

From Horsepower to Headsets

A Century of British Employment Transformation Through the Lens of the Census, 1901-2021

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Introduction

The decennial census, far more than a simple headcount, serves as a detailed socio-economic portrait of a nation at a distinct moment in time. When viewed longitudinally, these records offer a unique and powerful lens through which to observe the profound structural transformations that reshape societies.¹ This report undertakes such an analysis, charting the course of the United Kingdom's economic metamorphosis over 120 years by examining employment patterns recorded in the censuses of 1901, 1971, and 2021. The central thesis of this analysis is that by tracing the employment fortunes of four technologically emblematic sectors—horse-related work, coal production, the automotive trade, and call centres—one can map with remarkable clarity the decline of the industrial-era economy and the corresponding rise of the post-industrial service and information age.

The methodological framework of this report is grounded in a careful interpretation of census data, acknowledging the inherent challenges of comparing statistics across decades marked by evolving classification systems and societal norms.³ The analysis requires the construction of broad occupational categories, such as "horse-related employment" and "the car trade," from the specific job titles recorded by enumerators. This process, while necessary, introduces a degree of estimation that will be transparently addressed. Furthermore, the report will adhere to the specified denominators for calculating employment percentages: the total UK population for the 1901 and 1971 analyses, and the total employed population for the 2021 analysis. For the purposes of a comprehensive synthesis, comparative calculations using a consistent denominator will also be presented in the

final section. By navigating these complexities, this report aims to provide not just a set of figures, but a rich, contextualised narrative of a century of profound change in British working life.

Part I: The Edwardian Engine Room: Britain in 1901

At the dawn of the 20th century, the United Kingdom stood at the apex of its industrial and imperial power. The 1901 census captures a nation whose economic might was built upon the foundational pillars of coal and the physical power of the horse. These two sectors were not merely large employers; they were the indispensable engines of the entire economy, shaping the landscape, the nature of work, and the daily life of the population.

Population and Workforce Demographics, 1901

The 1901 census, taken on 31 March, recorded the total population of the United Kingdom of Great Britain and Ireland as **41,458,721**.⁶ This figure, which will serve as the primary denominator for this section's calculations, was composed of 32,527,843 people in England and Wales, 4,472,103 in Scotland, and 4,458,755 in Ireland.⁶ The census revealed a notable gender imbalance, with 1,253,905 more females than males, a demographic feature attributed to higher male mortality rates and the greater propensity for men to emigrate for work, military service, or colonial administration.⁶ This disparity had direct economic consequences, compelling a larger number of women to earn their own living than in previous generations. The era was also characterised by significant outward migration from all four constituent countries, a trend that had been ongoing for half a century in England and Wales and was particularly acute in Ireland, whose population had halved since 1841.⁶ While a precise figure for the total employed population is not readily available from the aggregated census reports, the social context of the time—with compulsory schooling ending at the age of twelve and many working-class children entering employment from thirteen—suggests a workforce that was proportionally very large by modern standards.¹⁰

The Horse-Powered Economy: An Anatomy of a Sector

In 1901, the horse was the undisputed prime mover of British society and commerce. The population of working horses in Britain reached its historical peak in this period, with an estimated 3.25 million animals directly engaged in the economy.¹¹ These were not peripheral assets but core components of the nation's infrastructure. They were fundamental to agriculture for pulling ploughs and carts; they powered urban transport systems in the form of omnibuses, cabs, and countless delivery vehicles; and they were integral to heavy industry, with pit ponies hauling coal from the mine face.¹² In London alone, the functioning of the city was dependent on a workforce of over 300,000 horses.¹²

To quantify employment in this sector in the "broad sense" requested, it is necessary to construct a composite of multiple occupations, as no single industrial category existed. The detailed occupational data from the 1901 census for the Wirksworth area in Derbyshire provides a valuable template for identifying the relevant roles.¹⁵ These can be grouped as follows:

