Faculty of science and technology

A comparison between Chichester and Brighton as an insight into attitudes towards environmental sustainability and the factors that make environmentally sustainable approaches successful

A dissertation submitted as part of the requirement for the MSc Green economy

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Abstract

Current environmental emergencies require action to be taken at international, national and local levels. This study examines local attitudes to sustainability in two Sussex cities of Brighton and Chichester. Data was collected in the two Sussex sounds of Chichester and Brighton through public surveys with the aim of gaining an understanding of the variation in the understanding and opinions of sustainability. Chichester and Brighton vary largely in their age and political demographics, Chichester is a largely older and more conservative city compared to the younger and greener city of Brighton. Attitudes tended to be more welcoming in the city of Brighton. This paper investigates the factors contributing to attitudes towards sustainability and identifies the most successful approaches for improving sustainability. An older, right-wing city such as Chichester is more suited to subtle approaches, whereas a younger, left wing city such as Brighton is more suited to active and bold approaches for environmental sustainability.

Acknowledgements

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I would like to thank both Chichester and Brighton council who worked with me to collect the data used in this project, without them this project would not have happened. Tom Day and Stephanie Evans of Chichester council were especially helpful in consistently keeping in touch with me to see how my research was going and to contribute any useful ideas they had.

I would also like to thank those who helped me in a non-academic sense, by thanking those that formed my support system and helped me to cope with managing the stress that naturally comes with such a project. Thank you to my family and friends.

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1 - Introduction:

1.1 – The issue at hand:

The Anthropocene period has witnessed continuous environmental stress resulting in environmental damage as a result of human behaviour, prompting an urgent need for humans to change their behaviour (Strengers and Maller 2016). These issues, amplified by urbanisation, are abundant and complex and involve a variety of factors including the environment, economics and society (Nicholls 2006). The abundance of environmental issues present throughout the Anthropocene period include but are not limited to; global warming, ocean plastic, waste contamination, oil spills and natural resource depletion (Strengers and Maller 2016). Evidence that these issues are a result of human activity is indisputable (IPCC 2013).

In the period of 1900 to 2000 global average temperature rose by approximately 0.6 ^{o}C and a continued rapid rate of temperature rise is predicted for the future (Houghton et al. 2001). While, species have shown responses to climate changes throughout evolutionary history (Harris 1993), it is the significantly rapid rate of change at present time that is of primary concern (Schneider and Root 1998). Continued global warming will cause considerable changes towards water availability and temperature (Ramsey 2015). The impact in these changes will vary regionally. In Europe, it is predicted that increased precipitation patterns during winter and spring will increase flood risk. While, during the summer it is predicted that increased temperatures in Europe will result in increased frequencies and durations of drought (Kreuzwieser and Gessler 2010). These climatic events, such as floods and droughts have occurred throughout human history. However, as human population has increased and civilizations have developed and become more valuable the economic impact of floods and droughts has grown worldwide to billions of dollars each year (Kundzewicz 1995). Continued pressure on natural systems as a result of global warming further intensifies the issue of climate variability and increases the likelihood of their adverse impacts on the intensity and frequency of climatic events such as flooding and droughts, resulting in further uncertainty within already complex sustainability issues (Kndzewicz).

Increased environmental threat comes from urbanisation, the conversion of natural land to developed land. Ecosystems are continuously modified, cultivated or built upon, resulting in degradation, diversity loss, and resource depletion. These impacts then go on to cause continuous further degradation and pollution towards the quality of air, water and land (Prescott-Allen 1995). Continuing the discussion on pollution, waste has become one of the most important environmental issues, particularly important at present is plastic pollution. In the last 50 to 60 years, the world's hydrosphere has suffered devastating impacts as a result of plastics and other synthetic, non-biodegradable materials. Plastic pollution has had severely detrimental impacts on aquatic life through entanglement accidents, ingestion, suffocation and debilitation, causing a decline in population of aquatic species (Gregory 2009).

A meta-analysis conducted by Root et al. 2003 analysed 143 studies which studied the impact of global warming on plant and animal species. The studies included a rich variety of species from molluscs to mammals and grasses to trees. The results of the meta-analysis found that over 80% experienced physiological constraints as a result of global warming which impacted their populations. Therefore, global warming, combined with other human caused stresses, such as pollution and habitat destruction has already had a significant impact on animal and plant species, leading to population decline, disbalance of community structure and in worse cases, extinction (Root et al. 2003).

1.2 – Defining and critiquing sustainability whilst focussing on environmental sustainability:

A popular practice that has been proposed as a solution to the planet's environmental issues is sustainability. There is often confusion and ambiguity in how sustainability is defined and consequentially, executed in practice. It was within discussion of renewable resources such as fish stocks and forests that the concept of sustainability arose and it is this broad context which sustainability is most commonly associated with (Hopwood et al. 2005).

Mostly simply, sustainability refers to meeting the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland 1987). In broad terms, the concept of sustainable development is an attempt to combine growing concerns about a range of environmental issues with socio-economic issues (Hopwood et al. 2005). Sustainability can be considered as a basic main dish such as a pizza, whereby further ingredients are added to it to change its identity. The many attachments to the term sustainability contribute to over-complicating the topic. For simplicity, this report focusses on environmentally sustainable behaviour, behaviour which benefits from the environment, yet aims to have as minimal impact on the environment as possible. To speak of sustainability in an ecological sense gives a more detailed and more specific definition to the concept. The additional ecological label to the concept of sustainability focusses attention on the environmental opportunities and constraints that nature gives to human beings (Redclift 2006).

Environmental sustainability is considered an important component of conservation. However, proposals have suggested that sustainability could be a flawed concept for tackling global environmental issues. A primary concern surrounding the subject of sustainability is resource management. The primary tool in sustainable resource management is maximum sustainable yield (MSY), this is an attempt to discover the rate of resource harvesting, which is environmentally sustainable, yet maximises the benefit received by those who harvest the resource (Curtis 2003). The drawback to the MSY approach is that the setting of the point of equilibrium between being more in favour of those harvesting the resource or maintaining the natural resource is down to interpretation and is subjective (Khalilian et al. 2010; Bell and Morse 2008). The MSY can be manipulated to benefit either end of the spectrum, the environment or those in need of the resource (Tisdell 1988).

