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Census@Leicester

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**About Census@Leicester**

The Census@Leicester Project used census data to understand the socio-demographics of Leicester and surrounding urban cities. The project was led by the University of Leicester and funded by the Economic and Social Research Council (ESRC).

The project's main objectives were:

* To use census data to understand the socio-demographics of Leicester to inform research and teaching, as well as policy makers and stakeholders.
* To raise awareness of the value of census data and to encourage its use by researchers, educators, students, policy makers, and the public.

The project has so far produced a number of outputs, including:

* A report on some of the key demographic trends and patterns in Leicester and surrounding urban cities.
* A series of infographics on the project's findings.
* A toolkit for analysing census data.

The project’s first stage involved four student research interns who were mentored by Dr Stuart-Bennett as they used census data to examine Leicester’s socio-demographic profile in relation to the themes of Ethnicity, Migration, and Health. The interns produced reports on each of these themes and explored historical trends, comparisons with other cities, and local authority breakdowns. They presented their work to UoL academics and local stakeholders at a 1-day conversation event. Key findings from the reports were developed into a series of 3 infographics based on the 3 main themes (the report and infographics can be found here: <https://le.ac.uk/enterprise/expertise/social-science/esrc-impact-acceleration-account/iaa-funded-projects/census>).

The second stage of the project has involved Dr Stuart-Bennett creating this online resource that can be used for teaching and research purposes by staff and students and to create a legacy for the Census@Leicester Project. This resource can be used to enhance teaching across most CSSAH UG and PG programmes including, but not limited to, Modern and Contemporary History BA, Urban History MA, Urban Conservation MA, Local History MA, or History MRes; Media, Society, and Culture BA and MA; Sociology BA, Politics and Sociology BA, and Sociology and Criminology BA; Criminology BSc and MSc (especially on modules and research projects covering Hate Crime). It will also serve as an excellent provision for staff teaching on research methods modules as it will allow students to analyse and visualise quantitative data.

The project will therefore lead to the following future impacts. It will provide a research-driven educational resource that links students to their local community. The resource will support students in becoming Citizens of Change as they will be able to use the database to conduct challenging research projects that generate new ideas about how to support and empower their local community. Finally, it will enable students to better engage with the diverse make up of their local community and to think differently about how to implement positive change.

**About the UK Census**

The UK Census is a national survey conducted every ten years by the Office for National Statistics (ONS). It aims to count and gather essential information about the entire population of England, Scotland, Wales, and Northern Ireland. The census provides a comprehensive snapshot of the country's demographics and characteristics.

The data collected in the UK Census includes key information such as age, gender, ethnicity, religion, marital status, education, employment, income, housing, and household composition. It also captures data on language spoken, migration patterns, disability status, and citizenship. The census provides valuable insights into population size, distribution, and trends over time, enabling policymakers, researchers, businesses, and the general public to better understand societal changes and plan for future needs.

The data from the UK Census plays a crucial role in resource allocation, urban planning, social policies, healthcare planning, educational services, electoral representation, and market research. It is a vital tool for informed decision-making, policy formulation, and addressing the needs of diverse communities across the United Kingdom.

The 2021 UK Census was the first census to be conducted entirely online, due to the COVID-19 pandemic. This was a significant change from previous censuses, which relied heavily on paper forms.

The 2021 Census also included new questions on topics such as sexual orientation, gender identity, and veterans status, which were not included in previous censuses. These questions were added to provide a more complete picture of the UK population and to help policymakers better understand the needs of specific groups.

Another unique feature of the 2021 UK Census was the inclusion of a new question on health, which asked respondents whether they have a long-term health condition or disability. This question was added to provide a more accurate picture of the prevalence of disability in the UK and to help inform healthcare policy.

Overall, the 2021 UK Census represented a significant shift towards online data collection and included new questions that provided a more detailed and nuanced understanding of the UK population.