- **Direct Transport and Haulage:** This includes roles such as Cab Drivers, Coachmen, Carters, and Waggoners. Carters were a particularly numerous group, often specialised by the goods they transported, such as coal or corn.¹⁵
- **Animal Care and Management:** This encompasses Grooms, Ostlers (who cared for horses at inns), Stable Hands, Horse Keepers, and Horse Breakers.¹⁵
- **Agricultural Labour:** A significant portion of agricultural work was dedicated to managing draught animals, with specific roles like "Horseman on farm," "Carter on Farm," and "Ag lab horse man" being explicitly recorded.¹⁵
- **Industrial Labour:** The use of pit ponies in coal mines created a specific role of "Pony driver coalmine".¹⁵
- **Ancillary Trades:** While harder to quantify exclusively, a vast network of craftsmen supported the horse economy. This included Blacksmiths, one of the most common occupations of the era, as well as Saddlers, Wheelwrights, and those involved in the provision of feed, such as an Agister, who managed pasturage for livestock.¹⁵

A precise national figure for the total number of people employed in these roles is not available in the summary census reports. However, a robust estimate can be constructed. With a working horse population of 3.25 million for a human population of just over 41 million, there was approximately one working horse for every 13 people. Given the labour-intensive nature of caring for and working with these animals, a conservative ratio of one dedicated worker for every three to four horses suggests a total workforce of between 800,000 and 1.1 million people. Using a midpoint of this range, an estimated **950,000 people** were employed in horse-related work.

Based on this estimate, the percentage of the UK population employed in looking after horses was approximately **2.3%**.

The Primacy of Coal: Fuelling the Empire

If the horse provided the motive power on the ground, coal provided the thermal energy that powered the Industrial Revolution and sustained the British Empire. It was the unrivalled fuel for the nation's factories, steam railways, and merchant marine, as well as for domestic heating and the production of town gas for lighting.¹⁷ At the turn of the 20th century, Britain was the world's dominant producer, mining an estimated two-thirds of global output.¹⁸

The coal industry was profoundly labour-intensive. Mechanisation of coal-cutting was still in its nascent stages; in 1913, less than 10% of coal was cut by machine.¹⁷ The work of extracting coal was done almost entirely by hand, relying on a vast workforce. While production peaked in 1913, the industry was already immense by 1901. Employment figures from the immediate pre-war period show that the industry employed "well over one million men and boys for most years between 1913 and 1927".¹⁷ Given the high levels of production in 1901, it is reasonable to estimate the workforce at that time to be approximately

1,000,000 people. This workforce, comprised of roles such as Hewers (who cut the coal), Hurriers (who moved it), and surface workers, was heavily concentrated in key coalfields in South Wales, Northumberland and Durham, Yorkshire, and Scotland.¹⁷ The 1901 census classification system explicitly recognised this group under the heading "Coal and Shale Miners".²¹

Based on this estimate, the percentage of the UK population employed in coal production was approximately **2.4%**.

An examination of the occupational data from 1901 reveals that these two dominant sectors were not independent but formed a deeply symbiotic system. The coal that powered the nation's railways and factories was often transported from the pithead to the station, and from the merchant's yard to the final consumer, by horse-drawn carts, giving rise to specific occupations like "Carter coal" and "Coal carter".¹⁵ Furthermore, deep within the mines themselves, pit ponies were essential for hauling tubs of coal, creating the role of "Pony driver coalmine".¹³ This interdependence meant that the health of the coal industry directly sustained a significant segment of horse-related employment, and vice versa. This interconnectedness is a defining feature of the Edwardian economy.

The very difficulty in isolating a single, neat category for "horse-related work" from the census records is itself revealing. Unlike "Coal Miner," which represents a clear industrial designation, jobs involving horses were diffused across the entire economy—agriculture, transport, industry, and personal services. This reflects a pre-modern economic structure where the horse was not a distinct "industry" but a cross-sectoral, general-purpose technology. The 1901 census made significant efforts to improve the

accuracy and definition of occupations compared to its predecessors.¹ However, the persistence of functional descriptions like "Carter" rather than modern industrial classifications demonstrates how the census itself serves as a mirror to the economic realities and conceptual frameworks of its time.

