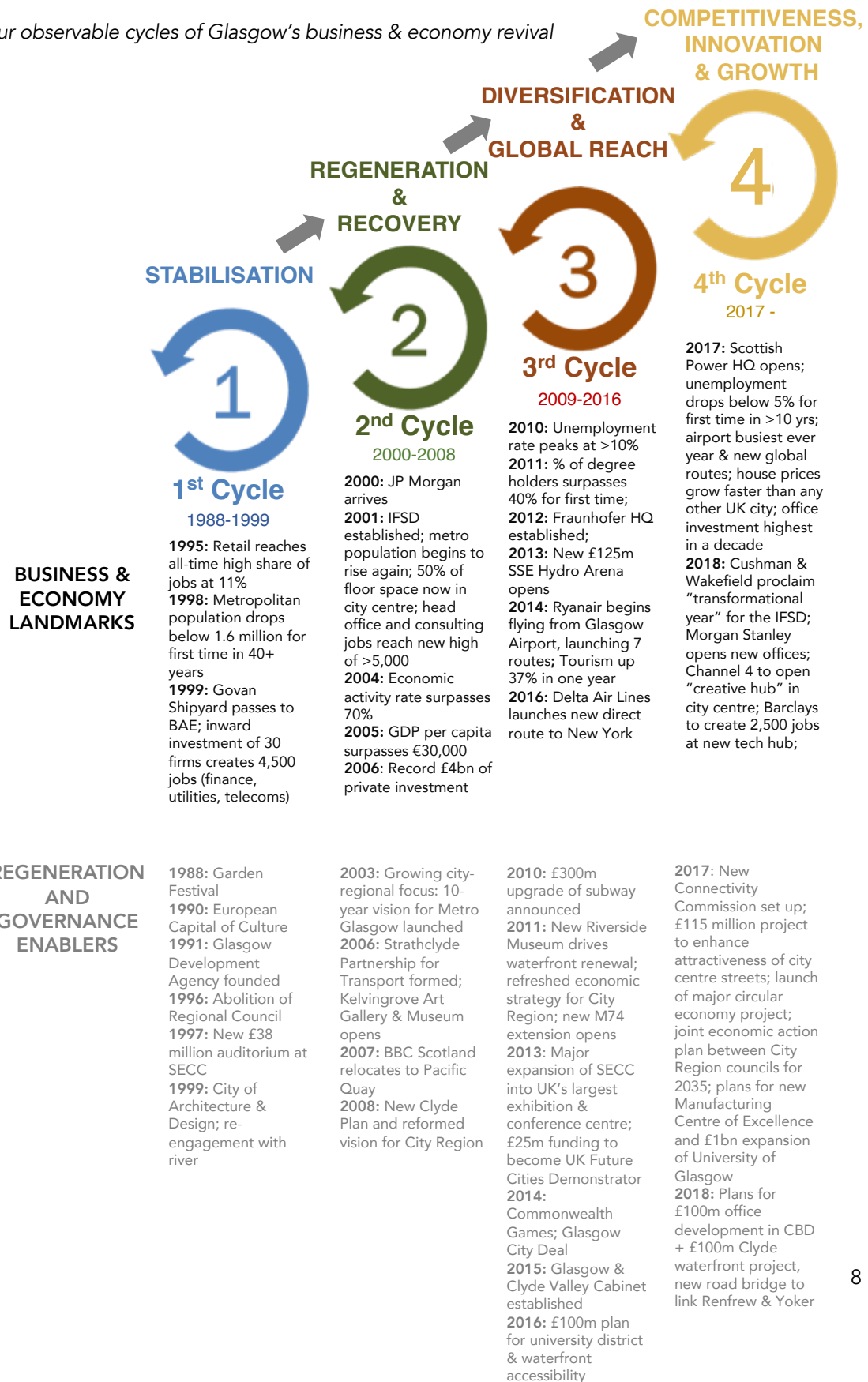
Today Glasgow is re-emerging as a player in the trade and innovation processes that shape the global economy, just as it was from 1750s to 1920s.

Our review of literature and analysis about Glasgow points to the way that the past 30 years have seen Glasgow evolve through a series of cycles or chapters, each with its own set of business drivers and catalysts (see Figure 1). These cycles have both required and reflected adjustments in Glasgow's tools, governance structures, partnerships, and ways of communicating to the world. The cycles do not have neat start and end points, but instead overlap and build on one another:

- **The first cycle** (approx. 1988-1999) is characterised mainly by Glasgow planting the seeds of its business recovery, at a time of ongoing decline. This was led by physical interventions in the city intended to reintroduce business to the city centre and celebrate Glasgow's cultural and civic character. This cycle featured urban restructuring to re-engage with the river and use flagship infrastructure to expand its visitor economy. Although metropolitan population continues to fall, in this period inward investment begins to gradually increase, and retail becomes a more important economic sector for the city.
- **In the second cycle** (approx. 2000-2008), Glasgow begins to embark on a phase of intensive city centre regeneration, supported by new regional partnerships and visions, the launch of the International Financial Services District, and an increase in private investment allied to the attraction of key business anchor tenants. Glasgow's population begins to increase again, and life sciences and the creative industries emerge as drivers of economic development. It is in this cycle that Glasgow really begins to realise the benefits of emphasising inward investment in the city centre, catalysing a move towards a new framing of the city.
- **The third cycle** (2009-2016) sees Glasgow substantially diversify its economy and develop global reach in the context of national economic downturn and consolidation. The hosting of the Commonwealth Games, together with the launch of new airport routes and a major expansion of the SECC, help to drive multiple kinds of tourism as a source of competitive resilience for the city. Meanwhile, important governance reforms and related investments allow Glasgow to set its sights on becoming a UK leader for smart cities, innovation, and higher education. In this cycle, the city's pool of skills starts to grow and diversify, and new global HQs drive increased interest in the city centre.
- In the **most recent cycle** (beginning around 2016-17) Glasgow's economy reaches maturity and starts to develop the ingredients of competitiveness in a new world of cities. More high-profile firms are announcing plans to set up new hubs in the city, spurring office investment,

while the dynamism of the consumption economy helps support an enlarged employment base. Glasgow's science, technology and engineering edges are starting to emerge more clearly as the digital economy expands and as Glasgow turns its higher education, advanced manufacturing and innovation promise into greater productivity and jobs. These trends are supported by more city regional joint working, project collaboration, and identification of more complementarities with Edinburgh.

Fig. 1: Four observable cycles of Glasgow's business & economy revival



What does the world know about this story?

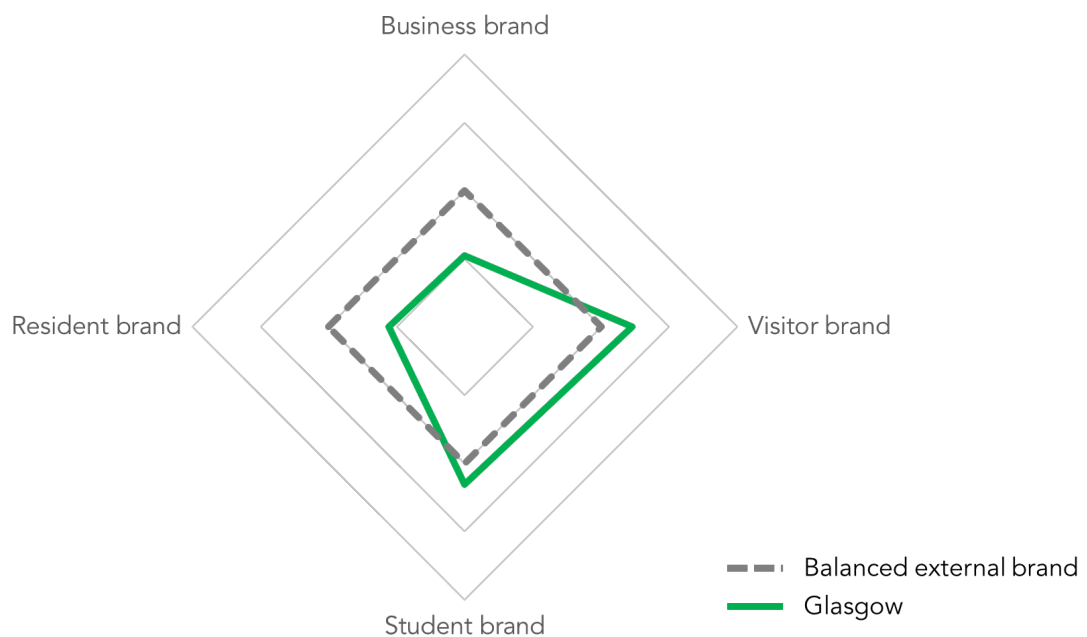
The data from our perception and visibility analysis clearly already confirms that, compared to other relevant UK and international cities, **Glasgow's overall visibility is improving. The world knows something is happening in Glasgow. But it does not seem to be strongly aware of the business and economy part of the story.**

Glasgow's visibility in global benchmarks and comparative studies that measure cities has improved over time. There are over 450 of these produced around the world – many are highly influential. They provide an important vantage point of a city's perception and performance, and the propensity of a city to be included in global 'short lists' and 'long lists'.

In 2017/18, Glasgow has appeared in 30% of global benchmarks, making it the 72nd most profiled city globally in this period, on a par with much larger cities such as Philadelphia, Johannesburg, Osaka, Bangalore and Taipei. Glasgow is much more visible than similarly sized post-industrial European cities such as Gothenburg (98th), Lille (138th) and Turin (158th). Since 2015-16, when Glasgow appeared in only 18% of global benchmarks, **the city has overtaken and become more visible than cities such as Rotterdam, St. Petersburg, Birmingham and Brisbane.** These reflect a combination of increasing interest in Glasgow, awareness of some of its distinctive edges, and more recognition of Glasgow's gateway role in Scotland's economy.

Despite this progress Glasgow's business brand is less strong vs resident and visitor brands, in a range of international markets. Our preliminary analysis of online interest in Glasgow over the past 5 years finds that while demand to visit and study in Glasgow is fairly strong relative to overall interest in the city, interest and attention on business, innovation and investment in Glasgow is substantially lower. Compared to the average appetite among cities in Europe and worldwide, Glasgow has the least widely perceived business brand, nearly 25% lower than other cities (see Figure 2).

Fig. 2: Glasgow's brand edges relative to average among selected global peers*; % of total search terms, 2013-2018



Source: Google Trends, November 2018 data. *See appendix for methodology and list of peers.

What this effectively means is that for every 100 people who are interested in other similar cities in relation to their business, investment or innovation, only 77 currently demonstrate that interest in Glasgow. This is both reflective of, and reinforced by, Glasgow's low media coverage of investment and business more broadly. For illustration, over the past year, Glasgow's aggregate number of mentions relating to investment and innovation in global news sources equates to around 140,000. This is around half the average among global peers, and is lower than in comparable UK cities such as Manchester (1,100,000) and Birmingham (215,000).

Several of Glasgow's current business edges are not widely used to describe Glasgow in international media and social media.

Preliminary analysis of international media commentary on Glasgow in Europe, North America and Asia indicates that the world is increasingly enthusiastic about Glasgow. These are reflected in the wordclouds produced below, which relate to the frequency of terms used to describe or encapsulate Glasgow in more than 20 of the most read global media publications (see Figure 3). Relative to the characteristics of other cities, three aspects of this trend stand out:

- Glasgow is famed for its sport, culture, art and lifestyle appeal. Of all the nouns and adjectives used to describe Glasgow in global media in the past five years*, over 40% make reference to culture (22%), music and art (17%) or sport (4%).
- Its energy, friendliness and citizen character stand out. References to the people-friendly and proud Glaswegian culture account for nearly 10% of all references to Glasgow, an unusually high share.
- Its industrial heritage and physical fabric is a prominent part of its recognisable characteristics. Adjectives and nouns referring to architecture, green space and Glasgow's distinct neighbourhoods are more prominent than on average in other cities, together accounting for nearly 15% of total mentions.

But the global media rarely touch on:

- Glasgow's business and trade prowess and DNA (2% of total mentions). Where Glasgow's business and trade credentials are mentioned, commentary tends to focus generally on the city's dynamism and growth curve, with occasional reference to the city's advanced manufacturing potential.
- Its entrepreneurial flair (2% of total mentions). Here references to the city's ambition, creativity and forward-thinking nature are common.
- Its science and technology edges (1% of total mentions). Wherever science and technology are mentioned, they tend to be linked almost exclusively to the Science Centre or the innovative science industry at large, rather than specific sectors of note.

This review provides *prima facie* indication that Glasgow's business strengths need greater visibility relative to the city's overall presence and proposition.

In the next sections we explore the character of these strengths, drawing on recent analysis produced for and about Glasgow, and the wider comparative analysis that is available.

3. Glasgow's Business Evolution & Edges: What the evidence reveals

Our review of the papers, reports, literature and analysis that have recently been produced by or about Glasgow already indicate a number of important advantages that can be crystallised and communicated. 10 aspects stand out in particular:

1. Glasgow's demographic turnaround and now its re-urbanising and upskilling population.
2. Its consistently growing jobs base.
3. Genuine diversification and critical mass in a range of sectors.
4. Improved and diversified investor appetite, driving city productivity and change.
5. An impressively large high-value high-wage professional core of the economy, fuelled by a proactive higher education sector.
6. A multi-purpose city centre that drives visitation and plays national functions.
7. Proven capability and credibility to host regional and global events and HQs.
8. Resurgent edges in scientific niches that have great potential for growth, exports and influence.
9. Glasgow's effective unlocking and anchoring of strategic business land to create innovation districts and other clusters across the region.
10. The ability to access scale and expertise from other cities and locations in the surrounding region.

Strongly re-urbanising and upskilling population	A Growing Jobs Base	A Diversifying Economy with Critical Mass	Maturing as an investment proposition	Rejuvenated professional and technical talent supply
A revived, enlarged city centre serving large markets	Trusted host of major events and HQs	Edges in World-Changing Science and Engineering	3 Innovation Districts with great potential	Borrowed scale from a competitive region

We review each of these in turn below.

3.1 Glasgow's population is re-urbanising and upskilling

Glasgow's population turnaround is very striking by global standards. Between 1980 and 2000, Glasgow was one of the top 1% fastest shrinking cities in the world. This trend has been dramatically reversed. Among all major regions in Europe, Glasgow ranked in the top 50% fastest growing over the 2007-2017 period.

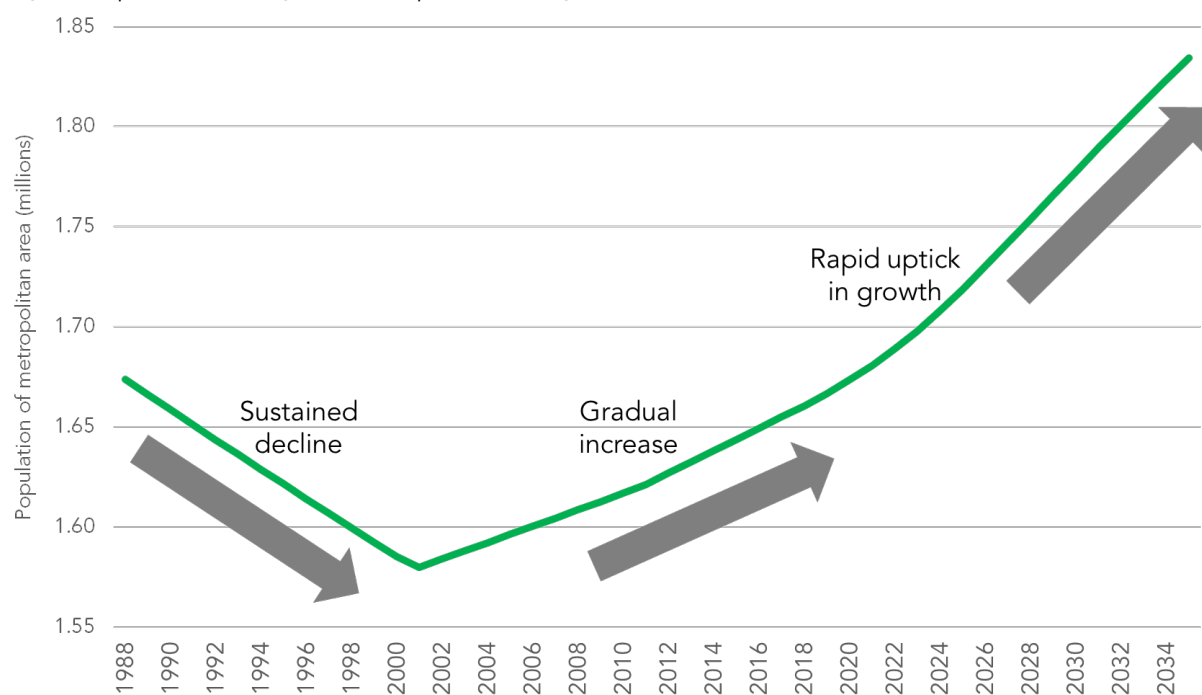
This turnaround is set to accelerate. New United Nations data shows that over the 2000-2018 period, Glasgow ranked in the 76th percentile among mid-sized European cities (between 1 to 2 million people) for population growth (29th out of 38 cities). But over the 2018-2035 period, it will rise to be in the 44th percentile (17th/38) due to a sharp uptick in population growth (see Figure 4).