Another area of debate is between the views of weak and strong sustainability (Haughton and Hunter, 1994). Weak sustainability does not view natural resources as relatively important, in comparison to strong sustainability. Instead a weak sustainability perspective views natural capital as a way of allowing human development to progress, believing that a total exhaustion of natural resources would not be a catastrophe and would instead be an event in human society's transition through technological development and the loss of natural capital will not detriment human wellbeing (Solow 1974). Strong sustainability is in complete opposition to the views of weak sustainability, viewing natural capital as irreplaceable by humanmade capital and considers the natural processes that natural capital provides such as the water cycle and photosynthesis of critical importance to human wellbeing (Rees 1998). A deep green perspective goes even further, giving natural capital an equal right to exist to humans (Naess 1989). Again, the concept of sustainability is surrounded by a mass of subjectivity in how important it is as a concept to tackle environmental issues whilst still providing for current generations.

While the drawbacks to environmental sustainability largely relate to subjectivity, environmentally sustainable approaches have potential to contribute to solving environmental challenges. An example of this is the introduction of a 5p charge for a single use plastic bag in supermarkets in

England. This approach encouraged consumers to transition towards reusable shopping bags. Estimates have suggested that since the introduction of the 5p single-use plastic bag, sales have fallen by 86%. Seven major retailers issued just over a billion single-use plastic bags in 2018, which is a significant reduction from 7.6 billion single-use bags in 2014 (Bullock et al. 2018). The 5p charge has significantly contributed to alleviating the global plastic problem previously discussed. This example gives clear evidence that it is possible for environmentally sustainable approaches to be effective in alternating human behaviour in a way that benefits the environment (Thomas et al. 2019).

1.3 – Attitudes towards sustainability:

It is clear from the above conversation that environmental issues are threatening and unsettling to consider, consequentially it is common for people to avoid thinking about the issue because it is uncomfortable to think about, in psychology, this is known as avoidance of negative emotions. The avoidance of negative emotions is a contributory factor to society being slow to make the necessary behavioural changes to increase environmental sustainability (Hannam 2015). A model by Willis et al. 2017 found that the avoidance of negative emotion had a direct, negative influence on pro-environmental behaviour. Along with environmental issues being unpleasant to consider, the approaches which attempt to solve these issues are not always well explained to the public and are often difficult to understand for those who are not experts of the field. Because of the complexity of environmental issues, an individual most go through a mental process of analysing the consequences of their actions and how it contributes to the issue, recognise the necessary changes to their behaviour and then physically make these adaptations (Willis et al. 2009).

There are several approaches for encouraging behavioural changes for a more sustainable lifestyle. The first is fear appeal, which operates on invoking the emotion of fear, which in context of sustainability would be the environmental issues. After invoking fear, the approach must then provide the individual with appealing solutions that the individual can adopt to mitigate the fear. The individual goes through a 4-step process, in context of pollution for example; the individual first acknowledges that pollution is a threat and secondly, that it will personally affect them. The third step is the recognition of the actions that will reduce the issue and the final action is the implementation of these actions into their lifestyle (Willis et al. 2009). It is possible that step 1 could be achieved without fear appeal, although it is an effective way of raising awareness of an issue to an individual who is unaware.

Value orientation is an important part of psychology which influences attitudes towards sustainability. Values have been defined as an individual's perspective, such as what is good and what is bad, throughout all aspects of life and the rules they use in decision making (de Groot & Steg 2008; Schwartz 1992). Value orientation is the organisation of which values are more important in comparison to others. Emotion is a key factor in the process of decision making (Loewenstein and Lerner 2003). Because of value orientation, consumption decisions are influenced by specific values of different individuals. Consumption behaviours will vary due to the different values within different cultures (Willis et al. 2009).

There are specific factors which may influence an individual's value orientation. A key influence is age. Typically, younger people are more open to acknowledging environmental issues, understanding the concept of environment sustainability and are more welcoming to adopting sustainable lifestyle changes (Kellstedt et al. 2008). Furthermore, political beliefs also influence views towards environmental sustainability. Typically, leftist views are more focussed on protecting the environment (Tomaselli et al. 2019; Harring and Sohlberg 2016; McCright et al. 2015), whereas

on the flipside, rightist views tend to prioritise economic growth over the environment (Safford and Hamilton 2011; Reichart 2000).

It is the lifestyle changes of an individual, towards sustainability that contribute to a change in society. It is the accumulative value of many individuals making positive lifestyle changes that benefits sustainability. Furthermore, there is benefit in accumulative value in a policy context too, policy changes towards a more sustainable outcome are more likely to occur when there is a significant number of people pushing for that change. Thus, approaches which influence individual change will also influence policy change. As sustainable lifestyle changes become more popular, psychology suggests is will have a snowball effect and continue to become more popular as previously unusual lifestyle habits become normalised.

The main take away for this report is that an understanding in the psychology of individuals and what motivates them to make individual changes is very useful for encouraging sustainable lifestyle changes. It is a main aim of this report to ascertain how environmental issues make them feel, how well individuals understand sustainability as a concept and finally, whether they use the approaches in their area which encourage sustainability and what changes could be made to encourage sustainable lifestyle changes.

1.4 – The research areas:

Human behaviour dictates the success of sustainability and cities are hubs for human behaviour **ref**. With high densities of human populations and activities, cities are prime areas for consumption and consequential environmental problems (Alberti and Susskind 1996).Therefore, cities make a useful site for studying attitudes towards sustainability. For the study, two cities in Sussex were chosen, Chichester and Brighton. The county of Sussex is located on the south coast of England and has a cold and temperate climate.

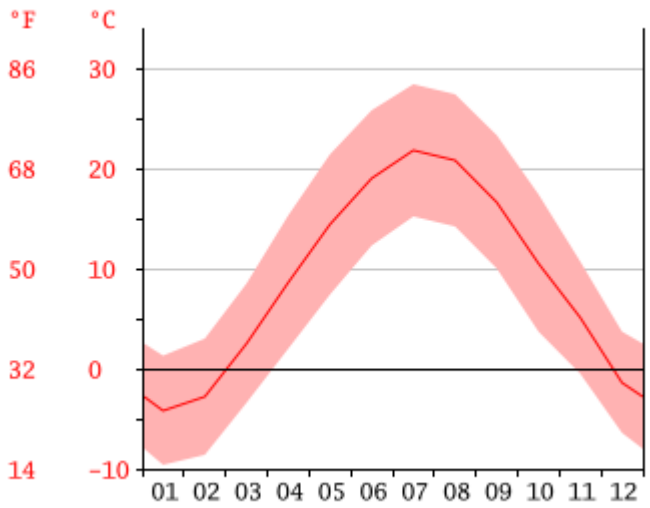

Figure 1 – Average monthly temperature for West Sussex in 2018 (Climate-data.org)

The two cities of Chichester and Brighton are only 28 miles apart from each other and are both coastal so share a similar climate. Whilst close in proximity, the significant difference between Chichester and Brighton is the people. Chichester city is composed of a majority elderly population, whereas Brighton is composed of a younger population. The people of Chichester and Brighton had opposing views in voting for Brexit and the most recent government election. The majority (50.9%) of Chichester district voted to leave the EU, however in contrast, the overwhelming majority of Brighton (68.8%) voted to remain in the EU. Chichester is a conservative constituency whilst Brighton is a green party constituency. The voting records of these two cities show that their residents have very different value orientations and therefore make appropriate areas for comparing attitudes towards environmental sustainability.