Sector	Estimated Number of Workers	Percentage of Total UK Population (41,458,721)
Horse-Related Employment (Broad Sense)	950,000	2.3%
Coal Production	1,000,000	2.4%

Table 1: Estimated Employment in Key Sectors, UK 1901. Note: Worker numbers are estimates based on available data. Total population figure from ⁶ and ⁷

Part II: The Post-War Crossroads: Britain in 1971

Seventy years later, the census of 1971 captured a United Kingdom in the throes of a dramatic and often turbulent transition. The old industrial order, though still significant, was beginning to cede ground to a new consumer-oriented economy. This period represents the zenith of the automotive age, a time when the internal combustion engine had comprehensively reshaped the nation's landscape, economy, and social habits, while the horse, its predecessor as a prime mover, had been almost entirely eclipsed.

Population and Workforce Demographics, 1971

The 1971 census, conducted on 25 April, recorded a total population for the United Kingdom of **55,573,956**.²² This figure represents a significant increase from 1901 and will be used as the denominator for this section's calculations. The data on the labour force from this period is more precise than in 1901. The census of employment for June 1971 recorded

22,122,000 employees in employment in the UK.²³ The overall employment rate for the population aged 16 to 64 stood at 71.8%.²⁴ This era was marked by significant economic turbulence, including rising unemployment, which surpassed one million for the first time since the 1930s, and increasing industrial tensions, culminating in the "stagflation" of the mid-1970s.²⁵

The Age of the Automobile: Rise of a New Economic Engine

By 1971, the motor car had transitioned from a luxury item to a cornerstone of British life. The proportion of households in Great Britain with access to at least one car had reached 52%, and the total number of cars on the road (the "car parc") stood at 19 million.²⁶ This mass adoption created a vast and complex new economic ecosystem. The centrality of the car to modern life was formally recognised in the 1971 census, which for the first time included questions on car ownership and the primary means of transport to work.²⁸

To assess employment in "the car trade," the analysis encompasses the three key areas of manufacturing, mechanics, and sales:

- **Manufacturing:** The most robustly documented part of the sector, motor vehicle manufacturing (including parts, bodies, and trailers) was a major employer. In 1971, this industry employed approximately **500,000** people in Great Britain.²⁹ At its peak in 1972, UK vehicle production reached 2.3 million units.²⁹
- **Mechanics and Repair:** The maintenance of a 19-million-strong car fleet required a substantial workforce of skilled mechanics. The 1971 census occupational classification system included a specific code (OCCC7: 41) for "Motor mechanics, auto engineers".³⁰ While a precise national total for this occupation is not available in the provided materials, the scale can be estimated. A supplementary "Census of Distribution and Other Services" was conducted in 1971 which specifically covered "motor trades," indicating the sector's economic significance.³² A conservative ratio of one mechanic for every 50-75 vehicles would suggest a workforce of 250,000 to 380,000. A reasonable estimate for this group is **300,000**.
- **Sales and Distribution:** This component is the most difficult to quantify directly from the available data. However, the aforementioned Census of Distribution covered retail and wholesale trades, and the main census form acknowledged roles like

"sales representatives".³³ Given the volume of new and used car sales, a significant workforce was engaged in this area. An estimate of **75,000** people in sales and related distribution roles is plausible.

Summing these components yields a total estimated employment in the car trade of **875,000** people.

Based on this estimate, the percentage of the UK population employed in the car trade was approximately **1.6%**.

The Twilight of the Working Horse: A Shift to Leisure

The seventy years between 1901 and 1971 witnessed the near-total displacement of the horse as a source of economic power. This technological transition, described by historians as a "profound change," was driven primarily by the mechanisation of agriculture, as the tractor replaced the draught horse.³⁵ By 1959, the agricultural horse population in Britain had plummeted to just one-tenth of its 1921 peak.³⁵ By 1971, the horse's role in transport, mining, and farming was functionally extinct.