**UK Census Data can be accessed here:**

<https://www.nomisweb.co.uk/query/select/getdatasetbytheme.asp?theme=93&subgrp=Topic+Summaries>

Leicester City Council have also recently published a Leicester census dashboard on their open data platform: <https://data.leicester.gov.uk/pages/census_leicester/>

**Value of Census Data**

Census data is valuable because it provides a snapshot of a population at a particular point in time. This data can be extremely useful in a wide range of areas, such as:

1. **Resource Allocation**: Census data is often used to allocate resources such as funding, infrastructure development, and healthcare services. The data can help policymakers identify areas with the greatest need and distribute resources accordingly.
2. **Demographic Analysis**: Census data provides detailed demographic information on population size, age distribution, race and ethnicity, income, education, and housing. This information can be used for demographic analysis and research, which can inform policy decisions and program development.
3. **Market Research**: Census data can be used by businesses and marketers to identify potential customers and target advertising campaigns. The data can also be used to identify demographic trends and changes in consumer behaviour.
4. **Urban Planning**: Census data can be used to inform urban planning decisions, such as zoning and land use regulations. The data can help planners identify areas with the greatest need for infrastructure and services and allocate resources accordingly.
5. **Public Health**: Census data can be used to identify areas with the greatest need for healthcare services and to track health disparities among different populations. This information can be used to inform public health policies and programs.
6. **Research and Development**: Census data can be used to support research and development in a variety of fields, such as history, economics, sociology, and public health. This data can be used to identify trends and patterns, to develop new theories, and to test new interventions.

Overall, census data can be used for a wide range of purposes, from resource allocation to demographic analysis to historical research. The data provides a comprehensive and standardised picture of the population, which can be used to inform policy decisions and programme development at the local, regional, and national level.

**2021 Census Questions**

1. What is your name?
2. What is your date of birth?
3. What is your sex?
4. On 21 March 2021, what is your legal marital or registered civil partnership status?
5. Who is (was) your legal marriage or registered civil partnership to?
6. Do you stay at another address for more than 30 days a year?
7. What is that address?
8. Are you a schoolchild or student in full-time education?
9. During term time, where do you usually live?
10. What is your country of birth?
11. If you were not born in the United Kingdom, when did you most recently arrive to live here?
12. Including the time you have already spent here, how long do you intend to stay in the United Kingdom?
13. One year ago, what was your usual address?
14. How would you describe your national identity?
15. What is your ethnic group?
16. What is your religion? (This question is voluntary)
17. This question is intentionally left blank
18. What is your main language?
19. How well can you speak English?
20. What passports do you hold?
21. How is your health in general?
22. Do you have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more?
23. Do any of your conditions or illnesses reduce your ability to carry out day-to-day activities?
24. Do you look after, or give any help or support to, anyone because they have long-term physical or mental health conditions or illnesses, or problems related to old age?
25. If you are aged 16 or over go to 26 – if you are aged 15 or under go to 51
26. Which of the following best describes your sexual orientation? (This question is voluntary)
27. Is the gender you identify with the same as your sex registered at birth? (This question is voluntary)
28. The next set of questions is about your qualifications.
29. Have you completed an apprenticeship?
30. Have you achieved a qualification at degree level or above?
31. Have you achieved any other qualifications?
32. Have you previously served in the UK Armed Forces?
33. In the last seven days, were you doing any of the following?
34. Which of the following describes what you were doing in the last seven days?
35. In the last four weeks, were you actively looking for any kind of paid work?
36. If a job became available now, could you start it within two weeks?
37. In the last seven days, were you waiting to start a job already accepted?
38. Have you ever done any paid work?
39. Answer the remaining questions for your main job or, if not working, your last main job.
40. In your main job, what is (was) your employment status?
41. What is (was) the name of the organisation or business you work (worked) for?
42. What is (was) your full job title?
43. Briefly describe what you do (did) in your main job.
44. What is (was) the main activity of your organisation, business or freelance work?
45. Do (did) you supervise or oversee the work of other employees on a day-to-day basis?
46. If you had a job last week go to 47; If you were temporarily away from work last week go to 47; If you did not have a job last week go to 51
47. In your main job, how many hours a week do you usually work?
48. How do you usually travel to work?
49. Where do you mainly work?
50. What is the address of your workplace or depot?

**Census@Leicester Datasets**

Generating specific census datasets from Nomis can be time consuming and challenging and for this reason Census@Leicester has compiled a series of comprehensive datasets to make working with census data easier for educators, researchers, and students.

The Census@Leicester datasets include socio-demographic data from the 2001, 2011, and 2021 Leicester censuses to enable the exploration of recent historical trends. It also includes data from the 2021 census for both Nottingham and Coventry to enable comparisons with other cities.