This means that by 2035, Glasgow is forecast to experience the 2nd most pronounced acceleration in population growth, both among European peers and compared to medium-sized European cities more broadly (see Figures 5, 6).

Table 1: Absolute population growth in Glasgow, 2000-2018 and 2018-2035 (projected), compared to average among mid-sized European cities (1-2m plus peers)

	2000-2018	2018-2035
Glasgow	75,432	173,713
Average among mid-sized European cities	121,999	106,215

Fig. 4: Population change in metropolitan Glasgow, 1988 to 2035



Source: UN World Urbanisation Prospects 2018.

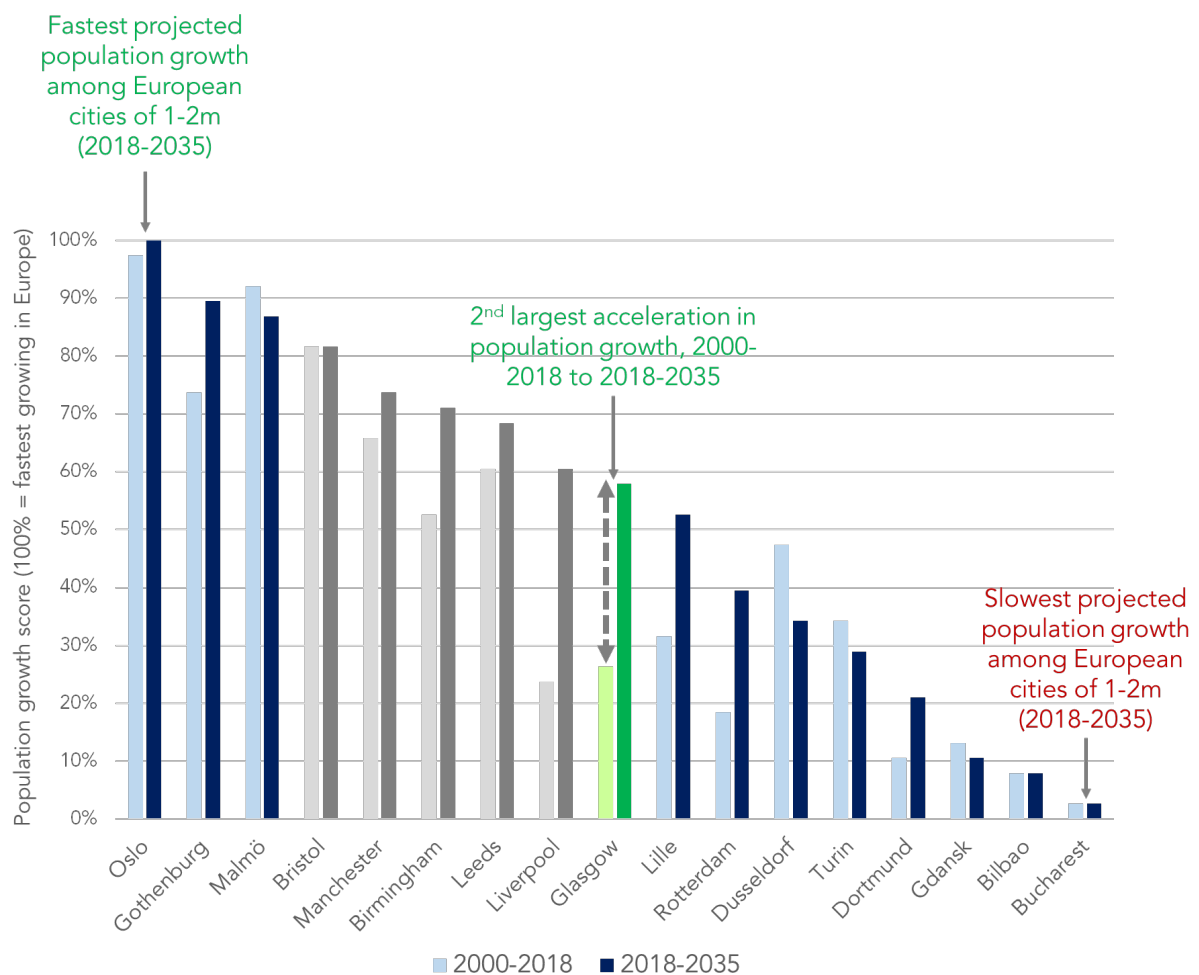
Between 2018 and 2035, the UN predicts that Glasgow will add nearly 175,000 residents to its metropolitan area – around 100,000 more than between 2000 and 2018. This is more residents than Liverpool and Edinburgh will add combined. In absolute terms, Glasgow is projected to be the 9th fastest growing city of 38 mid-sized European regions (between 1 and 2 million in size) over this next cycle, with its population rising as quickly as Copenhagen and Zurich. This contrasts with the 2000 - 2018 period, when Glasgow ranked 23rd (see Table 1).

While population growth in European cities is starting to slow down, in Glasgow, the opposite is occurring. Looking globally, **over the next 15 years, Glasgow's metro population will grow faster than in Lisbon, Helsinki and Amsterdam, and as fast as New York, Los Angeles and Paris.**

There are two other dimensions to this story. Firstly, Glasgow has a much more skilled population than ever before because of significant improvements in education and training (see Section 3.6). Secondly, Glasgow's population is becoming more concentrated. The residential population of the city centre has been rising quickly since the 1990s, with a 30% increase between 1996 and 2012, mainly due to an influx of 16-44 year-olds.²⁵ The Glasgow residential city centre population is now growing faster than the UK average, and will continue to grow as the city updates its urban planning policy and achieves its aim to build 25,000 new homes in the area by 2023.²⁶

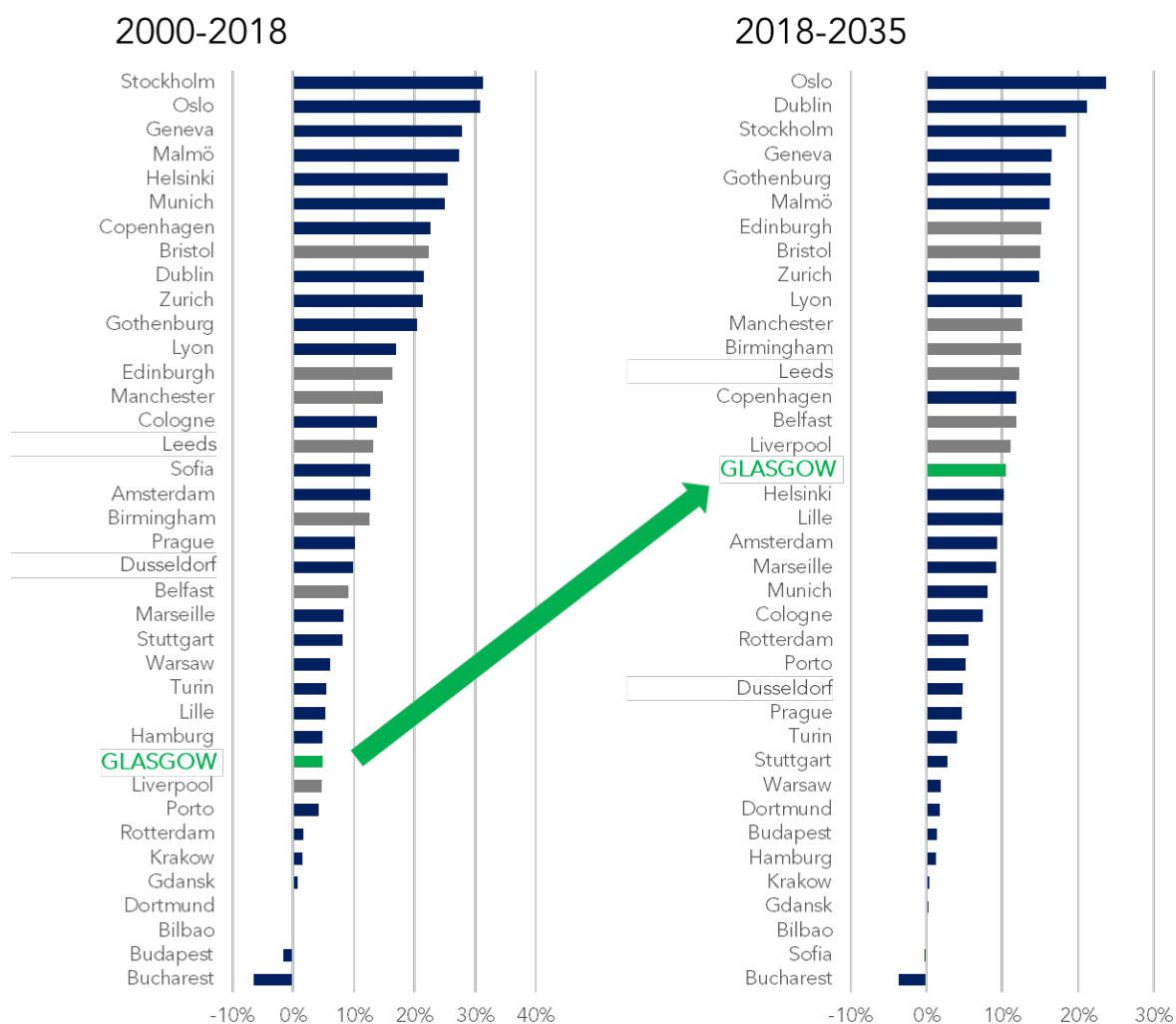
More needs to be made of Glasgow's journey of re-urbanisation, increased and upskilled population, and economic re-concentration in the city centre, and of the scale opportunities that derive from Glasgow's re-urbanisation.

Fig. 5: Population growth of Glasgow relative to other European cities of 1-2 million (European peers for illustration), 2000-2018 and 2018-2035 (projected)*



Source: UN World Urbanisation Prospects 2018. *See Figure 6 for full list of cities. **See appendix for methodology.

Fig. 6: Population growth of Glasgow compared to other European cities of 1-2 million, 2000-2018 and 2018-2035 (projected)*



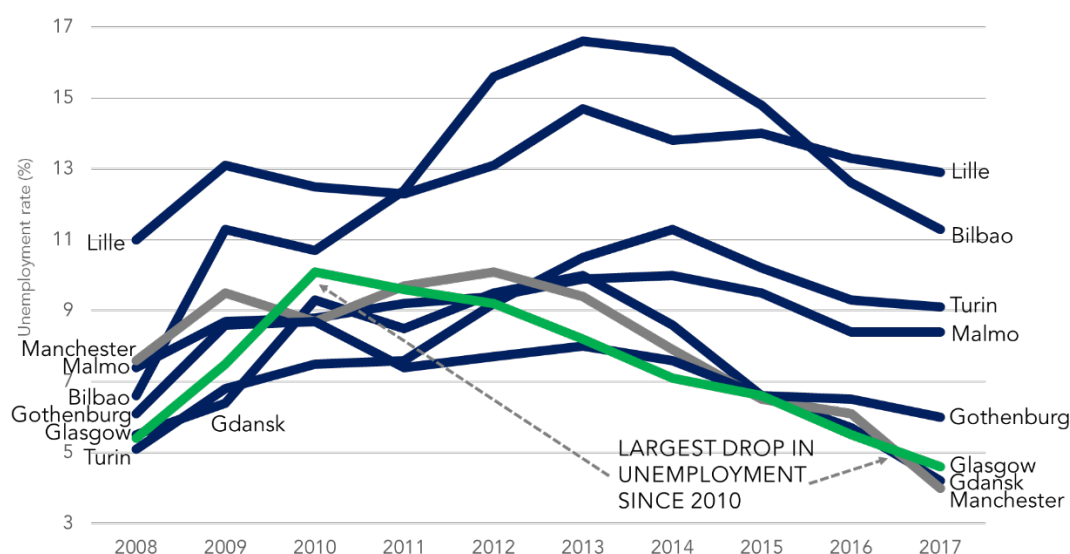
Source: UN World Urbanisation Prospects. *See appendix for list of cities.

3.2 The Growing Jobs Base

By international standards, Glasgow has posted good employment growth since the peak of the last recession. From 2000-2016, Glasgow ranked 13th of 30 mid-sized European cities for total employment and per capita GDP growth, posting similar levels of growth as Cologne, Rotterdam and Copenhagen.

Since 2010, the city region's economic activity, employment and unemployment rates have all improved as councils have started to pursue efforts to achieve a more inclusive economy. In particular, the share of people now in jobs has reached a long term high and is now much more favourable relative to other UK city regions. Across the whole city region, the 72.1% of people in employment at the last count is higher than in Birmingham (67.5%), Liverpool (71.2%), and competitive with Manchester (72.8%) and Leeds (73.4%). Unemployment has also declined accordingly (see Figure 7).

Fig. 7: Change in unemployment over time



Source: Eurostat (NUTS2 scale).

3.3 Glasgow's diversification has become established

After many years of economic development, Glasgow can now boast an economy with a critical mass of companies in a diverse mix of sectors. In particular

- a) **Finance and Business Services.** The Financial District cluster has now reached a critical mass. A number of key anchors, including Morgan Stanley and Barclays Bank are helping to unlock some of the remaining sites. The cluster of public institutions (the Scottish Courts & Tribunal Services, Department of Work & Pensions and the Government Property Unit) is also growing, which is in turn driving the re-connection of south bank of the River Clyde to the (enlarged) CBD.
- b) **Creative Industries.** Glasgow's creative and cultural firms stand out for several reasons. Firstly, the city has excellent infrastructure to host the sector – the Digital Media Quarter, Trongate 103, The Briggait, Creative Clyde, and high-quality studios, as well as an abundance of available land for expansion. Secondly, the collaborative ethos between public institutions, large companies, small firms, art schools and international production is well established and benefits from tight clustering across both sides of the Clyde.
- c) **Tourism and Events.** Glasgow has achieved a much larger tourism economy in recent years, which now attracts many different types of visitor – with particular interest from North America, Western Europe and the rest of the UK. Glasgow has leveraged its heritage, art, music, cuisine and architecture more successfully than other cities through events and showcases. SSE Hydro has also had a demonstrable catalytic effect and there are clear avenues to grow Glasgow's business events profile even further. This sector benefits from improving partnership and an outstanding Convention Bureau which is expected to have great success in bidding for, and delivering, future business events.

- d) **Higher and Further Education.** As well as being a successful incubator of research and an exporter of degrees, the literature indicates that Glasgow's universities are increasingly competitive in terms of their high-quality facilities, interdisciplinary research and social learning spaces. Glasgow's Further Education offering is also competitive and the city has a higher number of colleges per resident compared to large cities such as Manchester and Birmingham. This can be an important advantage for Glasgow moving forward, particularly in allowing the city to pivot towards certain high value-added craft and manufacturing sectors which require applied technical and vocational skills.
- e) **Digital Technology.** In the last 5 years, Glasgow city centre has become much more competitive in terms of renovating its assets to become the incubators and co-working spaces of future digital innovation. The University of Glasgow's huge Smart Campus redevelopment programme has great potential to act as a leading example of the integration of smart technology into daily life in the UK.²⁷

The growth of these five sectors is strongly responsible for Glasgow recording the fastest GVA/hr growth since 2011 among Core Cities.²⁸

Across all of these high export, high growth sectors, the literature and data indicate that:

- Glasgow is seeing healthy growth in the number of larger scale companies it can attract and scale.
- Glasgow's collaborative eco-system is helping to seed innovation, support firms to go further up the value chain, and provide the experience and tools to 'go global.'
- Firms, institutions and governments are increasingly successful at winning competitive 'bids' and projects.