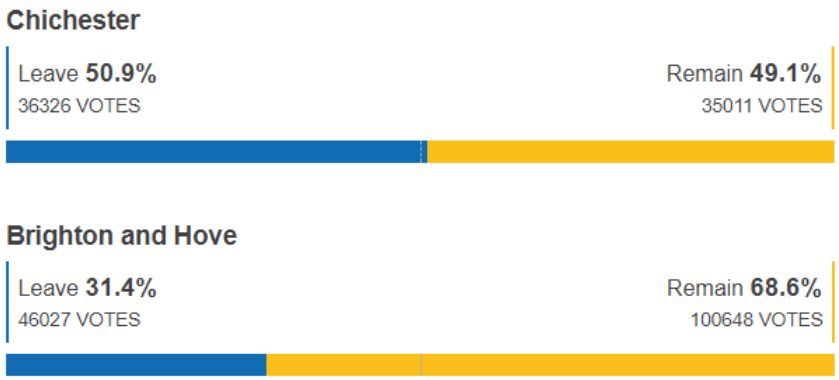

Figure 2 - Percentage of voters who voted to leave and remain in the EU referendum (a) Chichester, (b) Brighton

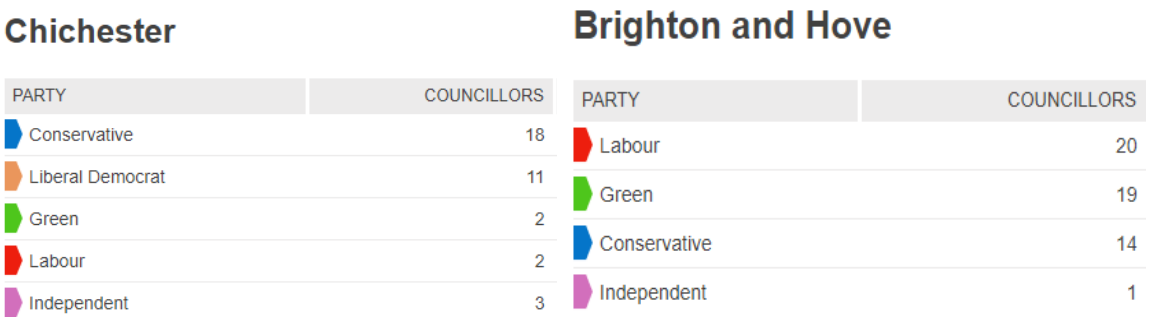

Figure 3 - Current number of local councillors for each party in Chichester (a), Brighton (b) (BBC 2019)

Chichester and Brighton can both take lessons away from other cities that are considered to be doing well sustainably. “The most sustainable city” is subjective and again goes back to how sustainability is defined, rather than looking at cities, Chichester and Brighton should look at different approaches implemented in other cities that have contributed to sustainability. Different cities are excelling in different aspects of sustainability. Frankfurt has become a lead example of green spaces within cities with 52% of Frankfurt being composed of green spaces. Zurich is a great example of implementing an efficient sustainable transport system powered by renewable energy. Munich has an ambitious target of using 100% clean electricity by 2025 and to become carbon neutral by 2050. London is perhaps the most relevant example as it is under the same policies and climate as Chichester and Brighton. London has excelled in its effort to become sustainable through policies relating to noise reduction, waste recycling and air pollution.

1.5 – Sustainable approaches:

There are many aspects of sustainability in cities where approaches can be constructed to target an improvement in that area of sustainability, these include but are not limited to; Transport, Waste and Biodiversity. There are two opposing strategies in sustainable approaches. A sustainable approach can target a conscious behavioural change by encouraging an individual to change their behaviour. An example would be encouraging an individual to cycle rather than drive. The alternative approach modifies an individual's activity to be more environmentally sustainable, yet the individual does not have to be conscious of the change, such as a change to a biodegradable takeaway coffee cup rather a plastic one by the provider of the coffee.

Transport is an important aspect of environmental sustainability that must be tackled (Chapman 2007; Hickman and Banister 2010). In 2017, transport was the largest contributor of global greenhouse gas emissions by sector (Harrabin 2019). Carpooling is the act of sharing a journey to a destination with other individuals, this contributes to reduced greenhouse gas pollution as less petrol or diesel powered vehicles are required to make the same journey. The main restraints for carpooling are concerning the logistic of the operation, in terms of informing individuals when rides are available and ensuring safety (Neoh et al. 2014). Ateneo University in Philippines trialled a carpooling system but found that there was little interest and few participants, preventing the project from being a success (Rustia 2018). However, there is potential in carpooling (Peng and Lan 2014; Zeng and Ouyang 2016). Companies such as "BlaBlaCar" have created apps where users are able to see a list of available rides to plan their journey and users are thoroughly screened to reduce risk of safety concern, BlaBlaCar is a French company with 70 million users, showing potential that a carpooling app could be popular in UK too . Both Chichester and Brighton are trialling carpooling projects, but both have low interest at present. An alternative option for sustainable transport is cycling. Cycling is a completely carbon neutral activity and so a transition from a car to a bike rather a car to carpooling would be the more sustainable choice. Furthermore, cycling gives an individual more freedom of being able to make a journey at their own freewill rather than having to look for available carpooling rides. However, during wetter months or for long distances, cycling may not be a preferable choice, furthermore councils may prefer carpooling. The provision of cycle paths within a city is a key factor to their success (Lovelace et al. 2016). A growing approach is the provision of rental bikes which have become popular in cities such as London and are now in place in Brighton. The rental aspect gives the individual using the approach a convenient and sustainable transport option, with many drop-off zones around the city (Sierpinski 2018).