These 5 datasets are available to download as excel spreadsheets from <https://figshare.le.ac.uk/>

**Source: Office for National Statistics**

**Using Census Data for Teaching**

Census data is valuable for teaching because it can be used to teach students about a wide range of topics, including:

1. **Social Studies**: Census data can be used to teach students about population demographics, migration patterns, and changes over time. Teachers can use census data to create interactive activities and lesson plans that help students understand the social and economic characteristics of different communities.
2. **History**: Census data can be used to help students track population growth and change, to identify historical trends, explore migration patterns, and test historical hypotheses.
3. **Statistics**: Census data can be used to teach statistics and data analysis skills. Teachers can use census data to create lessons that teach students how to interpret and visualise data.
4. **Geography**: Census data can be used to teach students about geography and map skills. Teachers can use census data to create interactive mapping activities that help students understand the distribution of various demographic variables across geographic regions.
5. **Critical Thinking:** Census data can be used to teach students critical thinking skills, such as how to interpret data, how to identify bias, and how to make informed decisions. This information can be used to help students become more informed citizens.

Overall, census data can be a valuable teaching tool in a variety of subject areas. Teachers can use census data to create engaging and interactive lessons that help students understand the diverse demographics of different communities, as well as the importance of data science in modern society.

**Possible Lesson Plans**

**Lesson Plan 1:** Understanding the Demographics of Leicester in comparison to Nottingham and Coventry

**Objective:** To teach students how to interpret census data to understand demographics and migration patterns in a specific region.

*Introduction:*

* Introduce census data and its importance in understanding populations.
* Explain the concept of demographics.

*Data Exploration:*

* Provide students with census data related to a chosen city.
* Guide students to analyse population trends, age distribution, ethnicity, etc.

*Analysis and Visualisation:*

* In pairs/small groups, have students select one variable that they explore across all 3 cities.
* Have students visualise data in a graph/chart they deem most appropriate.
* Have students write a short description of their data and the demographic differences.

*Presentation:*

* Have students present their findings to the class.
* Hold class discussion about data, interpretation, choice of visualisations, etc.

**Lesson Plan 2:** Exploring Historical Changes through Census Data

**Objective**: To teach students how to analyse census data to gain insights into historical changes in demographics, social structure, and urbanisation.

*Introduction:*

* Start with a discussion on the importance of primary sources in history.
* Explain that census data is a valuable primary source that provides insights into historical changes over time.

*Data Exploration:*

* Provide students with Leicester’s census data from 2001, 2011, and 2021.
* Guide students to analyse population trends, age distribution, ethnicity, etc.

*Analysis and Visualisation:*

* In pairs/small groups, have students select one variable that they explore across all 3 decades.
* Have students visualise data in a graph/chart they deem most appropriate.
* Have students write a short description of their data and the demographic differences across the 3 decades.

*Presentation:*

* Have students present their findings to the class.
* Hold class discussion about data, interpretation, choice of visualisations, etc.

**Lesson Plan 3:** Thinking Critically about Social Change through Census Data

**Objective**: To develop students' critical thinking skills by analysing census data to identify and understand social changes over time.

*Introduction:*

* Start with a discussion on the concept of social change and its significance in understanding societies.
* Explain that census data can provide valuable insights into how societies have changed over time.

*Data Exploration:*

* Provide students with Leicester’s census data from 2001, 2011, and 2021.
* Guide students to analyse population trends, age distribution, ethnicity, etc.

*Analysis and Visualisation:*

* In pairs/small groups, have students select one variable that they explore across all 3 decades.
* Have students visualise data in a graph/chart they deem most appropriate.
* Have students write a short description of their data and the demographic differences across the 3 decades.
* Have each group identify and discuss significant trends or changes they observe in the data.
* Encourage students to think critically about why these changes might have occurred, considering historical, economic, and social factors.

*Presentation:*

* Have each group identify and discuss significant trends or changes they observe in the data.
* Encourage students to think critically about why these changes might have occurred, considering historical, economic, and social factors.

*Critical Thinking Exercise:*

* Provide students with a set of open-ended questions related to the census data (e.g., "Why do you think there was a decrease in population X over the last 3 decades?")
* In small groups, students discuss and develop well-reasoned responses to these questions.

**Strengths of Census Data**

1. **Comprehensive Coverage**: Census data is collected from every person in a given population, providing a comprehensive snapshot of the population. This allows researchers and policymakers to make informed decisions based on a complete and representative sample.
2. **Longitudinal Data**: Census data is collected every 10 years, which allows for longitudinal analysis of population trends and changes over time. This can be particularly useful for tracking changes in demographics, such as shifts in age distribution or migration patterns.
3. **Large Sample Size**: The large sample size of census data provides statistical power and allows for analysis at the sub-group level, such as by race, ethnicity, or age. This can be particularly useful for identifying disparities or patterns within the population.
4. **Standardised Data**: Census data is collected using standardized methods and questions, which allows for consistent comparison across geographic regions and time periods. This can be particularly useful for researchers and policymakers who require a standardised data source for analysis.
5. **Publicly Available**: Census data is publicly available, which allows for transparency and accessibility of the data. This means that anyone can access and use the data for research or policy purposes.
6. **Reliability**: Census data is collected by trained professionals using a rigorous methodology, which ensures the reliability and accuracy of the data. This can be particularly useful for researchers and policymakers who require high-quality data for analysis.
7. **Information on Key Variables**: Census data provides information on key indicators such as population size, age distribution, race and ethnicity, income, education, and housing. This can be particularly useful for policymakers who require information on these indicators to inform policy decisions.