3.4 Glasgow has matured as an investment proposition

Notwithstanding cyclical ebbs and flows, the broad picture shows that investor confidence has been returning to Glasgow over the past 8-10 years. The year-on-year data suggests that the city now consistently punches above its weight in terms of investment projects.²⁹ Some distinctive observations from the recent cycle of investment include:

- New types of investors, especially institutional investors, allocating capital to Glasgow's real estate and niche sectors such as student housing.
- Rising number of large scale commercial office space developments and mixed-use projects.
- A larger and more diverse international investor base, for both real estate and FDI – including the US, France, Spain, Israel and Bermuda.³⁰
- Increasing levels of success at attracting investment as a preferred HQ and second office location (e.g. Channel 4).

3.5 Glasgow's skills and talent base is on the up

Glasgow's skills turnaround at the upper end of the labour market has been highly impressive. 44.4% of residents have a degree, which is not only well above the UK average (38%), but also the 5th highest among the main cities in the UK, well above major cities such as Birmingham, Manchester and Leeds. Glasgow also now boasts the 5th highest number of Higher Education students in the UK.³¹ In 2018, access to this highly skilled talent pool was highlighted as a leading advantage for Glasgow's start-ups.³²

Improving skills is a main reason Glasgow has seen one of the strongest improvements in PwC's Good Growth Index in the UK over the past 10-15 years, having increased its score at a rate more than 50% higher than the UK average during the same period. Working age skills attainment, improved job creation and work-life balance have all lifted Glasgow.³³

Talent retention is fast becoming a comparative advantage for Glasgow, and affordability ratios are still favourable across the City Region. Baseline forecasts suggest that local housing is likely to remain more affordable than most UK cities, which is an important selling point for mobile talent and business investors.

3.6 A City Centre with pulling power

Glasgow now benefits from a larger and more diverse city centre that accommodates multiple knowledge business sectors as well as education and a vibrant consumption economy. The city centre has been able to adjust to the shift towards high density digital employment, business process outsourcing and legal services.

The retail and night time economies are at the core of the working population of the city centre (21%+), with clothes shopping and nightlife acting as major drivers of regional and national visitation to the city centre. The ability of Glasgow's consumption economy to attract visitors from across Scotland and the UK, and to drive reliable foot traffic are recognised as important sources of the city centre's competitiveness.

3.7 Glasgow has translated its industrial know how into cutting edge science

Glasgow has global potential in photonics and quantum sensing.

The Central Belt Science and Innovation Audit highlights that Glasgow is at the core of an urbanised region that specialises in quantum tech, sensor systems and photonics, providing high quality, premium price services to end-user companies.³⁴ Glasgow is home to **QuantIC** (The UK's Quantum Technology Hub for Quantum Enhanced Imaging). Micro and nano electronics is also viewed to be the 2nd largest enabling tech sector for the region. The findings indicate that Glasgow's university and R&D assets can drive rapid export-led growth in these fields.

Glasgow has a strong platform to grow as a low-carbon industries hub.

Glasgow and the wider city region have an impressive renewable energy knowledge asset base, both in its business base and in its universities. These include Iberdrola's global renewable energy

centre in Scottish Power, Scottish & Southern Energy and recent corporate inward investment and UK Government investments. The development of new joint applied research centres in low carbon and related technologies can act as a catalyst for further development and investment. The development of Glasgow as Scotland's **International Technology and Renewable Energy Zone (ITREZ)** and as the location for the UK's Offshore Renewable Energy Catapult are exciting developments for the city's economy and businesses.³⁵

Glasgow has life sciences excellence.

The opening of the South Glasgow Hospitals Campus (the largest hospital campus in Western Europe) in 2015 along with complementary research capabilities offers an opportunity to grow life sciences. Universities in Scotland produce 5,000 first degree life sciences graduates per year, which fuel Glasgow's ability to carry out biotechnology R&D and the design and manufacture of advanced pharmaceutical devices.³⁶

Critically, these sectors are all at the heart of solving major and historic challenges for the UK and the world, and so are a source of potential influence and 'soft power' for Glasgow in future.

All of these strengths are underpinned by Glasgow's great research universities. Glasgow and Strathclyde Universities rank within the UK's 50 leading research universities. These universities have already had success at spinning out firms. Almost a third of Scotland's university spin-out companies originate in Glasgow's universities.

Importantly, Glasgow's technology strengths are well placed to drive upgrades in performance and competitiveness of the wider economy. The Science and Innovation Audit demonstrates that the region's strength in productivity-improving technologies is likely to improve the manufacturing, infrastructure and engineering performance of existing sectors.³⁷ These tech strengths include:

- Robotics and autonomous systems
- Industrial biotechnology
- Advanced materials
- Software and data analysis
- IoT and other control systems

3.8 Experienced host of major events and HQs

It is apparent from the data that Glasgow has started to win, host and attract more contested opportunities in the form of rotating events and multi-national offices and HQ functions. **Glasgow's scale and its role in the Scottish 'system of cities' has established it as a leading HQ location for a widening range of firms.** Glasgow is distinctive in the way it attracts HQ functions of:

- Large banks and insurance firms (e.g. Clydesdale and Yorkshire Bank, Scottish Mutual, Weir Group)
- Energy firms (e.g. Scottish Power)

- TV and Broadcasting (e.g. BBC Scotland, STV)
- Government (e.g. Department for Work and Pensions, Scottish Courts and Tribunals Service, GPU/HMRC)
- Research (e.g. Fraunhofer UK)

Glasgow has also built a track record with leading conferences and strategic events in biotechnology, electronics, engineering and construction. It is also successfully attracting events in important science, health and medical niches (e.g. mechatronics, oncology, haemophilia, pharmaceuticals, ultrasonics and computation). Glasgow has secured over 500 conferences through to 2022, with medical and life sciences meetings acting as strong drivers.³⁸ This flow not only generates business tourists and revenue, but is also an important advantage for Glasgow over other cities as it looks to build familiarity and affinity among prospective customers, talent and businesses of the future.

3.9 Glasgow's Has the Attributes to Make a New Cycle of Innovation Locations Succeed

Glasgow has three strongly emerging Innovation Districts – AMIDs, the City District and the University District - and the attributes needed to make all three of them work.³⁹ The demand ingredients are there given the size of the urban economy, the connectivity to other poles of growth, and the growing business base of leading-edge firms who utilise advanced technologies to be inventive and productive, and an enlarged talent and investor base. Around 7,000 new businesses already start up in the city region each year.

Glasgow's innovation districts possess the core ingredients to become globally competitive:

- (1) **They are underpinned by outstanding institutions who steward their development.** The National Manufacturing Institute for Scotland is the catalyst for AMIDS - it provides support for manufacturing businesses and connects all of Scotland's engineering universities and colleges. The Lightweight Manufacturing Centre and the University of Strathclyde's Advanced Forming Research Centre help to drive R&D of manufacturing technologies, and support the aerospace and automotive industries. Meanwhile the City District is adjacent to Strathclyde's new Technology & Innovation Centre (TIC), the ORE catapult and three other pan-Scotland innovation centres which specialise in the development of sensors, industrial biotech and digital health. The University District brings together multiple disciplines such as precision medicine, nano and quantum tech, and creative industries.
- (2) **They have excellent connectivity.** The AMIDs District has fantastic national and international connectivity to serve time-sensitive requirements in manufacturing and engineering. The City District is centrally located but still has direct access to the motorway network – and to Glasgow and Edinburgh airports – while Queen Street and Central stations connect to the Scottish and UK rail network. The University District is equally well located for access to the city centre and Glasgow Airport.
- (3) **They are served by improving urban amenities.** The Districts accommodate a mix of uses and institutional presence. City District in particular is a walkable, liveable neighbourhood

that is home to the University of Strathclyde and the city's creative Merchant City quarter, with the high amenity character to be appealing.

- (4) **They have effective multi-agency partnership.** The University Innovation District brings together the University of Glasgow, Glasgow City Council & Scottish Enterprise. The City District brings together government, industry and academia to build on the platform of existing research expertise, using the pipeline of high-quality, work-ready graduates. In both cases this provides the basis for the networking that underpins successful innovation districts globally.

3.10 Glasgow increasingly borrows scale from its region, an advantage in a global economy that favours scale and agglomeration

Glasgow's competitiveness appears to increasingly leverage the borrowed scale of its wider region and the complementary specialisations of Edinburgh.

The 'Central Belt Region' contains over 100,000 businesses - nearly 60% of the total active firms in Scotland - which together account for a combined GVA of nearly £100 billion, the 2nd largest in the UK after London.⁴⁰ **When measured together, the 3.3 million Region is at least one of the 20 largest urban regions in Europe, and is projected to grow faster than most other regions.**

This Region is becoming increasingly integrated. Commuting between the two metros was estimated at around 10,000 in the early 2010s, and in 2013 Greater Edinburgh contributed 1.8% of Greater Glasgow's workforce, and Greater Glasgow 4.3% of Greater Edinburgh's.⁴¹ Inter-city commuting has since risen and is set to grow by over 70% by 2022. This will rapidly increase the size of the region's shared labour pool, which is important as the jobs base grows and as specialisation develops.

This combined urban region is also able to achieve scale and visibility to compete for higher order activities. The evidence points to some distinct advantages when compared to other emerging dual-city regions in Europe. The region:

- Has strong growth fundamentals, with high overall job creation and a combined forecast economic growth of 2.1% per year between 2017 and 2020. This is well above the Scottish and UK average and is being driven primarily by growth in higher value sectors.⁴²
- Contains 8 universities, including 5 that are internationally competitive by research standards and account for nearly 10% of total UK research council funding, which is disproportionately high compared to its researcher population (6% of UK total).
- Is home to nearly 150,000 students, among the very top of medium sized regions (2 - 3.5 million metropolitan population) globally.
- Has an innovation ecosystem that benefits from some complementary specialisations, a mature collaborative ecosystem and a unique set of technology assets (see Section 4, below).⁴³

Collectively, these trends all point towards Edinburgh-Glasgow becoming a highly attractive city region, which will become more integrated as inter-city commuting and economic complementarity

develop. The region will be competing at a high level in a European context, comparable to Milan/Turin, Copenhagen/Malmö or Vienna/Bratislava.

Overall

The academic studies and recent evaluative reports provide compelling evidence that Glasgow has emerged into a much more competitive city than 20-30-40 years ago. In particular, the city has re-aligned around its fundamental capability: trade, engineering, innovation and decision-making. Glasgow has strong reasons to re-discover and celebrate its excellence, while remaining focused on the challenges that persist (see Section 5).

In the next sections we explore how these strengths translate into comparative and competitive assessments, and what that means for how Glasgow can confidently communicate its business story beyond the region.

4. Glasgow's business journey in comparative perspective

Glasgow's Improvement in the Benchmarks

How are the improvements observed across the literature reviewed in Section 3 reflected in the wider evidence of comparative city performance?

As part of this paper we have reviewed 450 global benchmarks, plus the full spectrum of available city and metropolitan data in order to observe how the strengths and promises outlined above translate into international performance recognition.

The evidence from global benchmarks firstly indicates that Glasgow is experiencing a strong uptick in comparative city performance since about 2015.

In the years after 2008, Glasgow tended to be disadvantaged and penalised by 3 tendencies in the way global comparative studies and benchmarks are designed:

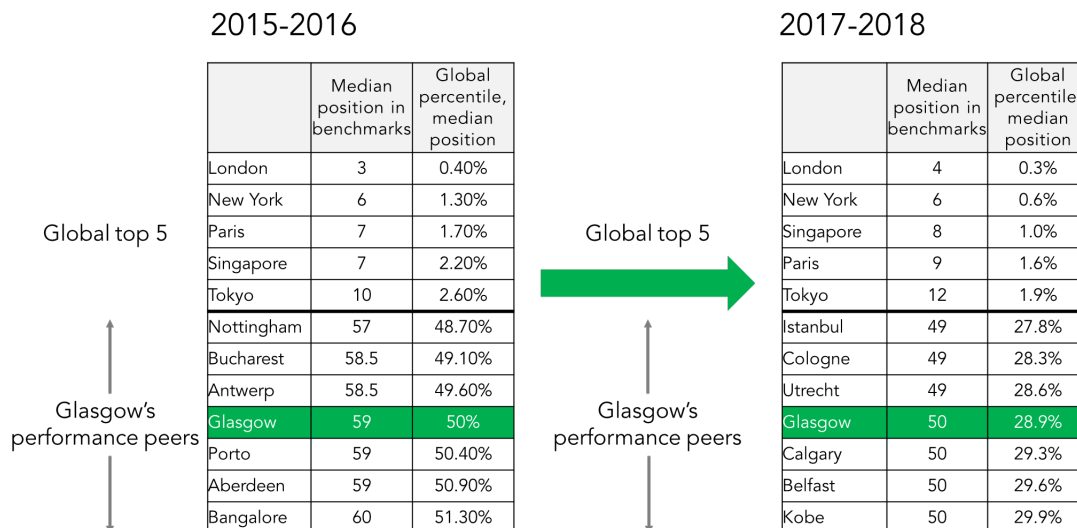
1. A tendency to measure cities on average and in aggregate. Glasgow is fairly unusual for possessing several areas of excellence, alongside large pockets of persistent low performance or disadvantage. The approach of indices tends to favour cities which perform more consistently towards the middle of the pack in all areas. This means that Glasgow's competitive edges are often not visible.
2. A tendency to be compared to larger, more globally established cities. As Scotland's largest city, and the UK's 2nd financial centre outside of London, Glasgow is frequently compared to cities with larger scale, more inherited assets, and more advantageous positions in their national 'system' of cities. This means Glasgow is penalised for size and scale limitations it cannot control and that it is compared to cities that are generally not in its competitive orbit. Many of Glasgow's peer cities – particularly other European cities such as Bilbao, Rotterdam and Dortmund – do not tend to feature in such benchmarks.
3. A tendency to be compared to all other UK cities. This has meant that Glasgow's strengths relative to relevant international comparators and competitors are not fully observed, especially in areas where UK cities as a whole perform well (e.g. foreign investment, higher education).

These embedded disadvantages persist, but nevertheless **over the past 3 years Glasgow's performance can be seen to be improving substantially.**

- In terms of Glasgow's position in the global metrics, the city has improved by 21 percentage points in the global measures: In 2015-16, among the 230 cities worldwide measured and ranked frequently, Glasgow's median position across benchmarks put it in the 50th percentile globally, on a par with cities such as Bangalore, Porto and Bucharest. By the most recent year, 2017-18, when over 310 cities are now regularly measured, Glasgow was in the 29th percentile for median performance, ranking 91st out of 313 cities, and on a par with a mixture of larger economic hubs such as Kobe and Istanbul and smaller cities that are reinventing their economies, such as Calgary and Utrecht (see Figure 8).

This relative improvement of Glasgow’s performance despite an overall increase in the number of cities measured suggests that **Glasgow’s incremental successes are starting to register. Among medium-sized cities, Glasgow ranks 32nd globally for overall performance across all comparative measures**, and sits alongside Ottawa, Canberra, Calgary and Cologne.

Fig. 8: Change in Glasgow’s median position in the global benchmarks, 2015-16 to 2017-18



Why is Glasgow improving?