Green spaces are important areas in cities for maintaining biodiversity and for providing residents with areas where they can connect with nature (Gaston 2010). Incorporation of plant life into cities utilises their air purifying function and filters toxic chemicals (Lohr and Pearson-mims 1996), benefiting the quality of life of the residents of the city (Lewis 1995). Furthermore, finding space for plant life in cities will have a cumulative global effect by increasing carbon storage (Davies et al. 2011; Alhorr et al. 2014). A newly emerging approach and one that is currently exercised in Brighton, is green pathways. These are small pathways or alleyways which connect roads together for pedestrians which have been designed or modified to incorporate plant life (Gill et al. 2007). Studies have shown an improvement in the mental health of individuals who spend more time with nature (Cox et al. 2017; Maller et al. 2005), thus an increase in the provision of green spaces will benefit the mental health of residents of the city. As well as being beneficial for humans, green spaces provide important habitat for wildlife and can increase biodiversity, green spaces can be designed to encourage specific species to live in the area, such as the butterfly beds which have been placed in "the level" park in Brighton. The butterfly beds contain plant species such as red valerian which

attract butterfly species and contribute to maintaining populations of butterflies in Brighton. Another approach which is in place in Brighton is a “free fruit forest”, this is an area of fruit trees which is open to the public and they are free to individuals to take what they like. This is an effective way of connecting to humans to sustainability with an incentive, furthermore it encourages individuals to collect their food locally and plastic free. Chichester city council are in the process of rolling out a single-use plastic ban throughout the city to contribute to mitigating the plastic waste issue, Chichester city has potential to be a leading example for the UK. A plastic ban is an example of an approach which does not require consumer awareness to have a positive effect, shoppers will be acting more sustainably by using plastic bag alternatives without having to be aware of the influence it has on mitigating the plastic issue.

Cities are hubs for consumption and consequentially produce a lot of waste (Kennedy et al. 2007), appropriate waste management is critical for a city to be considered environmentally sustainable (Gilbert et al. 2013). Approaches for sustainable waste management approaches include; a suitable amount of both recycling and non-recycling bins in the city. Employment of staff to dispose of waste and to collect rubbish which was not correctly discarded will also contribute to a more environmentally sustainable city, however this is a job provision topic and less relevant to influencing the behaviour of individuals, whereas, individuals are more likely to dispose of waste responsibly if there are a great number of bins in convenient locations (Grodzinska-Jurczak et al. 2003). Recycling resources is critical for limiting waste, with regular public waste bins there should also be equal provision of recycling bins (Grodzinska-Jurczak et al. 2003). Approaches for environmental sustainability should focus on being as environmentally sustainable as possible. Waste bins are designed for the purpose of disposing of litter, yet the city of Glasgow managed to save 850,000 plastic bin bags a year by not using plastic bags, further contributing to sustainability by reducing contribution to another environmental issue, plastic waste (Glasgow.gov.uk).

Aim – To understand the contributory factors which influence attitudes to sustainability and how sustainable approaches can be developed to increase sustainable behaviour.

2 - Methodology:

2.1 - Discovering what sustainable practices were currently in existence in both areas:

This report was carried out in collaboration with Chichester and Brighton councils. The first step was to collect two separate lists of projects which encourage environmental sustainability in Chichester and Brighton. This list was constructed by visiting the areas and taking notes of projects that were seen. As well as also contacting local councils, charities and initiatives.

2.2 - Creating a survey to interview the public:

The first two questions of the survey were classification questions, gathering information on age and gender with 5 age groups and options of male, female or other. The following questions were on a scale of 1-5. The first of the set asked the individual to what extent they understand the concept of sustainability. The following questions asked the individual to rank the importance of different issues; climate change, ocean plastic and economic growth. The individual was then asked what they thought was currently more important economic growth, environmental sustainability or that both are of equal importance. The same question was asked for the future (2050). The final questions asked the individual if they had used, heard of or not used approaches from a list of approaches which encourage sustainability in the city they reside in. If an individual selected that they had heard of but noted used or not used an approach, they were asked to rank the likelihood of themselves interacting with the approach out of 5, 5 being most likely. If the individual had not heard of the approach, the approach was explained to them so that they could rank the likelihood of them interacting with the approach out of 5.

2.3 - Conducting the survey:

An amount of 250 surveys answered was set as an appropriate amount for representing the cities.

To save paper, the interviewees were given a mobile phone to input their answers in to an google forms document.

Individuals were asked if they lived in the city where the survey took place, only those that lived in the city were surveyed. When approaching members of the public, they were told that the survey was regarding a scientific research project. To reduce bias answers, the public were not told beforehand that the survey was on attitudes towards sustainability.

To maximise the likelihood of sampling a similar cross section of the population in each town, an equal amount of time surveying the public was conducted in both areas on the same days of the week at the same time of day. The times were decided as 13:00PM on Monday, 18:00PM on Wednesday and 14:00PM on Saturday, with 2 hours spent each time. The first week of surveying began on Monday 8th July in Chichester. The following week the same schedule took place in Brighton, beginning on Monday 15th July. The survey took place in a busy high street, a recreational park and a district town in both cities. The survey took place at different days of the week, times of day and at different places so to give opportunity for a broader variety of results.

City:	Type of location:	Location:	Time:	Date:	Number of surveys answered:
Chichester	Town	High street, Selsey	13:00 to 15:00	Monday 8th July 2019	83
Chichester	Park	Priory park, Chichester	18:00 to 20:00	Wednesday 10th July 2019	107
Chichester	High street	North street, Chichester	14:00 to 16:00	Saturday 13th July 2019	189
Brighton	Town	Peacehaven, Brighton	13:00 to 15:00	Monday 15th July 2019	72
Brighton	Park	Preston Park, Brighton	18:00 to 20:00	Wednesday 17th July 2019	143
Brighton	City	Ditchling Road, Brighton	14:00 to 16:00	Saturday 20th July 2019	229

Table 1 – Locations, times and number of surveys answered in Chichester and Brighton.

Total number of surveys collected:

Brighton 444

Chichester 379

3 - Results:

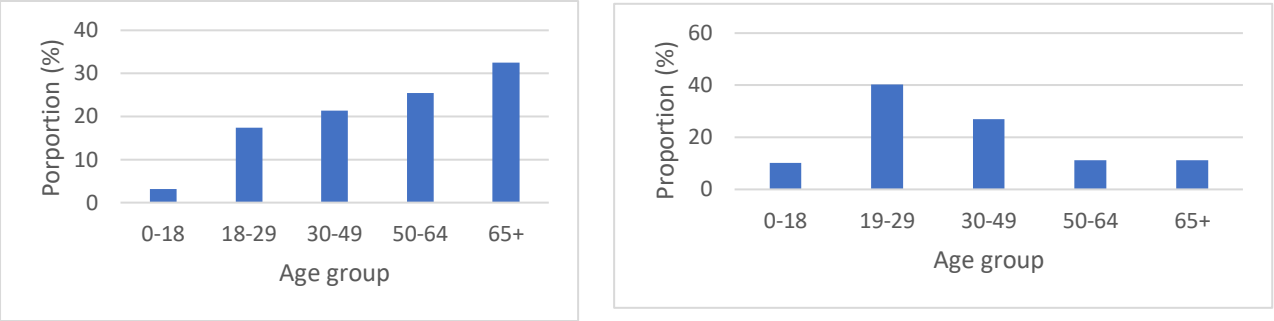

Figure 4. Proportion of survey respondents of different age classes (a) Chichester (b) Brighton.