The horse industry had not vanished, but had been fundamentally transformed into a sector based almost entirely on leisure and sport, including activities like horse racing and recreational riding.³⁶ The economic activity was now defined by a spectrum of engagement from professional sport to amateur leisure, supported by a significant but often unmeasured "informal economy" of small-scale breeders, trainers, and service providers.³⁷

Precise employment figures for this transformed equestrian sector in 1971 are not available in the provided materials. The main occupational classifications used in the 1971 census do not feature prominent categories for horse-related work, a stark contrast to 1901 and a reflection of the sector's diminished national economic importance.⁴ It is therefore necessary to produce a reasoned estimate of the workforce size. If the core workforce declined in rough proportion to the agricultural horse population (a 90% reduction), this would imply a residual workforce of approximately 95,000 people. This figure accounts for the remaining professional roles in racing, breeding, and specialist equestrian services.

Based on this low-confidence estimate, the percentage of the UK population employed in looking after horses was approximately **0.17%**.

The 1971 data provides a clear illustration of technological disruption. The internal combustion engine did not simply substitute for the horse on a one-to-one basis; it catalyzed the creation of an entirely new and more complex economic system. This new automotive ecosystem demanded a different set of skills—mechanical engineering, mass production logistics, and consumer sales, rather than animal husbandry and craft-based trades. It also required a completely different infrastructure of paved roads, petrol stations, and large-scale factories, replacing the localised network of stables, farriers, and feed merchants. This demonstrates the transformative, not merely substitutive, power of a general-purpose technology.

This transformation is also reflected in the very design of the census itself. The inclusion of new questions on car ownership and travel to work in 1971 signifies the state's recognition of the car's central role in modern social and economic life.²⁸ Conversely, the apparent disappearance of specific, high-level classifications for the myriad horse-related jobs that were so prevalent in 1901 indicates their marginalisation. A census is not a neutral instrument; it is a social mirror, and its evolving structure reveals what a society deems economically significant. By 1971, the working horse had become, for the purposes of national statistics, largely invisible.

Sector	Estimated Number of Workers	Percentage of Total UK Population (55,573,956)
The Car Trade (Manufacturing, Mechanics, Sales)	875,000	1.6%
Horse-Related Employment (Broad Sense)	95,000	0.17%

Table 2: Estimated Employment in Key Sectors, UK 1971. Note: Worker numbers are estimates based on available data. Total population figure from.²²

Part III: The Digital Frontier: Britain in 2021

The 2021 census was conducted in a United Kingdom fundamentally reshaped by globalization and the digital revolution. The economy is now dominated by the service sector, and the nature of mass employment has shifted from the factory floor and the coal face to the office and, increasingly, the home. The focus on call centre employment serves as a powerful indicator of this new world of work, where the primary economic activities involve the management of information and communication.

Population and Workforce Demographics, 2021

The analysis for this period is based on the Census for England and Wales, which was conducted on 21 March 2021.³⁹ It is important to note this geographic scope, as Scotland's census was delayed until 2022 due to the COVID-19 pandemic, meaning comprehensive UK-wide data from a single 2021 exercise is not available.⁴⁰

In England and Wales, the total number of usual residents aged 16 and over in employment in the week before the census was **27.8 million**.³⁹ In accordance with the specific parameters of the query, this figure for the employed population will be used as the denominator for the 2021 calculation. The census took place during a unique period of economic disruption caused by the pandemic, including national lockdowns and the furlough scheme. The Office for National Statistics (ONS) has therefore advised that caution should be applied when using these labour market statistics for planning and policy purposes.³⁹

The Rise of the Service Sector: The Call Centre

Quantifying employment in "call centres" requires a careful interpretation of the modern occupational classification system. The 2021 census data is coded using the Standard Occupational Classification (SOC) 2020, a highly detailed hierarchical system.⁵ While there is no single code for "call centre worker," the function is best captured within the major occupational group "7. Sales and customer service occupations" and, more specifically, the minor group "721 - Customer service occupations".⁴⁴ This minor group includes job titles such as customer service advisor, contact centre operator, and client services executive, making it the most accurate available proxy for the sector in question.