There are two main reasons Glasgow is recording aggregate improvements relative to other cities:

Firstly, its absolute success in building financial, creative and BPO clusters, its improving ability to provide a high quality of living for its residents (costs, natural environment health and safety, etc.), and its ability to provide a platform for students and early career talent, are producing improved scores. Glasgow has improved its position in several high-profile global benchmarks that are updated each year and which reflect these successes. These include:

- Mercer’s Quality of Living Survey
- Nestpick’s Best Cities for Millennials
- Z-Yen’s Global Financial Centres Index
- QS Best Student Cities
- Tholons’ Global Outsourcing Destinations Index

Secondly, as attention turns towards longer term competitiveness and successful growth management of cities, there are more measures are focusing on areas where Glasgow has inherited strengths or is measured to be improving relative to other cities. These include:

- The digital, science and engineering economy
- Investment intensity as a mid-sized city
- Creativity and cultural economy
- Higher education offer
- Affordability and appeal for millennial talent

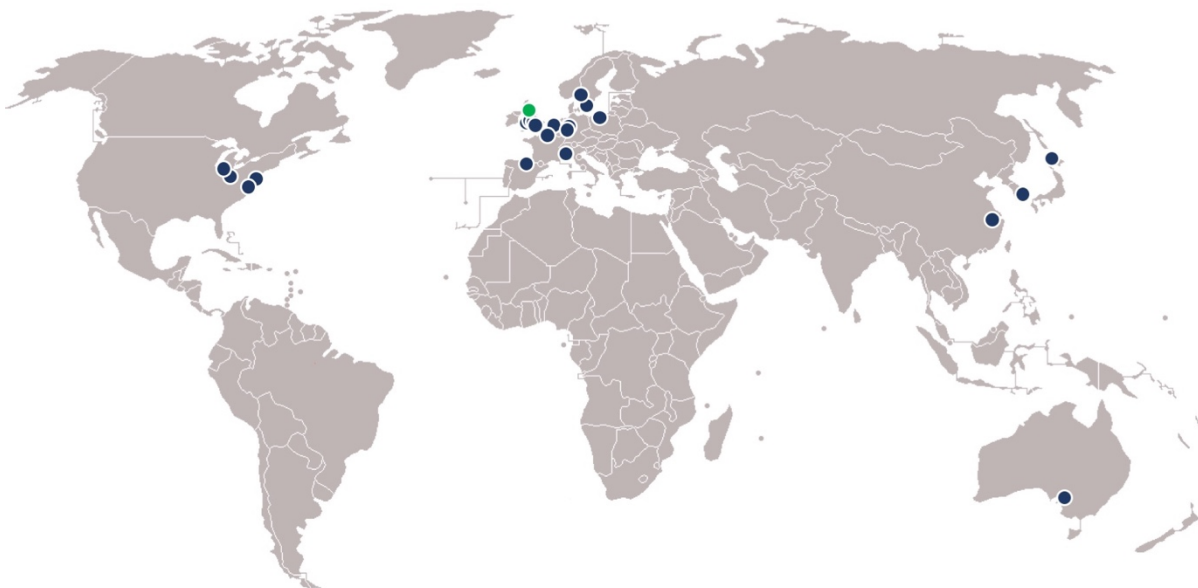
- Hospitality and welcome to a wide range of 'customers'
- District/neighbourhood visibility and performance

The world is starting to measure things where Glasgow is, or can be, more competitive. These are explored in more detail below.

Glasgow's Comparative Performance in Focus

Glasgow is not the only city on a journey of recovery. We observe many others that are 'peers' in one respect or another, either because of similar size, economic history and industrial DNA, coastal location, institutional presence, or positioning in new markets:

- Within the UK: Manchester, Birmingham, Liverpool, Leeds and Bristol
- Within Europe: Bilbao, Dortmund, Düsseldorf, Lille, Malmö, Gothenburg, Rotterdam, Turin and Gdansk
- Within North America: Pittsburgh, Philadelphia, Baltimore and Cleveland
- Within Asia-Pacific: Adelaide, Suzhou, Sapporo and Busan



In some segments, these cities are in direct 'competition' with Glasgow for business, investment and trade. In others, they are comparators because of shared elements of their evolution. Many were former capitals of industry and trade. These cities have had to pursue similar approaches in terms of:

1. Rationalisation of land uses in the city centre to accommodate new kinds of economic activity and residential population.
2. Re-skilling their industrial workforce for a services and knowledge-based economy.
3. Identifying and supporting their anchor institutions and companies, and related legacy assets, to support a new phase of engineering innovation.

In the following section we examine how Glasgow is performing against these cities. Whenever the word 'peers' appears in the text below, Glasgow is being compared to this group of up to 22 cities. However, in certain instances, we also assess how Glasgow performs relative to a wider cohort of medium-sized cities. In these cases, Glasgow is compared to all medium-sized cities for which data is available. The definition we use for medium-sized city is typically 1-3 million metropolitan population although the bandwidths vary slightly depending on the data coverage. Outside of the core group of 'peer' cities identified above, such cities include, for example:

- Within the UK: Edinburgh, Cardiff, Belfast
- Within Europe: Cologne, Lisbon, Copenhagen
- Within North America: Vancouver, Austin, Ottawa
- Within Asia-Pacific: Brisbane, Auckland, Wellington

What we demonstrate below is that by the standards of cities that may be considered 'peers', the nature of Glasgow's recovery is especially visible in terms of:

1. A resurgent financial cluster
2. Large professional core served by a rejuvenated skills base
3. Universities playing anchor roles for the new economy
4. Real innovation edges
5. A dynamic and resilient retail market
6. Tourism and hospitality reputation
7. Millennial appeal
8. Investor demand
9. Global connectivity – airport, digital and power
10. Social capital and working environment

These can form the basis for a renewed business story.

Where does the comparative analysis confirm or reveal what Glasgow is especially or especially good at?

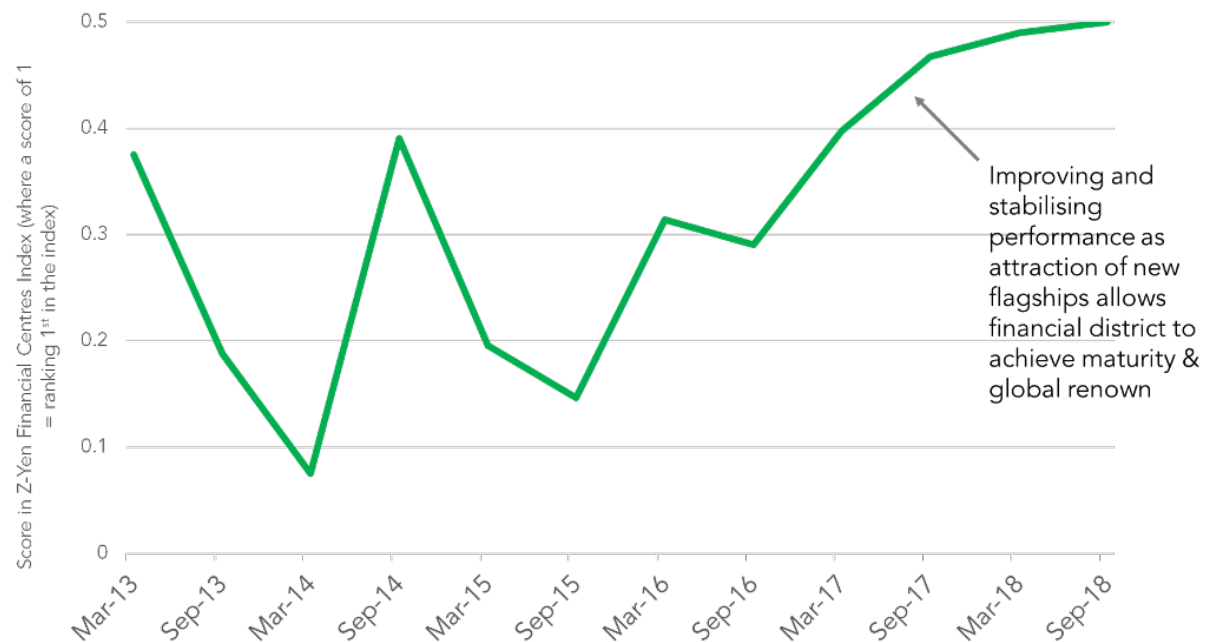
4.1 Glasgow has a resurgent finance cluster and is one of only 10-15 medium-sized cities in the world with a recognised and maturing international financial centre.

As the financial district matures and attracts more anchor occupiers, Glasgow now performs unusually well in international metrics of financial services centres.

As can be seen in Figure 9, Glasgow has emerged as a mature and established global financial centre. Since 2015, Glasgow has seen steady climb in major index performance as its main financial district has matured. Investor and occupier confidence has gradually returned due to increasing pre-let activity and a pipeline of plans to further enhance the area. Over the last 18 months, the city has consolidated its status as a global top 50 financial centre whose reputation among professionals in the know is disproportionately strong compared to its size, and is steadily improving relative to the rest of the world.⁴⁴ 2017/18 was a very strong year for IFSD - dubbed by

Cushman and Wakefield as "transformational in history of IFSD" due to the successful acceleration of ambitious regeneration plans, and the location of Morgan Stanley and various government departments within flagship buildings on Waterloo Street and Atlantic Quay.⁴⁵

Fig. 9: Glasgow's financial centre performance over time



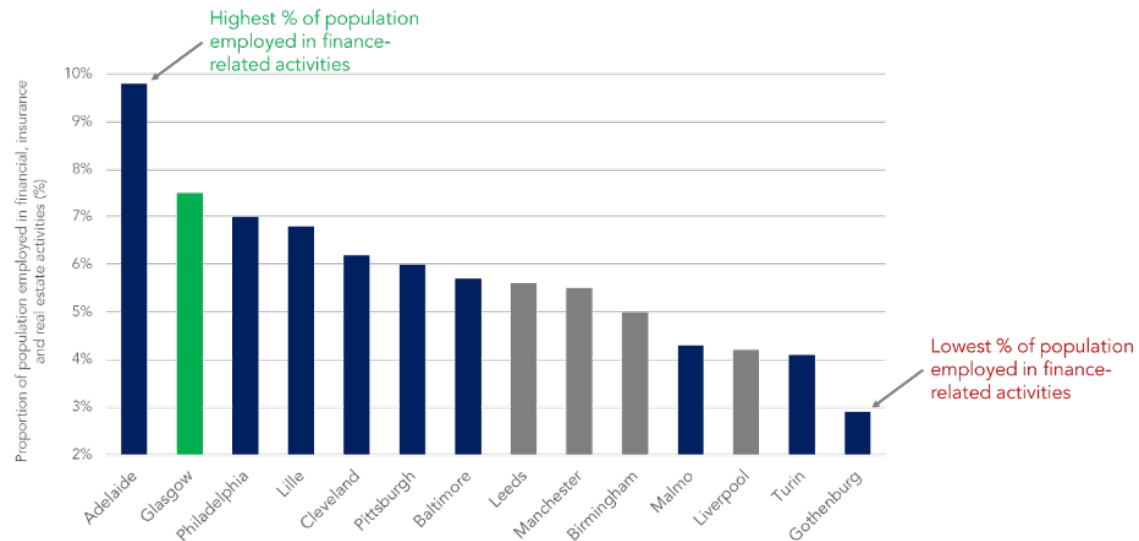
Source: Z-Yen Global Financial Centres Index.

Very few other cities of Glasgow's size anywhere in the world are recognised as financial hubs. The only other secondary/tertiary cities of a similar size are Calgary (42nd) and Wellington, New Zealand (45th). Glasgow now sits alongside more established world cities (over 2.5 million in metropolitan population), or capital cities, not smaller secondary cities, for its financial performance. In the latest edition of the Global Financial Centres Index, Glasgow is surprisingly ahead of established and significantly larger European business hubs and capitals, including Vienna (51st), Madrid (53rd), Brussels (54th) and Milan (56th).⁴⁶

4.2 Glasgow has a very substantial knowledge-intensive professional services base to its economy.

Glasgow has a higher proportion of people employed in finance, real estate and insurance than any of the other six predominantly urban UK Combined Authorities (also including North East England and the Sheffield City Region), and more than all of its measured global peers except for Adelaide (see Figure 10). This, combined with growth in other knowledge jobs, means that Glasgow benefits from a strong professional core compared to other cities of its size and calibre, and points to a favourable sectoral structure. The forecast trend numbers for this professional economy are very positive for at least the next 5 years.

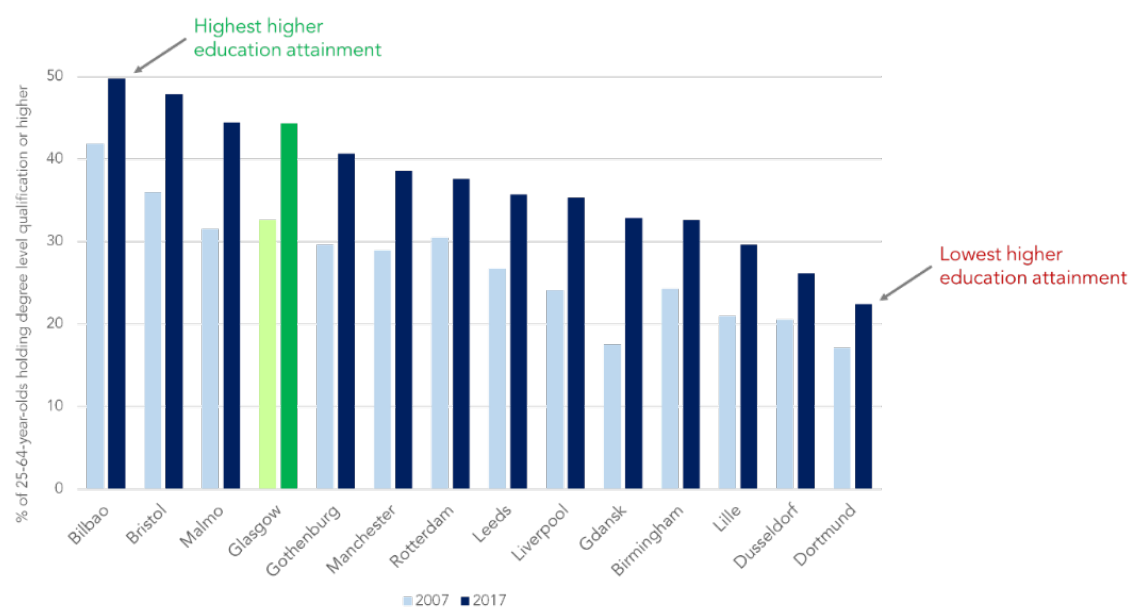
Fig. 10: Proportion of population employed in financial, insurance and real estate activities



Source: Census data.

Glasgow benefits from very strong HE attainment by European standards. In 2017, **Glasgow ranks in the top 10% of regions in Europe for the proportion of working age adults with at least a degree-level qualification.** Among other European peers, Glasgow is 4th only to Malmö, Bilbao and Bristol/Bath for this measure, while among the UK core cities, Glasgow is 2nd (see Figure 11).

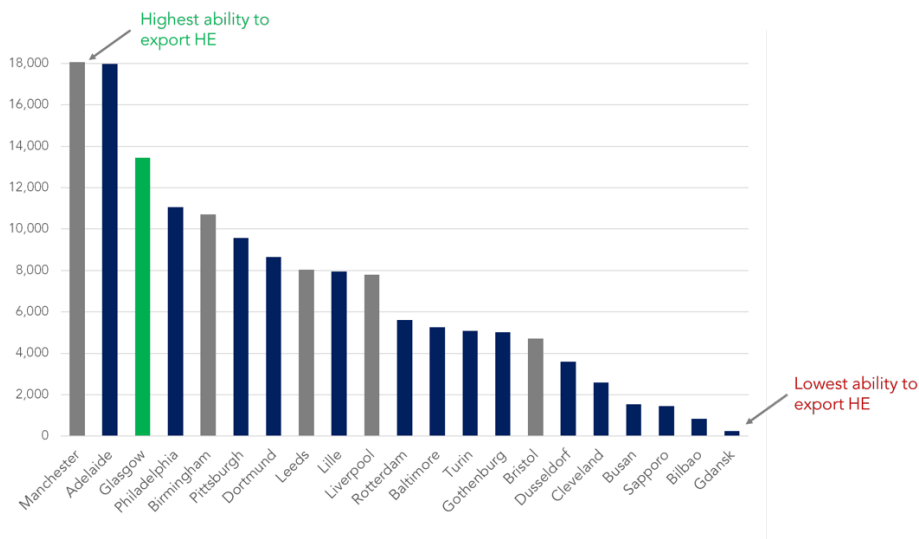
Fig. 11: Higher education attainment by city region, 2007 and 2017



Source: Eurostat (NUTS2 scale).

This talent base is, in principle, boosted by Glasgow’s very high number of international students (see Figure 12). **Compared to other medium-sized coastal cities (1 - 2.5 million metropolitan population), Glasgow has more international students studying in competitive universities than almost any city in the world except for Auckland, Brisbane, Dublin, and Edinburgh.**⁴⁷ Together, the further and higher education sectors in Glasgow generate £1.6bn of output in the Scottish economy.