The average of respondents in Chichester was older than that of Brighton. The largest age group in Brighton was 19-29 and the smallest was 50-64 and 65+. The largest age group in Chichester was 65+ with and the smallest was 0-18.

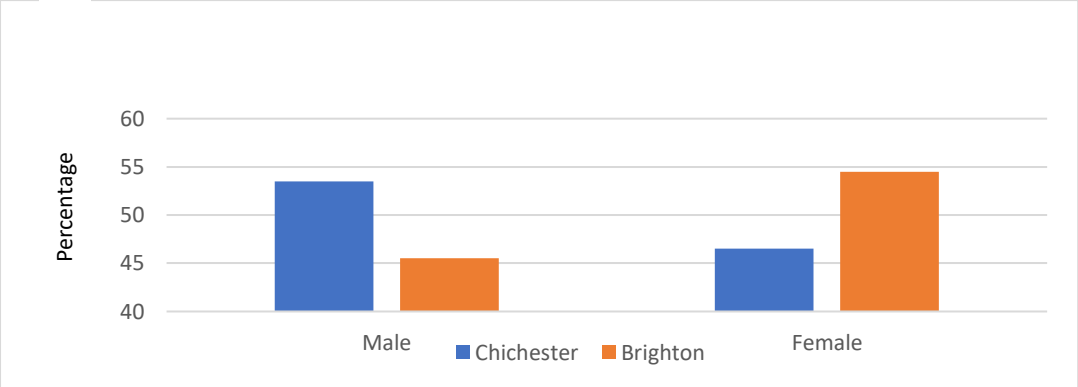

Figure 5 - Percentage of males and females in Chichester and Brighton

Those surveyed in Chichester had a majority male population male. Those surveyed in Brighton had a majority female population with 54.5% female.

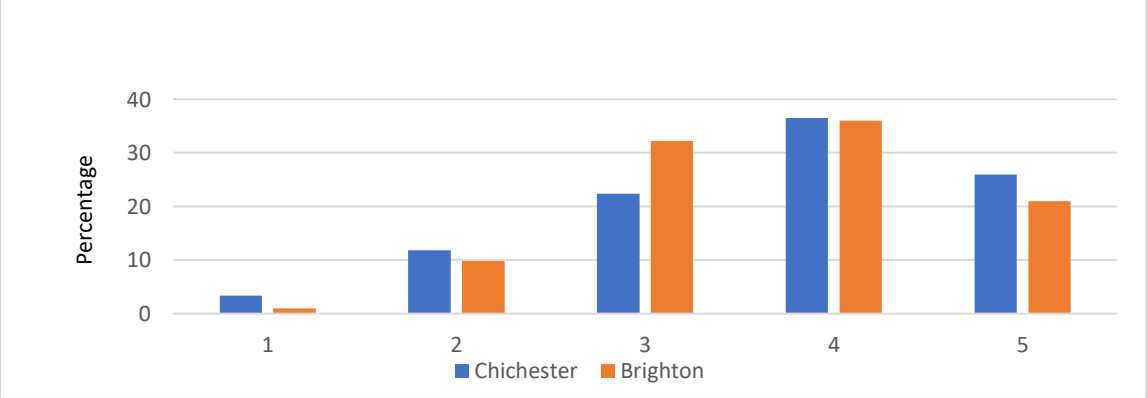

Figure 6 - Rankings from 1-5 (5 being the highest) for the understanding of the meaning of sustainability by the interviewees in Chichester and Brighton.

A greater percentage of people in Chichester voted for 5, full marks for understanding sustainability. An equal percentage of residents of Chichester and Brighton voted for 4. A greater percentage of voters in Brighton voted for a mid-level understanding of sustainability compared to Chichester. A greater percentage of voters in Chichester voted for a low-level understanding of sustainability compared to Brighton.

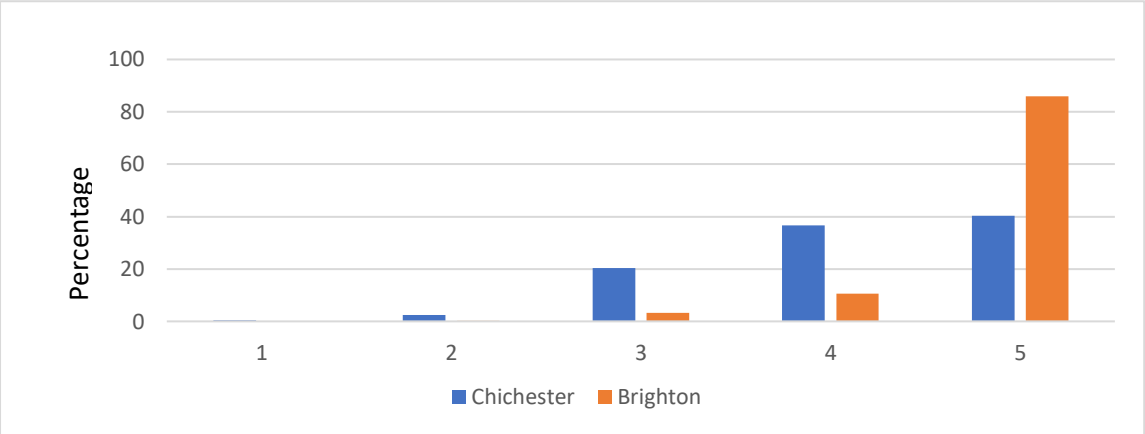

Figure 7 - Rankings from 1-5 (5 being the highest) of the importance of the issue of climate change by the interviewees in Chichester and Brighton.

A greater percentage of people in Chichester voted for a low-level and mid-level ranking for the importance of climate change. A greater percentage of people in Brighton voted for a high-level importance than Chichester by a factor of 2.1. A high-level importance was the most popular answer for both Chichester and Brighton.