Detailed census tables provide precise figures for these occupational groups. Analysis of ONS table TS063, which details

occupations for England and Wales, shows that the broader major group "7. Sales and customer service occupations" accounted for a total of **2,087,112** people in employment.⁴⁶ While a specific figure for the minor group "721" is not present in the provided summary documents, it is a substantial subset of this total and can be precisely identified using the ONS "Create a custom dataset" tool or the Nomis "Table Finder".⁴⁷ For the purposes of this report, using the broader major group provides a clear, albeit high-end, indication of the scale of this type of work.

Based on the total for the broader "Sales and customer service occupations" group, the percentage of the employed population of England and Wales in this sector was approximately **7.5%**.

The economic transition from 1901 to 2021, as viewed through these specific sectors, represents a profound dematerialization of labour. The work of 1901 was overwhelmingly concerned with the extraction and movement of physical resources and goods, powered by human and animal muscle. The work of 1971 was centered on the mass production and maintenance of complex physical machines. By contrast, the work of 2021, exemplified by the customer service agent, is fundamentally about the management of intangible assets: information, communication, and customer relationships. This marks a definitive shift from an economy based on manual and mechanical skills to one that places a premium on interpersonal, communication, and digital skills.⁴⁹

Furthermore, the very ability to conduct this modern analysis highlights a transformation in the tools of economic measurement. The highly granular and accessible nature of the 2021 census data, structured via the multi-level SOC 2020 framework and explorable through online table builders, is a world away from the broad, printed classifications of 1901.¹ This evolution in data collection and dissemination reflects a conceptual shift in how we understand the economy. The focus has moved from simply identifying which broad industry a person works in, to specifying the precise function they perform and the skills they utilize. This provides a far richer picture of the modern labour force, but also underscores the methodological caution required when drawing direct comparisons with historical data.

Sector	Number of Workers	Percentage of Employed Population (27.8 million)
Sales and Customer Service Occupations	2,087,112	7.5%

Table 3: Employment in Key Sectors, England & Wales 2021. Note: "Sales and Customer Service Occupations" is used as a proxy for call centre employment. Denominator is the total employed population of England & Wales. Data from ³⁹ and ⁴⁶

Part IV: Synthesis and Insights: A Century of Economic Metamorphosis

The data from the 1901, 1971, and 2021 censuses, when viewed in sequence, tells a powerful story of national transformation. The decline of an economy built on coal and horsepower, the rise and subsequent restructuring of one built on mass manufacturing, and the emergence of a new order defined by services and information are all clearly legible in these employment figures. This concluding section synthesizes the findings, draws comparative analyses, and explores the underlying drivers and consequences of this century of change.

The Great Restructuring: A Comparative Analysis

To fully appreciate the scale of the economic shifts, it is essential to compare the employment data across the three periods. The following table presents the core findings, showing each sector's employment as a percentage of the total population (as initially requested) and also as a percentage of the total employed population, providing a more direct, like-for-like comparison of their weight within the workforce of their respective eras.

Year	Sector	Estimated Workers	% of Total Population	Estimated Employed Population	% of Employed Population
1901	Horse-Related Employment	950,000	2.3%	~18.5 million	~5.1%

	Coal Production	1,000,000	2.4%	~18.5 million	~5.4%
	Combined 1901 Total	1,950,000	4.7%		~10.5%
1971	The Car Trade	875,000	1.6%	22.1 million	4.0%
	Horse-Related Employment	95,000	0.17%	22.1 million	0.4%
2021	Sales & Customer Service	2,087,112	(3.7%)*	27.8 million	7.5%

Table 4: Comparative Summary of Employment in Key Sectors, 1901-2021. Note: 1901 employed population is an estimate. 2021 % of Total Population is for England & Wales only and

The figures are stark. In 1901, the coal and horse-related sectors alone employed an estimated 1.95 million people, representing nearly 5% of every man, woman, and child in the United Kingdom, and over 10% of the entire workforce. By 1971, these foundational industries had been almost entirely superseded. Horse-related work had shrunk to a fraction of its former size, while the car trade, a sector that barely existed in 1901, now employed 4.0% of the workforce. By 2021, even this mid-century manufacturing giant had been eclipsed in employment terms by the service sector, with the broad category for customer service occupations alone employing 7.5% of all workers in England and Wales.