Fig. 12: Exports of higher education (number of international students studying in top 1000 ranked universities)

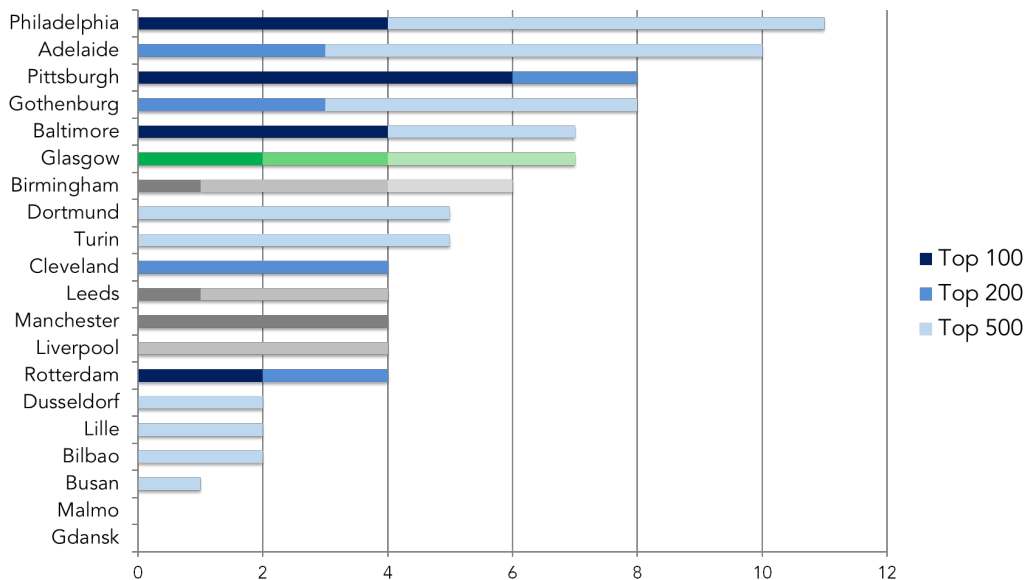


Source: QS.

4.3 Universities excel, especially for Engineering and Industrial Design

Glasgow’s universities are increasingly competitive internationally and they excel in key niches that are important to the new economy. As Figure 13 shows, their frequency in the top 100 and top 200 global rankings is impressive relative to other cities that have undergone similar evolution.

Fig. 13: Number of university appearances in top global rankings, by city region

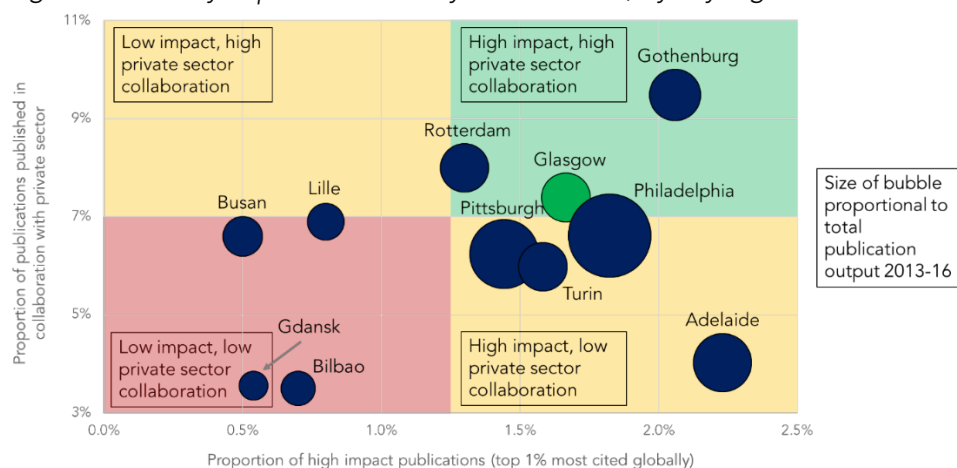


Sources: QS, THE, ARWU, CUWR.

Glasgow’s universities also excel for high impact, highly collaborative research. 1.7% of the City Region’s publications are among top 1% most cited globally - significantly more than global peers. Nearly 7.5% of publications are produced in collaboration with private sector firms, which is also much higher than the average. Within the UK, Glasgow rates 0.1% and 0.6% higher than the average respectively for these measures.⁴⁸

Glasgow's high impact, collaborative research edge is supported by new infrastructure such as the South Glasgow Hospitals Campus (the largest hospital campus in Western Europe), and £4 million in funding for the MediCity Scotland facility, which is designed to cluster academics, entrepreneurs, clinicians and business support staff. Overall, this engagement with external demands and priorities makes Glasgow's universities a major asset in continuing to pivot towards the future of jobs and the future of technology (see Figure 14).

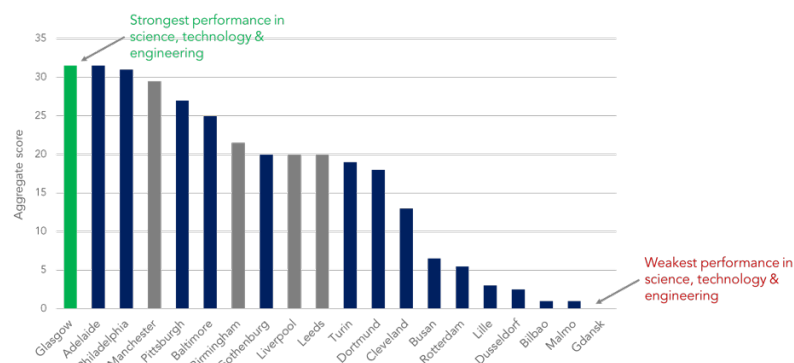
Fig. 14: University impact and industry collaboration, by city region



Source: Leiden University Ranking.

A critical edge for Glasgow is the fact it has the strongest aggregate performance in sciences, technology and engineering among peer cities we reviewed (joint with Adelaide) (see Figure 15). Glasgow University's engineering department ranks in the top 5 in the UK for "internationally excellent" and "world-leading" research, as does Glasgow and Strathclyde's joint chemistry submission (3rd). Glasgow ranks 45th worldwide for life sciences, putting it ahead of major university cities such as Zurich, Bristol and Pittsburgh. It is also 97th for Natural Sciences, on a par with Paris' Ecole Normale Supérieure and ahead of Stockholm and Milan. The University of Strathclyde's relative strengths in electronic and electrical engineering mean that the Glasgow region also has 2 universities that rank in the top 200 for engineering and technology.

Fig. 15: Aggregate university performance in sciences, technology & engineering



Sources: QS, THE. *See appendix for methodology.

Glasgow benefits further from a **strong cluster of creative and arts schools** compared to many international cities. Glasgow School of Art ranks 16th globally for Art and Design, ahead of leading

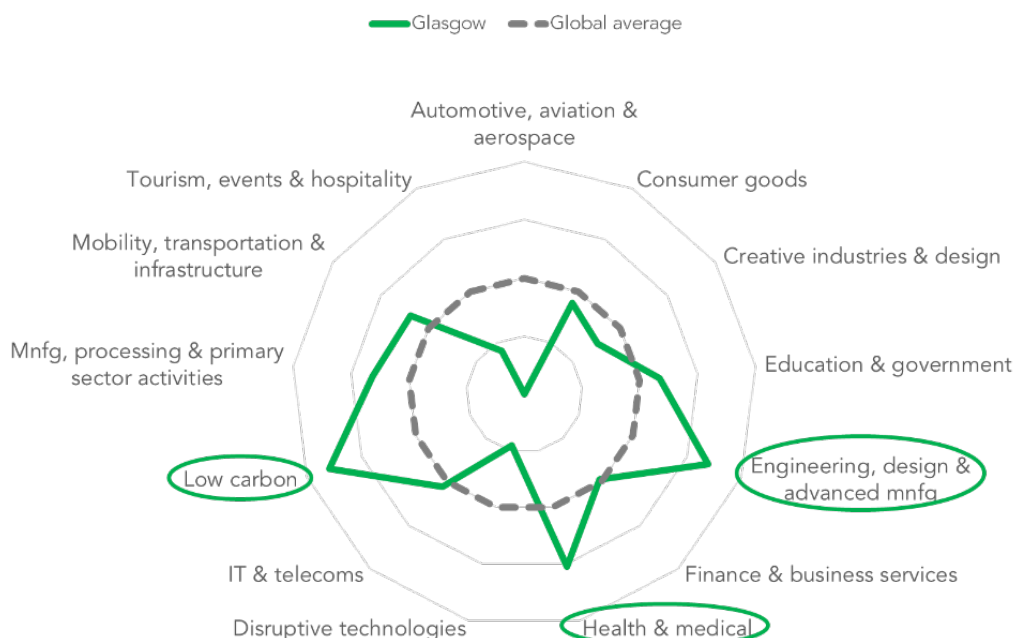
arts schools in Sydney, Oslo and Eindhoven, while the Royal Conservatoire of Scotland ranks 5th for Performing Arts, ahead of globally renowned conservatoires in Paris, Stockholm and Melbourne. Across the whole metropolitan area, there are nearly 250 Creative Arts and Design courses on offer – far more than in many of its other global peers. This flow of world-class arts and design skills is of fundamental importance as creative industries increasingly cross-fertilise with corporate and technology sectors where Glasgow is well placed to grow.

4.4 Glasgow is starting to produce real innovation edges.

A review of Glasgow’s most rapidly scaling innovative firms shows that the region is growing its presence in several leading "enabling technologies" sectors.⁴⁹ It is already known that the Central Belt region is home to over 90% of Scotland's enabling technology companies, and that current plans aim to double the size of the existing enabling technology asset base over the next 10 years.⁵⁰

The latest global data shows among **top innovative firms based in Glasgow there is an unusually strong representation in low carbon** (80% higher than the global average), **engineering, design and advanced manufacturing** (+68%), and **health and medical sectors** (+53%). Glasgow is producing more innovative activity than most cities in renewable energy, green building and clean tech; industrial and mechanical engineering; and biotechnology, healthcare and medical devices respectively (see Figure 16). Leading scale-ups include MindMate, a wellness and healthcare firm; TC BioPharm, a biotechnology and therapeutics firm; and Kite Power Systems, a specialist in renewable energy.

Fig. 16: Presence of Glasgow’s top innovative firms by sector



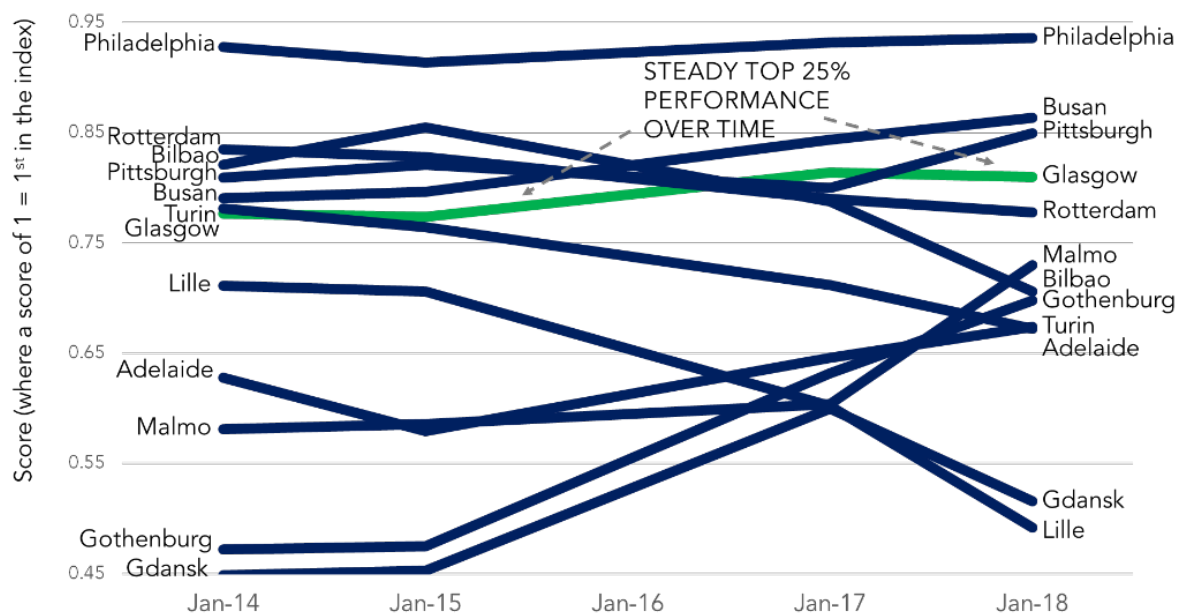
Source: Crunchbase, October 2018 data.

Glasgow appears to be successfully leveraging its University of Strathclyde Centre for Innovative Manufacturing in Continuous Manufacturing and Crystallisation to establish an international reputation for industrial biotechnology (linking chemicals, life sciences and engineering), and pharmaceuticals.

By contrast, Glasgow's innovative activity in the sectors of disruptive technologies (e.g. IoT, AI, mobile apps, automation, etc.) and creative industries and design (e.g. printing, broadcast, fashion, etc.) are underrepresented compared to the global average, by 56% and 23% respectively.

This fine-grained data is also reflected in larger benchmarks that point to Glasgow's steadily improving its innovation capabilities. The city places inside the top 100 in the latest edition of 2thinknow Consulting Innovation Cities Index, which is much higher than most other UK and European post-industrial cities of a similar size and asset base, and an improvement on 2014 (see Figure 17). Over the past 5 years, Glasgow has consistently ranked in top 20% (top 100 cities) globally, holding its own against other leading cities in Europe, Asia and elsewhere. It places 4th in the UK, behind Manchester and Edinburgh, but well ahead of Bristol and Birmingham.⁵¹

Fig. 17: Performance in 2thinknow Consulting Innovation Index over time



Source: 2thinknow Consulting.

Real-time databases indicate that Glasgow currently hosts around 575 innovative firms in its metropolitan area - the highest absolute number of firms among measured global peers with similar populations (0.8 - 2 million metropolitan population) (see Table 2). Looking on a per capita basis, Glasgow has the 3rd highest innovation intensity among this size bracket behind Malmö and Gothenburg, and is ahead of most of the pack overall.

Glasgow also hosts a significant number of specialised incubators and accelerators. There is a strong creative industries slant, with 4 out of the 15 designed specifically for creative, media and design firms. Glasgow's system of incubators and accelerators caters to firms at all levels of development, from seed to late growth stage. Overall, Glasgow has the 2nd highest number of

incubators/accelerators among measured global peers behind Philadelphia, and a third are affiliated with a university (see Table 3).

Table 2: Innovation Intensity (number of firms per million population) by city region

	No. of innovative firms	Regional population (millions)	Innovation intensity (no. of firms per million population)
Philadelphia	4,776	6.1	783.0
Cleveland	1,564	2.1	744.8
Baltimore	1,823	2.8	651.1
Malmö	501	0.8	626.3
Gothenburg	459	1	459.0
Manchester	1,135	2.8	405.4
Rotterdam	1,221	3.7	330.0
Leeds	983	3	327.7
Glasgow	575	1.8	319.4
Adelaide	389	1.3	299.2
Birmingham	785	2.8	280.4
Liverpool	417	1.5	278.0
Lille	233	1.3	179.2
Gdansk	156	1.0	156.0
Bilbao	168	1.1	152.7
Turin	233	2.3	101.3
Düsseldorf	457	5.1	89.6
Dortmund	146	2.5	58.4

← Highest innovation intensity

← Lowest innovation intensity

Source: Crunchbase, October 2018 data.

Table 3: Key characteristics of incubators and accelerators, by city-region

	Number	Median age (y)	% >5y old	% affiliated with university	% small (0-10 firms)	% medium (10-50 firms)	% large (50+ firms)	Specific strengths
Philadelphia	20	4	30.0%	45.0%	44.4%	55.6%	0.0%	Health (2), nanotech (1), advanced manufacturing (1)
Glasgow	15	5	53.3%	33.3%	33.3%	33.3%	33.3%	Creative industries (4), life sciences (2), IoT & informatics (2)
Pittsburgh	10	5	60.0%	10.0%	22.2%	33.3%	44.4%	Life sciences (1), fintech (1), robotics (1)
Rotterdam	9	6	55.6%	22.2%	12.5%	25.0%	62.5%	Port (1), circular economy (1), food (1)
Adelaide	9	4	33.3%	22.2%	16.7%	33.3%	50.0%	Defence (1)
Gothenburg	6	14	60.0%	33.3%	0.0%	75.0%	25.0%	Life sciences (3), creative industries (1)
Malmö	4	10.5	100%	0.0%	25.0%	50.0%	25.0%	Life sciences (1), creative industries (1)
Gdansk	3	4	33.3%	0.0%	100.0%	0.0%	0.0%	N/A

Sources: Crunchbase, city-level incubator and accelerator directories.