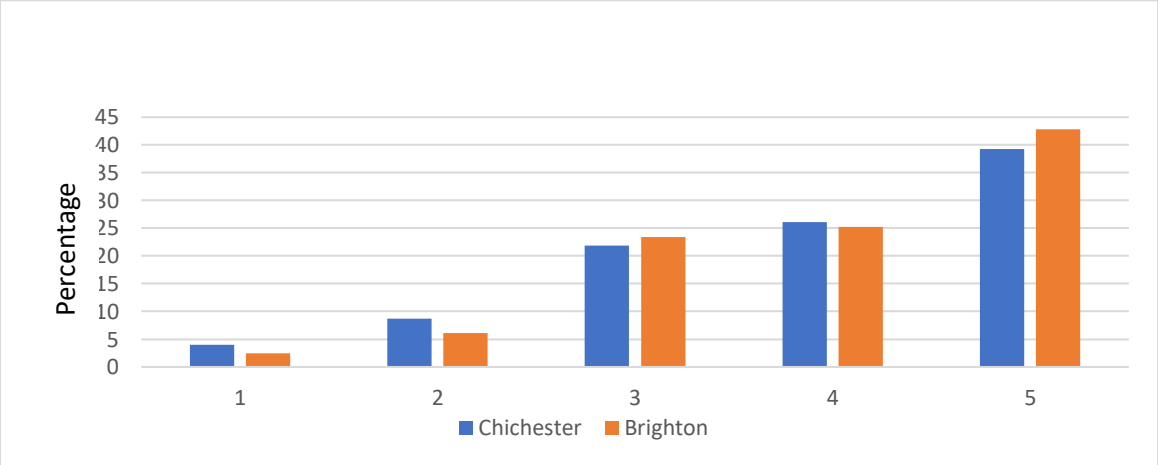

Figure 8 - Rankings from 1-5 (5 being the highest) of the importance of the issue of ocean plastic by the interviewees in Chichester and Brighton.

A greater percentage of people in Chichester voted for a low-level of importance of ocean plastic than Brighton. A greater percentage of people in Brighton voted for a mid-level of importance than Brighton. A high-level of importance was the most popular answer for both Chichester and Brighton.

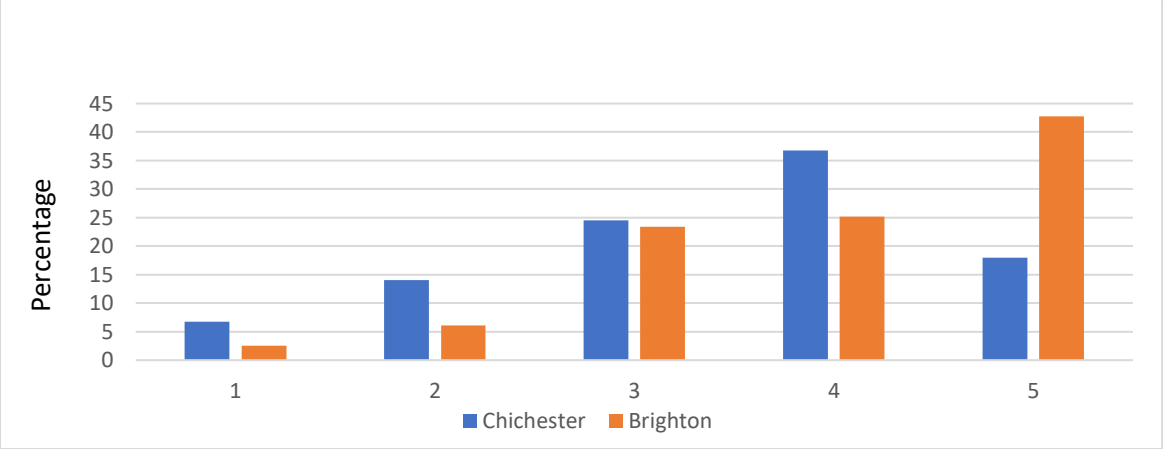

Figure 9 - Rankings from 1-5 (5 being the highest) for the importance of the issue of economic growth by the interviewees in Chichester and Brighton.

A greater percentage of people in Chichester voted for all levels of importance than Brighton, apart from 5, the level of most importance. A greater percentage of people in Brighton voted for 5 than Chichester by a factor of 2.4.

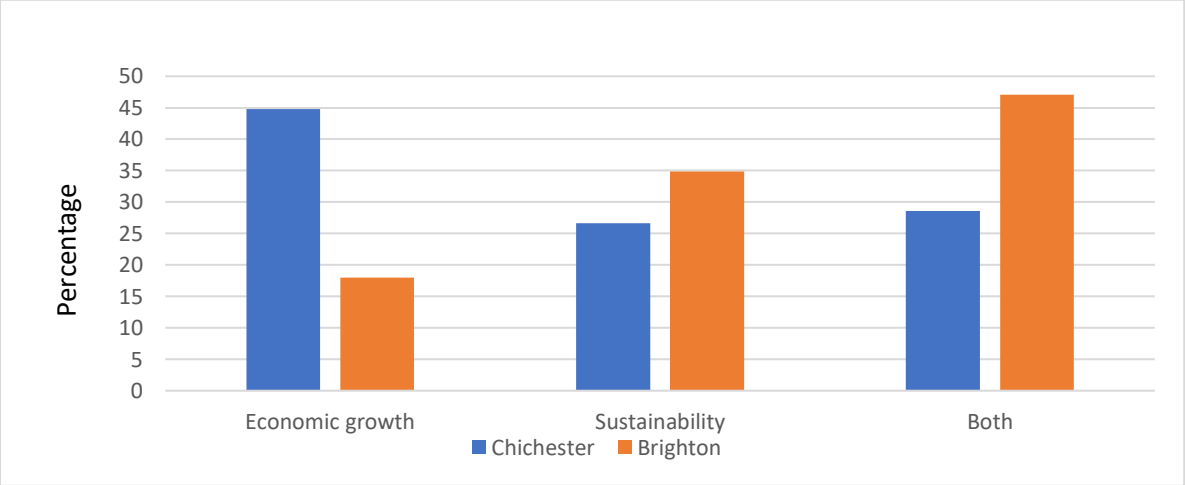

Figure 10 - Rankings of the most important of economic growth, sustainability or both currently, as voted by the interviewees in Chichester and Brighton.

The city of Chichester voted economic growth as the most important currently and sustainability as the least important. The largest percentage of votes from the people of Brighton was for both issues being equally important currently and economic growth had the smallest percentage of votes.