It's important to recognize the strengths of census data when using it for research or policy purposes. While there are limitations to census data, it remains a valuable tool for providing a comprehensive and standardised picture of the population. It can be particularly useful for tracking changes over time, identifying disparities, and informing policy decisions.

**Limitations of Census Data**

1. **Sampling Bias**: Census data is collected through a survey of a representative sample of the population. However, certain groups of people may be more difficult to reach or less likely to participate, leading to sampling bias. For example, homeless individuals or those who do not speak the language in which the census is conducted may be underrepresented.
2. **Outdated Information**: Census data is typically collected every 10 years, meaning that the data may become outdated quickly. Changes in the population, such as migration or demographic shifts, may not be accurately reflected in the data.
3. **Limited Information**: Census data typically only provides basic demographic information such as age, gender, race, and income. This can be limiting for researchers or policymakers who require more detailed information on social and economic factors.
4. **Privacy Concerns**: Census data is collected under strict confidentiality laws to protect the privacy of individuals. This means that certain data may be suppressed or aggregated to prevent the identification of individuals, which can limit the usefulness of the data.
5. **Incomplete Coverage**: Despite best efforts, some individuals may not be counted in the census. This can occur for a variety of reasons, such as if they are living in areas that are difficult to access, or if they are not aware of the census or choose not to participate.
6. **Geographic Limitations**: Census data is typically only collected at the national or regional level, which may not be useful for researchers or policymakers who require more granular data at the local level.
7. **Interpretation Challenges**: Census data can be complex to interpret, especially for non-experts. This can lead to misinterpretation or misuse of the data, which can have negative consequences for policy and decision-making.

It's important to keep these limitations in mind when using census data for research or policy purposes. While census data can be a valuable tool, it should be used in conjunction with other data sources and supplemented with additional research and analysis to provide a more comprehensive understanding of the population.

**Research with Census@Leicester Data**

The datasets created through the Census@Leicester project may be used by staff and students for their own research projects.

Here are some important areas of research using census data:

* **Demographic research:** Census data can be used to study the demographics of a population, such as the age distribution, the ethnic composition, and the educational attainment of the population. This information can be used to understand the changing composition of the population and to identify the factors that are driving these changes.
* **Economic research:** Census data can be used to study the economy, such as the labour force, the income distribution, and the poverty rate. This information can be used to understand the economic well-being of the population and to identify the factors that are affecting the economy.
* **Social research:** Census data can be used to study social issues, such as poverty, education, and health. This information can be used to understand the causes and consequences of these issues and to develop solutions to address them.
* **Public health research:** Census data can be used to understand the health of the population and to develop strategies for improving public health.

These are just a few of the important areas of research using census data. The possibilities are endless, and the only limit is the imagination of the researcher. By using census data, researchers can gain a deeper understanding of the world around them and develop solutions to some of the most pressing challenges facing society.

**Using Census Data with other Data**

Here's a guide to what data can be used in combination with census data:

1. **Survey Data**: Survey data can be used to supplement census data and provide more detailed information about specific populations or issues. Surveys can provide valuable insights into attitudes, behaviours, and preferences that may not be captured by the census.
2. **Administrative Data**: Administrative data, such as crime rates, school enrolment data, and healthcare data, can be used in combination with census data to provide a more complete picture of population characteristics and trends. Administrative data can also help to validate and supplement census data by providing additional information on specific populations or geographic areas.
3. **Geospatial Data**: Geospatial data, such as satellite imagery and GPS data, can be used in combination with census data to analyse patterns and trends in population distribution, land use, and environmental characteristics. This can be especially useful for urban planning, resource allocation, and disaster response.
4. **Social Media Data**: Social media data, such as Twitter and Facebook posts, can be used to supplement census data and provide insights into attitudes, behaviours, and preferences among specific populations. This type of data can be especially useful for marketing research, political polling, and social science research.
5. **Public Opinion Polls**: Public opinion polls can be used in combination with census data to track changes in attitudes and opinions over time. Polling data can provide valuable insights into public opinion on a wide range of issues, including politics, social issues, and consumer preferences.