4.5 Glasgow's Competitive Service Economy – Retail, Hospitality and Events

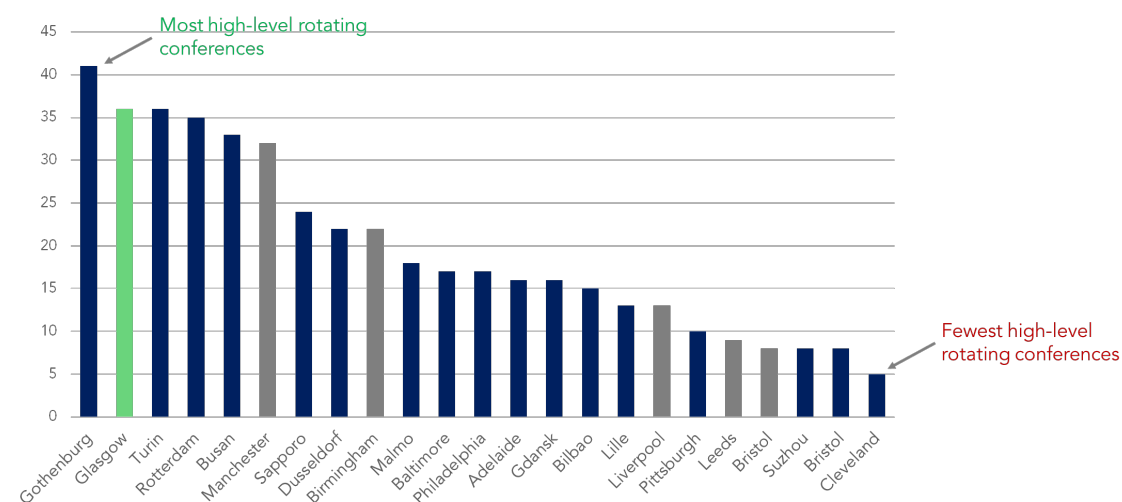
Glasgow has a vibrant retail economy and an impressive global retailer presence. It is 2nd in the UK for market spend potential, behind London's West End (and 12th in Europe, just behind Milan, Zurich and Amsterdam).⁵² The city punches well above its weight in this regard. In measures of attractiveness to international retailers, it ranks 102nd globally, behind Philadelphia and Manchester but ahead of Adelaide, Gothenburg and Birmingham. Glasgow achieves an impressive 41st globally for international retail rents, on a par with a mixture of large, established capitals such as Madrid, Beijing and also smaller and up-and-coming cities which are diversifying their retail offering, such as Oslo.⁵³

Data also indicates that Glasgow has been improving the quality of its retail offer faster than other cities. In terms of the proportions of up-market shops– Glasgow is up 30 places to 38th since 2014 in the Harper Dennis Hobbs UK Index, putting it ahead of Liverpool (47th) and Bristol (53rd) and on a par with Birmingham (34th) and Manchester (35th).⁵⁴ This trend is driving plans for a high end £100 million Harbour Lifestyle Outlet in the city.⁵⁵

Relative to its size, Glasgow's ability to host conventions and conferences is also very competitive.

Glasgow rates an impressive 72nd globally for number of high-level rotating meetings and major ICCA-registered conferences hosted in 2016-2017.⁵⁶ This puts it 3rd in the UK behind Edinburgh and London, and far ahead of all measured global peers apart from Gothenburg (see Figure 18). Glasgow is also very successful at attracting conferences with large numbers of delegates. So far in 2018, for example, Glasgow has hosted two conventions with more than 3,000 delegates (World Federation of Haemophilia, 4,000 delegates and FIP World Congress of Pharmacy and Pharmaceutical Sciences, >3,500 delegates). This is more than, Edinburgh for example, where the highest number of delegates across any conferences was 2,500. Among mid-sized cities (1-3 million metropolitan population), Glasgow ranks 30th globally for the number of events hosted, just behind many European capital cities.⁵⁷

Fig. 18: Number of high-level global rotating meetings and conferences by city-region



Source: ICCA, 2017.

Glasgow's meetings industry is also an early adopter of good sustainability practices. It places 5th out of 38 cities globally in ICCA et al.'s Global Destination Sustainability Index for sustainable

growth in MICE tourism, up from 7th in the previous edition. This is because of Glasgow's high concentration in the city centre and the commitments of industry stakeholders:

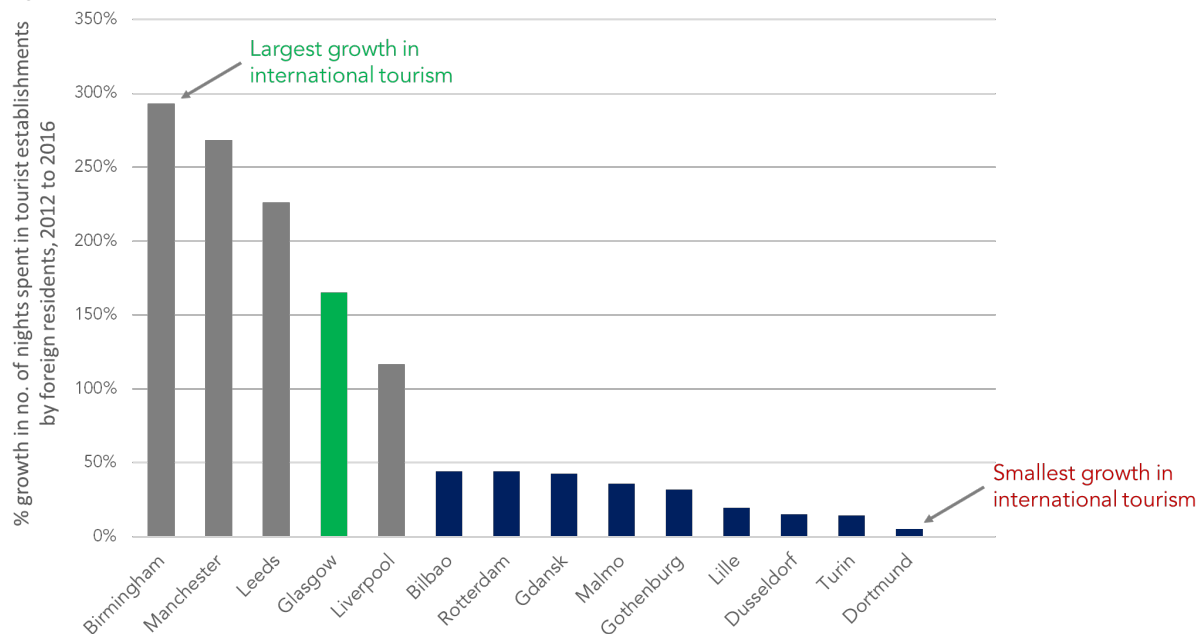
- Over 95% of city's hotel bedrooms (more than 7,000 rooms) are within 30 minutes of the Scottish Event Campus and are easily accessible by public transport.
- 40% of the city's hotels have achieved a Green Tourism award.
- In 2017, 15% of all conferences were in the field of sustainability, 2nd only to medical + life sciences meetings.⁵⁸

A highly sustainable MICE sector is one of the reasons why Glasgow recently ranked 19th for its environmental sustainability in the new version of the Arcadis Sustainable Cities Index. This result places the city higher than New York, Barcelona and Paris, 3rd in the UK behind Edinburgh and London, and 5th in the Arcadis-defined category of "post-industrial opportunists."⁵⁹ This can be an important additional attribute to the way Glasgow communicates its industrial and technology strengths.

4.6 Glasgow has a great comparative record in tourism, hospitality, accommodation, cuisine, & cultural experiences

Glasgow has witnessed a major cycle of growth in tourism relative to other cities, experiencing more than 150% growth in the number of nights spent by overseas visitors since 2012.⁶⁰ Although the city does not quite reach the levels of growth witnessed by Birmingham and Manchester, across all regions in Europe, Glasgow ranks in top 10% for this measure. Tourism in the city region has grown more than 3 times as fast as some of its closest European peers, including Bilbao, Turin and Gothenburg (see Figure 19).

Fig. 19: Growth in International tourism, 2012-2016



Source: Eurostat (NUTS2 scale).

In the UK, Glasgow's hotel sector has been growing faster than in any other city. In the first half of 2018, the average cost for an overnight stay climbed 7.5%, while RevPAR grew at 8x the UK average.⁶¹ This growth is partly due to Glasgow's emerging reputation for excellence in

hospitality, accommodation, cuisine and authentic cultural experiences. **Glasgow was recently rated as one of the top 10 cities in world based on TripAdvisor online ratings**, with one of the highest percentages of Certificate of Excellence recipients.⁶²

Repeat visits are made more likely by the fact that visitor satisfaction with the city's main ports of entry (e.g. train stations, airports etc.) is also extremely high. In a recent review, Glasgow ranked 5th out of 100 cities globally for this measure, making it the highest ranked UK city. This is linked to consistent investment in upgrading the city's airport, increasing capacity and focusing on passenger experience, which also will apply to key termini such as Queen Street Station.⁶³

This emerging reputation for customer service, together with waterfront developments and an increasingly distinctive culinary scene, are helping to direct more attention to the city. In 2018, Glasgow was ranked by the New York Times as a top 10 destination to visit, while the city was also recently ranked one of the 10 leading European destinations for growth in demand for cultural experiences.⁶⁴ TripAdvisor data reveals that bookings for cultural experiences have risen 148% compared to 2017, and the clear directions for building the city's cultural offer and global profile are outlined in the city's 2023 Tourism and Visitor Plan.⁶⁵

4.7 Strong recent record of RE investment

In previous years, the majority of Scottish office investment has occurred in Edinburgh, but recently more than 50% of the total volume has been transacted in Glasgow. International investment in the city's office market is now going through a particularly strong surge. In 2016, when £208 million was transacted across 14 office deals, foreign buyers made up 52% of the total volume, whereas in 2017, when £461 million was spent across 23 office deals, foreign buyers accounted for 65% of the volume.⁶⁶ This is part of a larger trend of an increase in interest from investors in Asia, New Zealand, the Middle East, Europe and America, due to a variety of macro factors as well as local market fundamentals.⁶⁷

These trends are supported by recent benchmark assessments. Looking globally, Glasgow ranks 103rd for cross-border real estate investment, which is high relative to its small size, and higher than most European and UK peers except for Manchester (68th), Edinburgh (74th) and Birmingham (63rd).⁶⁸ At a global level, Glasgow's matches Kuala Lumpur and Memphis for cross-border real estate investment volumes. Meanwhile, it ranks 151st globally for commercial attraction, higher than all continental European and American peers except for Rotterdam and Philadelphia.⁶⁹

Overall, Glasgow's strong results reflect an increasing confidence to invest, due to a positive supply:demand ratio, the fact that city has one of lowest rental levels of the UK's "Big 6" Regional cities (implying room for growth), rising headline rents, and a current prime yield which offers an alternative discount to cities such as Edinburgh, Manchester and Birmingham.⁷⁰

4.8 Glasgow's Millennial appeal is on the rise

As mentioned above, many of the global measures of cities are turning towards factors that favour Glasgow. This is especially the case where studies are starting to track which cities meet the needs and preferences of early-career mobile workers. Among several examples, the city is now 7th among medium-sized cities globally for **attractiveness to millennial talent** (19th overall, up from

30th year previous).⁷¹ Within the UK, Glasgow's millennial appeal is the 3rd highest among this cohort, behind Manchester and Bristol. These strong scores are due mainly to high scores for internet speed, high levels of personal and political freedom and choice (28th globally), and low housing costs (32nd globally). Moreover, Glasgow was recently ranked as the 12th most "Hipster" city in Europe (42nd out of more than 440 cities globally) in MoveHub's Index, based on the concentration of amenities such as vegan eateries, coffee shops, tattoo studios, vintage boutiques, and record stores.

Meanwhile in an increasingly competitive field, Glasgow is still a **top 50 global city for students**. In the major study by QS, the city ranks 43rd globally, and continues to be buoyed by strong scores for positive student recommendations (also 43rd) (favoured by diverse student mix and high proportion of international students) and high levels of employer desirability (51st). Within the UK, Edinburgh (14th) and Manchester (24th) are also very competitive but by international standards Glasgow stands out.⁷²

Finally, Glasgow **is improving its ability to retain its millennial and working-age talent**. The latest data on graduate retention rates suggest that Glasgow has improved to become the 4th best city in the UK outside of London for retaining talent, with a graduate retention rate of 46%.⁷³ This puts Glasgow slightly behind Manchester and Birmingham, but well ahead of other major UK cities such as Edinburgh (42%), Liverpool and Leeds (outside the top 10). Looking more globally, it is also promising to see that Glasgow's graduate retention rate is much higher than the average across all US metropolitan regions (30%).⁷⁴

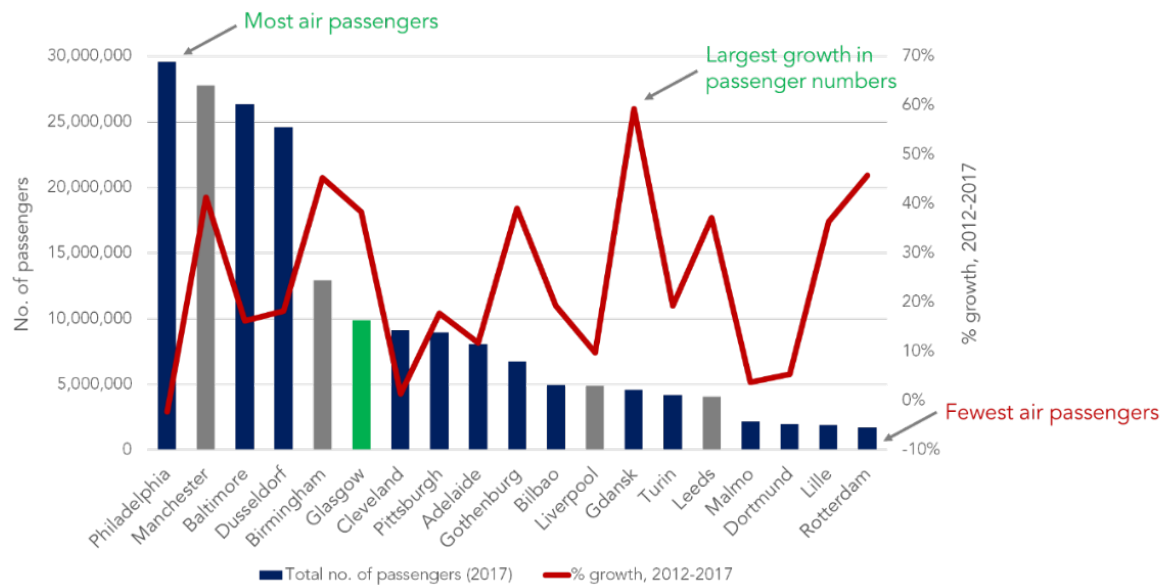
4.9 Glasgow has very strong Airport, Digital and Energy infrastructure

Global reach is increasingly critical to long-term competitiveness. In 2016, Glasgow offered direct international connections to 76 destinations, ranking 69th globally for this measure. This is very high given the city's small size, and up from its ranking of 89th in 2014.⁷⁵ Looking globally, within the category of secondary coastal cities with metropolitan populations of 1 to 2 million, Glasgow ranks higher than almost all others except for established European resort cities such as Nice, Venice and Palma di Mallorca.

Glasgow also rates very favourably for passenger throughput and growth. Among global peers, Glasgow has in absolute terms the most airport passengers in its size bracket (1 - 2 million metropolitan population) (see Figure 20). Its growth in passenger numbers also puts the city on a par with important European hub airports. Compared to its metropolitan population, Glasgow has more airport passengers than destinations such as Philadelphia and Dusseldorf (see Table 4).