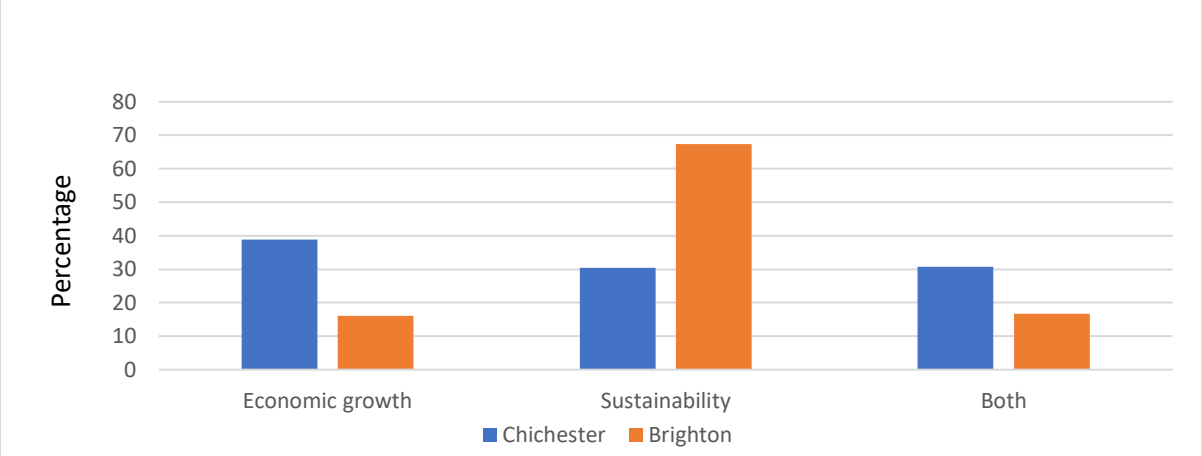

Figure 11 - Rankings of the most important of economic growth, sustainability or both in the future (2050), as voted by the interviewees in Chichester and Brighton.

The city of Chichester voted economic growth as the most important in the future and sustainability as the least important, by 0.4% less than both. The largest percentage of votes from the people of Brighton was for sustainability by a factor of 2.2.

Chichester

Approach	Use	Heard of but do not use	Not heard of
Cycle routes	0.46%	0.54%	0.00%
Bins	0.90%	0.10%	0.00%
Sussex energy tariff	0.43%	0.32%	0.25%
Biodiversity action plan	0.06%	0.27%	0.67%
Single use plastic ban	0.00%	0.25%	0.75%
Carpooling	0.02%	0.15%	0.83%

Table 2 – The percentage of people in Chichester who use, have heard of or not heard of the approaches for sustainability in Chichester.

Everybody surveyed in Chichester had heard of cycle routes and bins. Bins were the most used approach. Carpooling was the least used and heard of approach in Chichester.

If you selected "heard of but do not use" how likely are you to interact with this approach?

Approach	1	2	3	4	5
Cycle routes	48%	19%	15%	11%	7%
Bins	13%	32%	0%	0%	65%
Sussex energy tariff	62%	19%	3%	6%	10%
Biodiversity action plan	2%	4%	11%	15%	68%
Single use plastic ban	/	/	/	/	100%
Carpooling	40%	19%	13%	9%	19%

Table 3 – The percentage for each likelihood out of 5 (5 being most likely) that they would interact with the approach of people in Chichester that voted that they had heard of said approach.

Everybody in Chichester will interact with the single use plastic ban. Most people surveyed voted for a "low-level" of likeliness that they would interact with the Sussex energy tariff. The majority of those surveyed voted for a high-level of likeliness that they would interact with bins and the biodiversity action plan. Most people in Chichester voted that they were highly unlikely to interact with cycle routes.

If you selected "not heard of" how likely are you to interact with this approach?

Approach	1	2	3	4	5
Cycle routes	/	/	/	/	/
Bins	/	/	/	/	/
Sussex energy tariff	23%	19%	13%	17%	28%
Biodiversity action plan	5%	8%	8%	24%	55%
Single use plastic ban	/	/	/	/	100%
Carpooling	3%	7%	14%	28%	48%

Table 4 - The percentage for each likelihood out of 5 (5 being most likely) that they would interact with the approach of people in Chichester that voted that they had not heard of said approach.

Most votes for the Sussex energy tariff, by those who had not previously heard of it voted that they were either highly unlikely or highly likely to interact with it. Most people voted that they were highly likely to interact with the biodiversity action plan and carpooling.

Brighton

Approach	Use	Heard of but do not use	Not heard of
Cycle routes	65%	35%	0%
Bins	90%	10%	0%
Free fruit forest	5%	14%	81%
Biodiversity gardens	8%	18%	74%
Green spaces	90%	10%	0%
Green pathways	72%	18%	10%
Bike hire	23%	68%	9%
Carpool	5%	3%	92%

Table 5 - The percentage of people in Brighton who use, have heard of or not heard of the approaches for sustainability in Brighton.

Of those surveyed in Brighton, none had not heard of cycle routes or bins. A significant majority use the cycle routes, bins, green spaces and green pathways. The majority of those surveyed in Brighton had not heard of the free fruit forest or the biodiversity gardens. Most of those surveyed in Brighton had heard of but do not use the bike hire approach, while most had not heard of the carpooling approach.

If you selected "heard of but do not use" how likely are you to interact with this approach?

Approach	1	2	3	4	5
Cycle routes	88%	0%	0%	9%	3%
Bins	0%	0%	0%	0%	100%
Free fruit forest	36%	23%	19%	12%	10%
Biodiversity gardens	30%	17%	9%	24%	20%
Green spaces	19%	17%	11%	22%	31%
Green pathways	42%	25%	7%	8%	18%
Bike hire	60%	8%	2%	12%	18%
Carpool	88%	2%	0%	0%	10%

Table 6 - The percentage for each likelihood out of 5 (5 being most likely) that they would interact with the approach of people in Brighton that voted that they had heard of said approach.

Most people that had heard of cycle routes in Brighton voted that it was highly unlikely that they would interact with the approach, this is the same case for green pathways, bike hire, carpooling and free fruit forests. A significant majority also voted a high unlikeliness for biodiversity gardens, however a significant percentage also voted that it was highly likely that they would interact with the approach. A large percentage voted that they were highly likely to interact with green spaces and everybody voted that they were highly likely to interact with bins.

If you selected “not heard of” how likely are you to interact with this approach?