The Engines of Change: Technology and the Labour Market

The primary driver of this century-long restructuring has been technological innovation. The transition from the horse to the internal combustion engine, and subsequently from the assembly line to the microprocessor, represents two distinct waves of creative destruction that have fundamentally altered the British labour market.

The first transition, from horse to car, was a shift from a decentralized, craft-based system to a centralized, industrial one. The horse was a versatile power source supported by a widespread network of local artisans—blacksmiths, saddlers, wheelwrights. The car, by contrast, demanded massive capital investment in factories, a national infrastructure of roads and fuel distribution, and a new class of worker: the semi-skilled assembly line operator and the technically-skilled mechanic.²⁹

The second transition, from the industrial to the information economy, was driven by the microprocessor. This technology enabled the automation of many routine manufacturing tasks, contributing to the long-term decline in manufacturing employment in the UK.²⁹ Simultaneously, it created entirely new sectors. The call centre is a product of this revolution, an industry built on the convergence of telecommunications and computing that created a new form of mass employment based not on producing goods, but on processing information and managing customer interactions.

The Evolving Nature of Work and Society

These technological shifts have had profound sociological consequences, changing not only what people do for a living, but the very nature of work itself.

- **From Physical Toil to Emotional Labour:** The data maps a clear progression from the physically demanding and often dangerous labour of the 1901 coal miner ²⁰, to the skilled technical problem-solving of the 1971 mechanic ³⁰, to the communication-intensive "emotional labour" of the 2021 customer service agent, whose primary task is to manage the customer's experience.⁵⁰
- **Gender and the Workforce:** The changing structure of the economy is inextricably linked to the changing role of women in the workforce. The heavy industries of 1901 were almost exclusively male domains. The rise of the service sector from the mid-20th century onwards created millions of new jobs and was a key factor in the dramatic increase in female employment, which rose

by 5.8 million between 1971 and 2018, narrowing the employment gap between men and women from 6.2 million to 1.7 million.⁴⁹

- **The Geography of Employment:** The industries of 1901 were geographically anchored to their resources, most notably the great coalfields of Wales, the North of England, and Scotland.¹⁷ This created dense, culturally distinct industrial communities. The rise of manufacturing in the 20th century led to the growth of new industrial centres. The information-based work of the 21st century is, in many ways, "footloose," less tied to physical resources, allowing for a different distribution of economic activity, though it has also led to new forms of concentration in urban centres.

Conclusion and Avenues for Further Research

The journey from an economy powered by horsepower to one managed through headsets represents one of the most fundamental transformations in British history. The census data, despite its limitations and the need for careful interpretation, provides an invaluable quantitative record of this shift. The decline of the horse and coal industries, the rise of the automotive sector, and the emergence of the information-based service economy are not abstract trends; they are stories told in the changing occupational titles of millions of people.

For those wishing to explore this topic in greater depth, the available data sources offer several avenues for more granular research:

1. **Refining the 2021 Call Centre Figure:** A more precise figure for employment in call centres and related roles can be obtained by using the ONS "Create a custom dataset" tool⁴⁷ or the Nomis "Table Finder".⁴⁸ Researchers should query the 2021 census data for the specific Standard Occupational Classification (SOC) 2020 minor group **"721 - Customer service occupations"** to isolate these roles from the broader "Sales and customer service" category used in this report.
2. **Deepening the 1901 Analysis:** The estimate for horse-related employment in 1901 could be refined by consulting the digitized national-level 1901 census reports, which are accessible through platforms like "A Vision of Britain Through Time"⁵³ and The National Archives.⁸ A systematic search for the national totals of key occupational titles identified in the local Wirksworth data—such as "Carter," "Groom," "Coachman," and "Waggoner"—could yield a more accurate national figure.
3. **Investigating the 1971 Motor Trade:** The estimates for the mechanics and sales components of the 1971 car trade could be substantiated by locating the full reports of the **1971 "Census of Distribution and Other Services"**.³² These specialized reports, likely available through major academic or national library archives, should contain detailed quantitative data on the

"motor trades" category, providing a solid statistical basis for the size of the repair and retail workforce.

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