An important enabler of overall airport passenger growth in recent years (+38% between 2012 and 2017) has been the addition of new routes to important business centres. Glasgow airport recorded its busiest ever year in 2017 in part due to the introduction of new services to Madrid, Frankfurt and Lisbon (Ryanair), New York (Delta), and record passenger numbers to and from the U.A.E. thanks to the new daily double services to Dubai.⁷⁶ These links allow Glasgow to develop both its two-way visitor traffic but also foster more business and trade links.

Fig. 20: Airport passengers, total and % growth



Source: Airport Annual Reports.

Table 4: Number of airport passengers per million residents

	No. of passengers (millions)	Regional population (millions)	No. of passengers per million population (millions)
Manchester	27.8	2.8	9.9
Baltimore	26.4	2.8	9.4
Gothenburg	6.8	1.0	6.8
Adelaide	8.1	1.3	6.2
Glasgow	9.9	1.8	5.5
Philadelphia	29.6	6.1	4.9
Dusseldorf	24.6	5.1	4.8
Birmingham	13.0	2.8	4.6
Gdansk	4.6	1.0	4.6
Bilbao	5.0	1.1	4.5
Cleveland	9.1	2.1	4.4
Liverpool	4.9	1.5	3.3
Malmo	2.2	0.8	2.7
Turin	4.2	2.3	1.8
Pittsburgh	9.0	5.0	1.8
Lille	1.9	1.3	1.5
Leeds	4.1	3.0	1.4
Dortmund	2.0	2.5	0.8
Rotterdam	1.7	2.3	0.8

Source: Airport Annual Reports.

Coverage and speed of internet connections are also a key comparative advantage for Glasgow.

Unlike many international peers, virtually all of Glasgow region has access to basic broadband at download speeds of at least 2mb, and access to superfast broadband is improving through trials of Fibre to the Premises (FTTP). Glasgow currently ranks 6th out of all UK cities for its overall digital connectivity, which is primarily due to the city's impressive 3rd place for mobile connectivity: 61% 4G coverage and an average download speed of 33 mbps.

Glasgow is also a UK leader in terms of renewable energy production potential. With over 11,500 renewable energy sites and a combined generation of over 3,500,000 MWh, the city has a huge renewable energy advantage compared to other cities in the UK. Glasgow currently has a generation:household ratio of 4.30, which is many times higher than the other measured UK cities including Manchester and Liverpool.⁷⁷ Glasgow's visibility in this area will be enhanced by the fact it is the HQ for the UK government's Renewable Energy Catapult, the UK's leading Tech Innovation and Research Centre for Offshore Renewable Energy, which has supported more than 400 SMEs.⁷⁸ The city is also home to the largest annual Renewable Energy event in the UK, All Energy, which attracts >7,000 attendees annually.⁷⁹

4.10 Social capital and working environment

The global comparative studies increasingly record and gauge cities by the quality of life and environment for workers. Such measures suggest that **there is potential to make more of Glasgow's tolerance and cohesion, lower stress urban living and relative affordability for business and workers.**

Tolerance and Cohesion

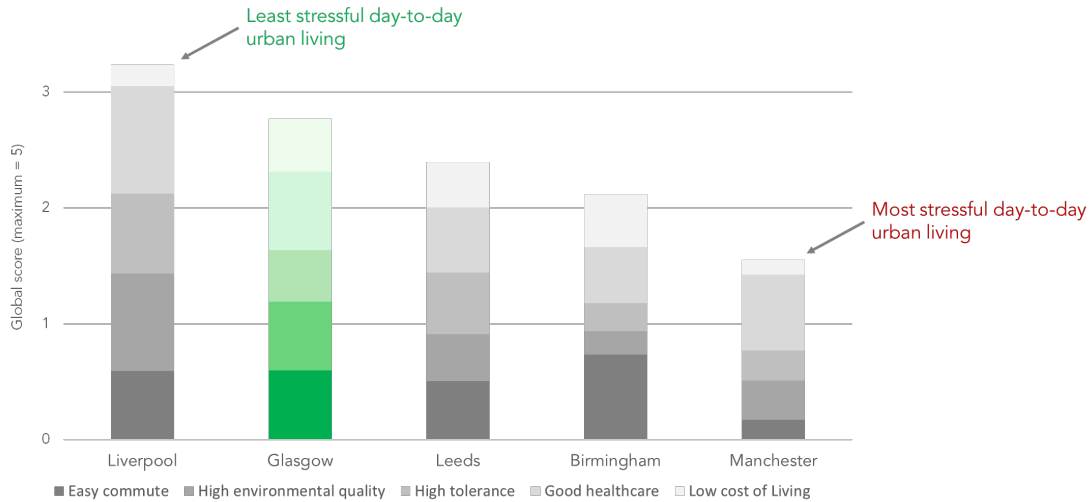
More assessments now examine how well cities can accommodate diversity. For example, Glasgow ranks 26th out of 110 cities globally (18th in Europe) for LGBT inclusion.⁸⁰ This puts the city well above the majority of its global peers and globally on a par with renowned open cities such as Sydney and Lisbon.

Glasgow is also now in the top 25% of cities globally (35th out of 165) for social cohesion.⁸¹ Again, this puts the city ahead of all of its non-UK peers except Rotterdam and established world cities such as London (68th) and Paris (87th) and on a par globally with historically inclusive cities such as Vienna, Hamburg and Vancouver. Glasgow is recording improvements in this area in part because of a sustained focus on resilience and more empowered communities in recent years.⁸²

Lower Stress Urban Living

Many widely available datasets that are used to inform other influential benchmarks and studies find that Glasgow rates well for low-stress urban living. This is mainly due to the high quantity of green spaces (13th), and improving mental health relative to other cities (28th) (awareness, suicide rates + coverage of mental health professionals).⁸³ In the UK, Glasgow ranks 2nd behind Liverpool for management of key causes of urban stress (e.g. long commutes, expensive/inaccessible healthcare, lack of tolerance, poor environment quality, etc.) (see Figure 21).

Fig. 21: Glasgow's ability to manage key causes of urban stress in comparison to UK peers



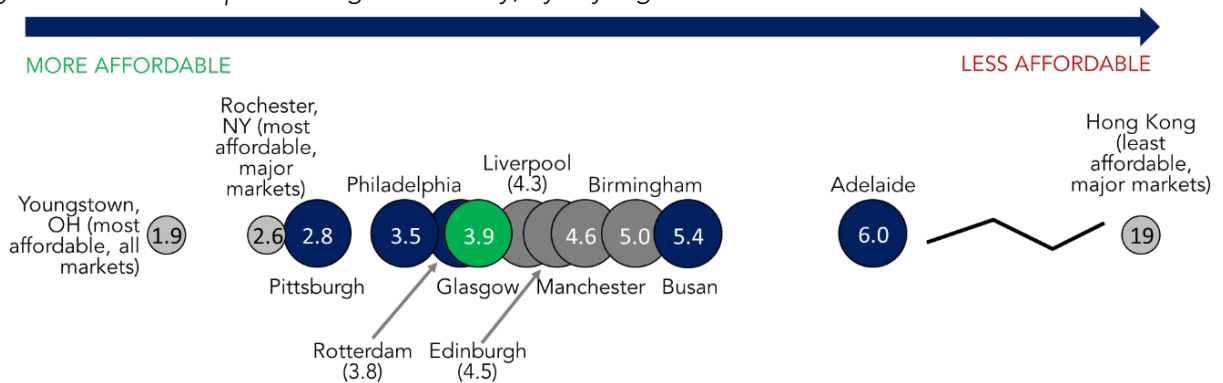
Source: Teleport, October 2018 data.

Relative Affordability

Glasgow's appeal to businesses and talent is also enhanced by the fact that **housing remains relatively affordable across a range of measures, despite recent growth**. Its median multiple of 3.9 makes it the most affordable large housing market in the UK, and compared to all 293 major housing markets globally in English-speaking countries, it is now just outside the top 10% most affordable.⁸⁴ Glasgow is also significantly more affordable than all measured global peers outside of land-rich North America (see Figure 22).

Glasgow also benefits from a relatively affordable rental market. On average, residents spend <1/3 of their monthly income to rent a 1-bedroom apartment, significantly less than in the majority of European cities. Overall, Glasgow has the 5th most affordable rental market among peers for 1-bedroom apartments, and the 11th most affordable for 3-bedroom apartments (see Figure 23). This represents an important source of attraction for Glasgow that can support some of its strategic business sectors, and can endure, particularly given current plans to expand supply and build 25,000 new homes in the city centre by 2023. A growing and urbanising population means that strong house price growth will demand a more diverse housing mix (e.g. types, locations and price points).⁸⁵

Fig. 22: Median multiple housing affordability, by city region



Source: Demographia, 2018.

Glasgow's above average housing affordability is reinforced by a low cost of living more broadly - relative to other cities, Glasgow is now cheaper than in the past, as other cities have had more difficulty keeping costs down as they have attracted talent and population. Glasgow is now the 49th cheapest out of 209 cities globally, and by far the cheapest of all UK cities of similar size except Belfast.⁸⁶

Fig. 23: Affordability of rented accommodation compared to Glasgow City Region (Glasgow City Region = 1).



Source: Numbeo, October 2018 data.

Summary

Together, these comparative strengths point to a picture that despite increased competition from cities around the world, Glasgow has retained many of the hallmarks of the city that made it a pioneer in the 19th and 20th centuries, and is improving its all-round long-term competitiveness. Indeed in one of the most authoritative studies, the UN Habitat Global Urban Competitiveness Index, Glasgow now ranks just outside the top 25% globally (82nd out of nearly 300 cities) for its long-term sustainable competitiveness.⁸⁷ This is in no small part due not only to Glasgow's inherited size and scale roles in the Scottish economy, but also its growing ability to attract and retain working-age talent, foster a productive and efficient working and living environment, anchor an emerging innovation economy with world-class universities, and accommodate a resurgent and increasingly mature set of high value clusters that spur long-term investor demand. There are many elements to the city's success and momentum that can form part of Glasgow's business story in future.

5. Persistent challenges and long-term imperatives in order to build the Glasgow business story

Alongside the documented successes and improvements, the literature and the comparative global studies also confirm competitive constraints for Glasgow around four key themes.

5.1 Working participation and productivity

The divergence of Glasgow's labour market means it has not increased employment numbers in high export sectors at the same rate as some of the English comparator cities. Although Glasgow has experienced high levels of employment and productivity growth since 2000 (its GDP per capita growth in particular is more favourable relative to the UK average), the most recent data (2014-2016) suggests that, among 30 mid-sized European cities, Glasgow ranks in the bottom 30% for this measure.⁸⁸

Productivity growth is still held back by:

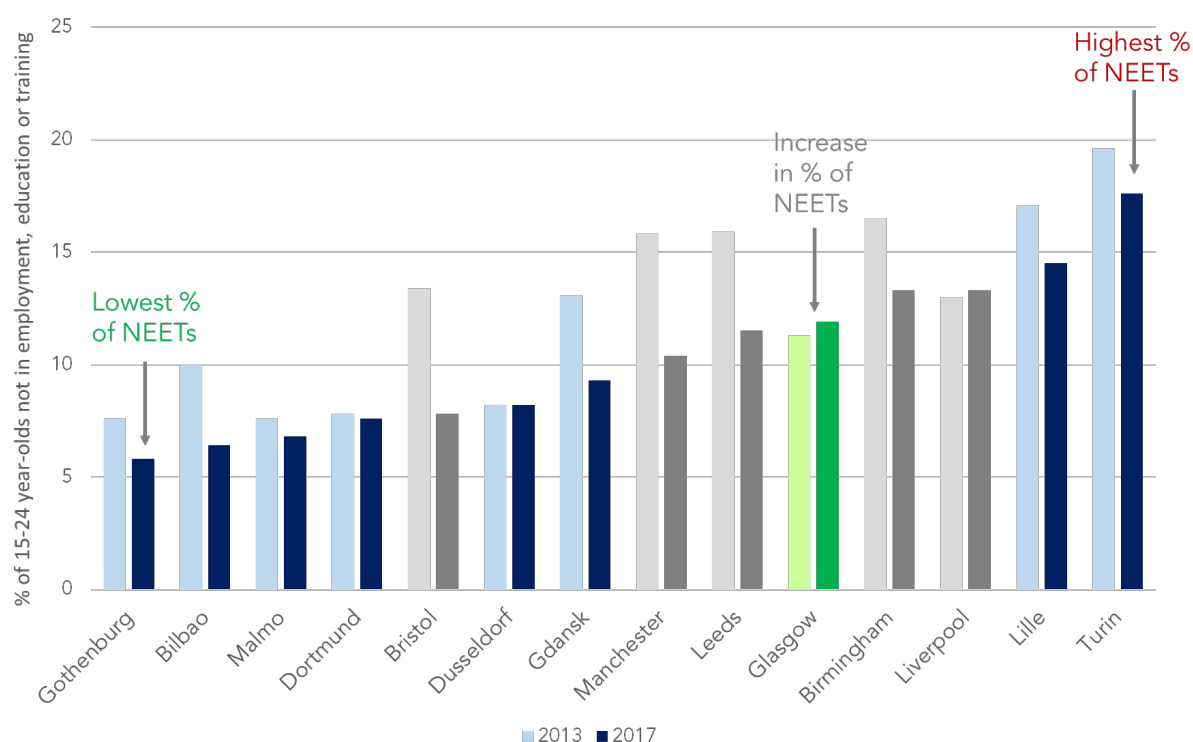
- **A high share of part-time jobs.** The percentage of part-time jobs is higher in Glasgow than in all other predominantly urban UK Combined Authorities except for Liverpool (34% in Glasgow, but 31-32% on average elsewhere).⁸⁹
- **Low health outcomes.** The size of the inactive working age population in the Glasgow City Region, and the share that is out of work specifically due to poor health (29%), is comparatively high. Moreover, 24.3% of Glasgow's working-age population have a limiting disability, which is significantly higher than in other secondary UK cities such as Leeds (17.4%), Manchester (20.0%) and Birmingham (21.2%).⁹⁰

5.2 Skills and maximising opportunity and inclusive growth

Despite the undoubted success improving educational attainment at the higher levels, the imperative for inclusive growth is very clear in Glasgow. Reducing the number of residents with no qualifications remains a key challenge, and progress on this measure has been modest so far.

Looking across all European regions for which data is available, Glasgow is in the minority of cities that have seen an increase in the number of people not in employment, education or training (NEET) since 2013. In 2017, just under 12% of the population were NEET, putting the city in the 62nd percentile Europe-wide.⁹¹ Although still some way ahead of Turin, Lille and many UK cities for this measure, Glasgow's overall competitiveness will depend on continued improvements to ensure that its skills profile becomes less polarised over the coming years (see Figure 24).

Fig. 24: % of 15-24-year-olds classified as not in education, employment or training (NEET)



Source: Eurostat (NUTS2 scale).

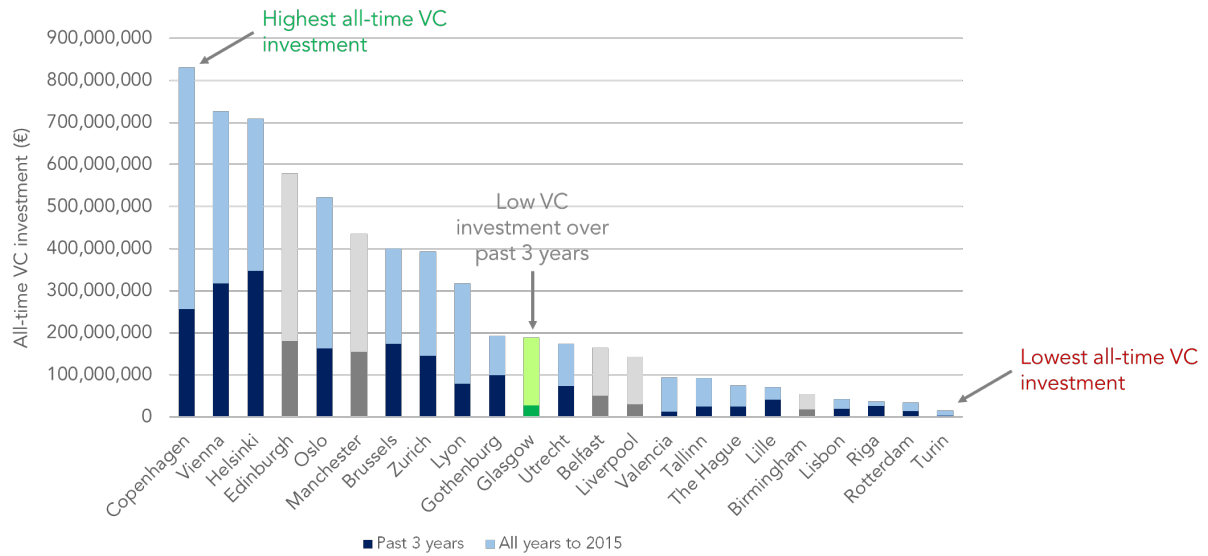
5.3 The innovation economy is becoming more fiercely contested

Glasgow boasts anchors and assets that can and do make world changing innovations, but in aggregate the city only records 7.5 patent applications per 100,000 population – putting it in the 10 lowest ranked UK cities out of more than 70 for this measure.⁹² Crunchbase analysis confirms this, suggesting that Glasgow so far performs less well for scaling up innovation activity in comparison to many of its peers. Glasgow is HQ to only 8 innovative tech firms in the top 20,000 globally. This is half the number of a city like Malmö, although slightly more than in Bilbao, Adelaide, Turin and Liverpool. Looking across Europe, Glasgow can start to move clear of cities such as Lille, Lyon, Valencia and Antwerp in terms of recognition for scaling its innovation activity.