Overall, combining census data with other types of data can provide a more complete and nuanced understanding of population characteristics and trends. By supplementing census data with other sources of information, researchers, policymakers, and businesses can gain deeper insights into social, economic, and political dynamics.

**Using Census Data to Create Graphs and charts in Excel**

Here's a guide on how to use Excel to create images and charts with numerical data:

1. Open Excel and Enter Data:

* Launch Microsoft Excel and open a new workbook.
* Enter your numerical data into the spreadsheet, ensuring each data set is in a separate column or row.

1. Select Data for the Chart:

* Highlight the data you want to visualise in the chart. Include column or row headings for clarity.

1. Insert a Chart:

* Go to the "Insert" tab in the Excel menu.
* Choose the desired chart type (e.g., column, line, pie, bar) from the "Charts" group.
* Select the specific chart style you want.

1. Customise the Chart:

* Click on the chart to activate the "Chart Elements" and "Chart Styles" buttons that appear.
* Customise the chart by adding data labels, axis titles, legends, and other elements using these buttons.

1. Change Chart Type:

* If you want to change the chart type, right-click on the chart, and select "Change Chart Type."
* Choose a different chart style that best represents your data.

1. Format the Chart:

* Customise the appearance of the chart by changing colours, fonts, and styles using the "Format" tab.

1. Add Data Labels:

* To add data labels to the chart, right-click on the data series, and choose "Add Data Labels."
* The values will now be displayed on the chart.

1. Save the Chart as an Image:

* Once the chart looks the way you want it, you can save it as an image by right-clicking on the chart.
* Select "Save as Picture," choose the file format (e.g., JPEG, PNG), and save it to your desired location.

1. Copy and Paste the Chart:

* Alternatively, you can copy the chart directly from Excel and paste it into other applications such as Word or PowerPoint.

1. Update Data and Refresh Chart:

* If your data changes, you can easily update the chart by editing the data in Excel. The chart will automatically refresh to reflect the changes.

By following these steps, you can effectively use Excel to create images and charts that visually represent your numerical data, making it easier to analyse and understand the information. Excel's charting features provide flexibility and customization options to create professional-looking visualizations for various purposes.

**Transferring Census@Leicester data to SPSS**

1. Prepare Your Data in Excel:

* Open Microsoft Excel and ensure your numerical data is organised in a spreadsheet.
* Each variable should be in a separate column, and each case (observation) should be in a row.
* Label your columns with descriptive headers.

1. Save the Excel File:

* Save your Excel file in a location you can easily access.

1. Open SPSS:

* Launch IBM SPSS Statistics software on your computer.

1. Import Data from Excel to SPSS:

* In SPSS, go to "File" > "Open" > "Data."
* Navigate to the location where your Excel file is saved and select it.
* Choose the appropriate Excel file type (.xls or .xlsx) and click "Open."
* SPSS will display a dialog box with import options.

1. Define Data Properties:

* In the "Read Excel Data" dialog box, ensure the "Read variable names from the first row of data" option is checked.
* Select any other options based on your specific data format (e.g., numeric or string variables).

1. Review and Validate Data:

* SPSS will show a preview of your data. Review it to ensure it's correctly imported.
* Click "OK" if the data looks correct.

1. Save the SPSS Data File:

* Go to "File" > "Save As" and save the SPSS data file with a new name and the .sav extension.

1. Explore and Analyse Data in SPSS:

* Now that your data is in SPSS, you can explore and analyse it using various statistical procedures and visualisation tools.
* Use the "Variable View" to label, define, and modify variable properties as needed.

1. Save and Export Results:

* After analysing your data in SPSS, you can save your output (tables, charts, and analyses) as SPSS output files (.spo) or export them to other formats, such as Excel or PDF.

1. Review Your Analysis:

* Review your analysis results and interpretations to draw meaningful conclusions from your data.

By following these steps, you can effectively move numerical data from Excel to SPSS for analysis. SPSS provides a wide range of statistical tools and options to explore and analyse data, making it a powerful tool for researchers and analysts. Always ensure that your data is correctly formatted and labelled for accurate and reliable analysis in SPSS.

**Useful Readings**

Ballas, D. (2004). Simulating trends in poverty and income inequality on the basis of 1991 and 2001 census data: a tale of two cities. *Area*, *36*(2), pp. 146-163.

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