Glasgow has attracted nearly €200 million in VC investment overall, which puts it in the top half of mid-sized European cities and globally on par with cities such as Cape Town and Auckland.⁹³ However, looking solely at deals done within the past 3 years reveals that Glasgow has slipped relative to other cities making their own efforts to capture more of the innovation economy (see Figure 25). This is reinforced by recent data from the Central Belt Region Science and Innovation Audit, which shows that early stage, growing companies in Glasgow and Edinburgh have limited access to investment capital in the range of £2-20 million. A current priority for the region is linking members of the Science and Innovation Consortium more intelligently with specialist global VC funds, and maximising private sector investment in the region is now a keen focus.⁹⁴

Some innovation is also not captured in the current ways of assessing (e.g. formal patents, innovation firm HQs) and so it is incumbent on Glasgow to correct misperceptions through communication and storytelling.

Fig. 25: Venture capital investment over the past 3 years as a proportion of total

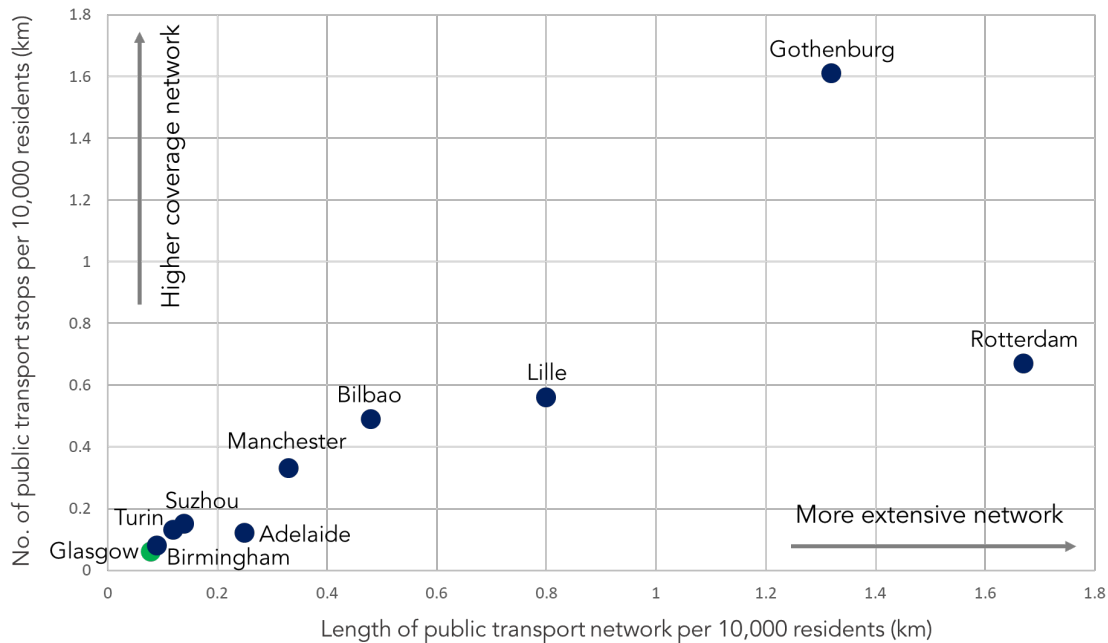


Source: Pitchbook.

5.4 Transport efficiency to optimise scale and regional functions

While the Glasgow City Region has the 2nd largest commuter rail network in the UK (2nd only to London), **poor connectivity across the region is a key constraint relative to other systems**, with no through rail routes linking national rail networks to the north and south of the River Clyde. This situation also has national implications because it prevents direct rail services from major Scottish destinations – such as Edinburgh, Aberdeen, Inverness, and Perth – to Glasgow and Prestwick airports as well as a range of other regional destinations.

Fig. 26: Length and coverage of rail transport system* compared to population, Glasgow and selected global peers

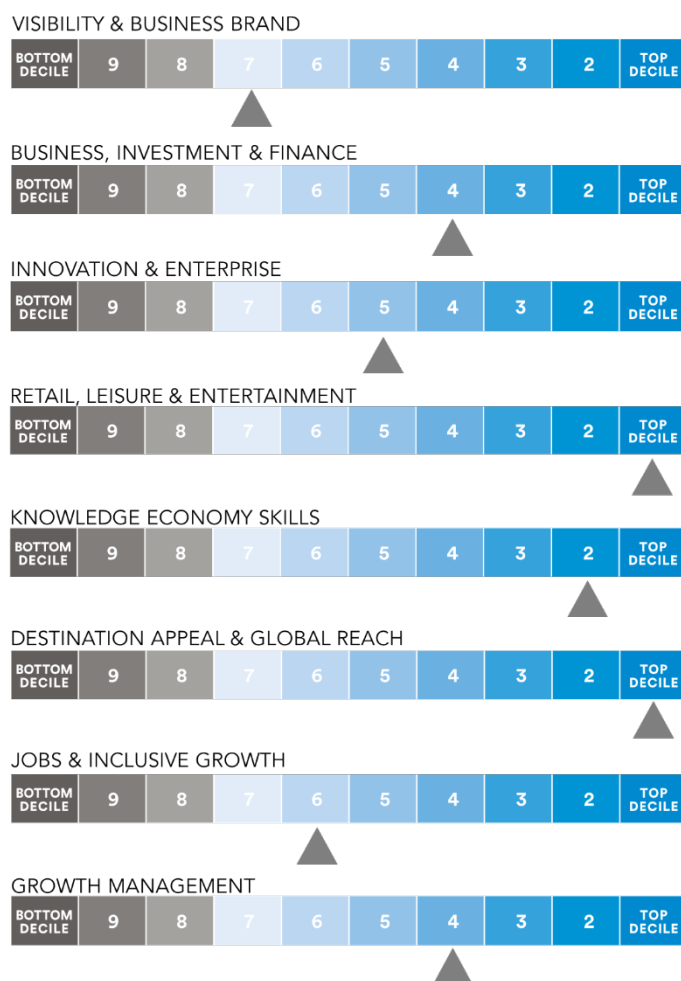


Source: City and national transport agencies. *Public transport system = metro/tram/light rail.

The result is a city not yet fully set up to provide maximum efficiency to incoming business activity. Glasgow is now in the top one-third most congested medium-sized, developed-world cities globally (102nd out of 189 in total), behind all other measured global peers except Manchester and Leeds.⁹⁵ The city also now ranks in the bottom 10% among mid-sized European cities (35th out of 38), and just behind Manchester and Birmingham, for the overall quality and reliability of its public transport system.⁹⁶ Moreover, Glasgow ranks last among measured global peers for the per capita coverage and length of its rail transport system (see Figure 26), and performs weakly for adoption of ridesharing and bikesharing schemes,⁹⁷ all of which inhibits the city's ability to pivot to new economies and smart innovations that thrive off an efficient platform.

6. Performance Summary and Spidergram

This analysis from Sections 3, 4 and 5 is summarised and captured visually in the following tables and spidergram, which evaluate Glasgow's performance in the last 12 months of benchmarks across 8 broad categories. Each category incorporates the results of multiple metrics, benchmarks and comparative studies in order to capture as wide as possible lens on how Glasgow is performing and perceived. The rating score is based on an ELO algorithm that accurately aggregates performance from different types of comparative assessment.



Glasgow's 2018 performance vs the following peers (calculated across 50+ benchmarks using ELO algorithm)

Adelaide
Baltimore
Bilbao
Birmingham
Busan
Cleveland
Dortmund
Dusseldorf
Gdansk
Gothenburg
Leeds
Lille
Liverpool
Malmo
Manchester
Philadelphia
Pittsburgh
Rotterdam
Turin

The spidergram highlights once again Glasgow's strengths in most economic areas compared to many of its peer group of cities. The challenge of building an inclusive economy is clearly visible (in the Jobs & Productivity segment), but Glasgow is outperforming a lot of cities in terms of its finance and business base, investment attraction, knowledge creation, consumption economy, and ability to host and reach global markets.

By contrast, Glasgow's business brand and reputation is relatively less developed, as measured in global benchmarks and in our analysis of global media visibility and online activity.

Glasgow's performance in this analytical framework is likely to evolve over time, as real performance changes, as perceptions evolve, and as new measures and data come to the fore.

This framework for analysis can therefore be monitored on an annual or bi-annual basis to observe Glasgow's progress.

The Glasgow Performance Spidergram in 2018



7. Implications

The analysis we have undertaken highlights that Glasgow has made many critical accomplishments in its transition from post-industrial malaise and disinvestment into a diversified productive city with key ingredients to be competitive in an urbanising, globalising and tech-disrupted economy. These achievements already inspire the world and can inspire even more when the full story is told.

The evidence from Sections 3 and 4 of this report suggest that among the areas Glasgow will need to look to in order to build its story include its population rebound, its ability to sustain many different economies at once (HQs, consumption, visitor, knowledge, innovation), its skills and advantages in the specialisms that the world is in high demand of, its regional roles and potential, its global reach, its retention of deep DNA of industry, trade and creativity, and its capacity to absorb growth sustainably and in a way that will produce high quality urbanism.

Understanding Glasgow's direction will be an important part of the storytelling effort. Our analysis identifies a growing cohort of 'New World Cities' that compete because of their small number of high value business specialisations, efficient connectivity and logistics platform, distinct character, citizen identity and their quality of life appeal that enable them to attract and retain contested assets. Cities such as Denver, Hamburg, Brisbane and Barcelona have pioneered this model, and over time more varieties of New World City are emerging. How to build the business brand and platform, and gain the 'benefit of the doubt' among wider set of global audiences, is becoming a strategic priority for many cities of these types.



Source: JLL and The Business of Cities, 2018

We observe that Glasgow is starting to gain some of the attributes to aspire towards becoming a new world city, in terms of its unique citizen brand, innovation assets, and potential influence and reputation on globally significant issues.

New World Cities tend to succeed when they have most or all of the following ingredients:

1. Distinctive Lifestyle and Character
2. High Liveability (and affordability)
3. Diversified Jobs
4. Excellent public services and infrastructures
5. Urban vitality and vibrancy
6. Regional connectivity/collaboration and regional housing/lifestyle choices
7. Internationally oriented institutions (e.g. universities, cultural organisations)
8. Technological orientation
9. Scientific industrial specialisation
10. Entrepreneurial/innovation eco-systems
11. Collaborative leadership and metropolitan management
12. Compelling and balanced story/brand

So far, the comparative analysis suggests that Glasgow is making strong progress on about half of these, but needs to go even further on the other half. Partly this will require Glasgow to continue to actively address its competitive weaknesses and threats, including the obstacles to building a more inclusive economy. Some of these are identified in Section 5. In addition, improved storytelling can be a tool to achieve some of its competitive goals and elevate perceptions, enthusiasm and momentum about others.

Next Steps

Glasgow requires a clear and compelling 'business chapter' for the wider Glasgow Story if it is to close the gap between its actual assets and positive performance, and its visibility and reputation for business. The city will need to be able to pitch and promote itself more effectively for contested investment, employment, and trade opportunities.

The data synthesised and distilled above can provide many important building blocks for an engagement process that can produce an updated business, economy, and jobs narrative for Glasgow. The evidential base can help build a narrative that has wide application and commits to a set of common stories and a common identity across different markets.

The development of this narrative will benefit from an organised effort that relies on input from a wide range of governmental and business interests. This effort will also assess in more detail the ways to help the world understand and tell Glasgow's business story better, and identify specific audiences, reports, indices and markets to target in order to improve the visibility of Glasgow's business prowess and the calibre it is associated with.

Method notes

1. Glasgow's overall performance

For each of the 8 categories, Glasgow's score is derived from performance across multiple comparative studies, indexes, benchmarks and metrics. In each category, Glasgow's performance has been graded on a 10-point scale, based on its performance against the 19 other comparator cities. Our ELO algorithm (based on the relative levels of players in zero-sum games) is used to compute the overall performance of all comparator cities for each theme, and is preferred because it accurately overcomes the common issue of different cities rated in different studies.

Glasgow's decile position for each theme is based on its overall performance score, based on Glasgow's algorithmic position out of the 20 cities. e.g. The algorithm rates Glasgow 2nd of 20 cities among comparator cities overall for Destination Appeal & Global Reach, putting it in the top decile.

2. Data aggregation:

Data on *university impact & collaboration* are based on assembling figures from all universities in the territories of each of the city regions, and calculating a weighted regional average based on number of publications. Data on *rental affordability* are based on figures from all cities in the territories of each of the city regions, and calculating a weighted regional average based on population size.

3. Notes to individual figures:

Figure 2

Based on Google Trends patterns among peers over the past 5 years. Search terms included: For the business brand: "invest Glasgow", "innovation Glasgow" and "do business in Glasgow." For the visitor brand, "visit Glasgow"; For the student brand, "study in Glasgow"; For the resident brand "move to Glasgow." Brand strength in each segment is calculated by comparing search frequency as a percentage of total search, and then calculating deviation compared to the average among global peers. The cities reviewed were: Adelaide, Baltimore, Birmingham, Bristol, Cleveland, Leeds, Liverpool, Manchester, Philadelphia, Pittsburgh and Rotterdam.

Media Wordclouds based on Google results for six different sentences about each city from 11 leading countries' online media repositories (UK, Ireland, USA, Canada, New Zealand, South Africa, India, Israel, Spain, Germany and France) over a three-year period (November 2015 to November 2018). The five sentences used were: Glasgow is a [blank] city; Glasgow is a city of [blank]; Glasgow is known for [blank]; Glasgow is famous for [blank]; Glasgow is renowned for [blank]; Associate Glasgow with [blank].

Figures 5, 6

Relative population growth based on growth rate compared to fastest growing medium-sized European city over each period.

Figure 15

University performance was calculated by assigning regional universities scores based on their performance in QS and THE university subject-specific rankings: (5 = top 50, 4 = top 150, 3 = top 200, 2=top 300, 1=top 400, 0.5=top 500).

Figure 16

Scores based on Crunchbase category data on the top 1,000 or total number of innovative technology firms in the city region (whichever was greater). Categories were organised into 13 broad groups - we calculated the share of each category group as a percentage of total innovative firm activity for each city. Glasgow's performance based on average among comparators.

Figure 23

Score in each category based on city's rank as a percentile of total cities ranked.

Indicators used for each category:

Healthcare: Healthcare expenditure, healthcare quality, life expectancy; *Commute*: Traffic handling, walking & cycling activity
Environmental quality: Air quality, cleanliness, drinking water quality, urban greenery; *Tolerance*: LGBT Equality index, LGBT adoption rights, LGBT age of consent, LGBT blood donation and conversion therapy regulations, LGBT discrimination legality, LGBT gender-changing and marriage rights, tolerance towards minorities; *Cost of living*: 5km taxi ride; cappuccino; beer; kilogram of apples; bread; inflation level; lunch; mobility fitness club membership; monthly public transport; movie ticket; price of restaurant meal.



Co-authored by Professor Greg Clark CBE,
Dr Tim Moonen, Jake Nunley, Borane Gille

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