Approach	1	2	3	4	5
Cycle routes	/	/	/	/	/
Bins	/	/	/	/	/
Free fruit forest	4%	7%	10%	18%	62%
Biodiversity gardens	10%	0%	14%	26%	50%
Green spaces	/	/	/	/	/
Green pathways	60%	18%	8%	0%	14%
Bike hire	25%	9%	5%	6%	55%
Carpool	16%	4%	7%	7%	66%

Table 7 - The percentage for each likelihood out of 5 (5 being most likely) that they would interact with the approach of people in Chichester that voted that they had not heard of said approach.

Most people that had not heard of free fruit forests in Brighton voted that they were highly likely to interact with the approach, this was the same for biodiversity gardens, bike hire and carpooling. Most people that had not heard of green pathways in Brighton voted that they were highly unlikely to interact with this service.

4. Discussion:

Firstly, the results displayed in figure 4 show that the results of the survey match the initial predictions for the age demographics of Chichester and Brighton. Chichester is a city largely composed of elderly residents with more than half of the population over the age of 50 and under 30s only making up just over one fifth of the population. Brighton on the other hand was the opposite, over half of the population were under the age of 30 and only just over a fifth of the population were over the age of 50. The other significant difference between the classification data of the two cities was that as seen in figure 5, Brighton had a majority female population compared to Chichester who had a majority male population. This variation in demographics makes for useful comparison to identify whether or not Kellstedt et al. 2008 is correct in stating that age and gender is a contributory factor in attitudes towards environmental sustainability and that younger individuals tend to be more welcoming to the idea of environmental sustainability and willing to make environmentally sustainable behavioural changes. In addition to their differences in age and gender, the residents of Brighton and Chichester also show significant differences in political views. Chichester displays a right-wing orientated voting record, with a majority vote (50.9%) voting to leave the European Union (EU) (Figure 2) and its district being mostly composed of conservative MPs (Figure 3). Brighton on the other hand displays a left-wing orientated voting record, with a majority vote voting to remain in the EU (Figure 2) and its district being mostly composed of labour and green MPs (Figure 3). These differences in age, gender and political beliefs make the cities of Chichester and Brighton ideal candidates for identifying the contributary factors that influence attitudes towards sustainability.

Following a collection of the classification data, the survey asked individuals to rank their understanding of the concept of environmental sustainability out of 5, with 5 being the highest level of understanding. The aim of the report is to understand the factors which influence attitudes towards sustainability. A high-level of understanding of the concept of sustainability suggests that the individual is more likely to behave sustainably (Willis et al. 2009). An individual with a high-level of understanding of environmental sustainability has gone through the process of understanding that environmental threats are real and dangerous and is aware that the concept of environmental sustainability exists as a potential solution to the existing environmental threats. Figure 6 shows that a greater percentage of people in Chichester voted for 5, the highest level of understanding for the concept of environmental sustainability in comparison to Brighton. On the opposite end of the scale a greater percentage of people in Chichester voted for 1 and 2, the lowest levels of understanding for the concept of sustainability in comparison to Brighton. Most votes for this question for those surveyed in Chichester were polarised to either ends of the scale, while the most common answer in Brighton was 3, a mid-level understanding. The questions asked in figure 7 and figure 8 asked individuals to rank the importance of two current environmental issues; climate change and ocean plastic, on a scale of 1-5, with 5 being of most important. The purpose of asking these two questions was to gain an understanding of whether the answers to the questions asked in figures 7 and 8 would correlate to figure 6, would the population with a larger percentage of individuals that voted for a high-level of understanding of the concept of sustainability rank the environmental issues as more or less important than the city with a lower percentage of individuals that voted for a high level of understanding? The results in figures 7 and 8 show that Brighton, the city that voted that it had a lower-level of understanding than Chichester, ranked both issues as more important than the residents of Chichester did. The most significant statistic is in figure 7, more people in Brighton voted for the highest level of importance for the issue of climate change than Chichester by a factor of x2.15. The data shows that while Chichester is the city that believes it has an overall greater understanding of the concept of environmental sustainability it does not rank the environmental

issues as important, this is a very interesting result which gives great insight into attitudes towards sustainability.

These results could be explained by the "avoidance of negative emotion" mechanism discussed by Hannam 2015. The residents of Chichester may have gone through the first steps of understanding the threats of the environmental issues and the solutions but perhaps the threshold to make changes towards their lifestyle are too high and instead they choose not to think about the issues and justify this choice by ranking the issues as of less importance than what they may actually be. A further explanation of these results could be the age difference. With the majority of those surveyed in Chichester being over the age of 50, the individual may believe that the issues will not have much impact on their life and are therefore of less importance than they may be for a younger population such as Brighton, who will live for a longer amount of time whereby these issues will intensify and could have significant impact on their wellbeing. Well the residents of Chichester my have stumbled on the 3rd hurdle of making environmentally sustainable lifestyle changes, it could be the 2nd hurdle that the residents of Brighton have stumbled on. The residents of Brighton have clearly recognised the importance of current environmental issues (figures 7 and 8), however they rank lower than Chichester for an overall understanding of sustainability.

While figures 7 and 8 have shown that the people of Brighton consider climate change and ocean plastic to be of more importance than the people of Chichester do, figures 9, 10 and 11 give insight in to how important the people of Chichester consider the issue of economic growth in comparison to the issue of environmental sustainability. The introduction of the issue of economic growth gives a useful comparison as an insight to how important individuals consider the two issues of economic growth and environmental sustainability. Figure 9 shows that for both cities the percentage of votes increases from 1 to 5 for the ranking of the importance of the issue of economic growth (5 being the most important) apart from one anomaly. The reason for Chichester's low score for 5 may be accountable by the fact that Chichester is a wealthy area and residents of Chichester do not feel economic growth would be considerably beneficial. Asking the individuals to rank either environmental sustainability or economic growth as more important, or vote that they are both of equal importance, gives an accurate picture of an individual's value orientation. When the question was asked at present, the largest percentage of votes from the city of Chichester was for economic growth meanwhile the largest percentage of votes from the city of Brighton was that both were equally importance. To prioritise economic growth would mean to shift the point of balance closer towards benefiting human development at present rather than acting in an environmentally sustainable manner to preserve natural capital, therefore these results show that the residents of Chichester are less likely to shift towards more environmentally sustainable activities at the detriment of economic growth than the residents of Brighton. For figure 11, the same question was asked as in figure 10 but this time in context of the future, which was set at 2050. Asking this question helps to identify how attitudes may change throughout time in both cities. For Chichester, the issue of economic growth was still the option with the greatest percentage of votes. Even though in 31 years environmental stressors will intensify and environmental threats will be far more damaging, residents of Chichester still consider economic growth to be more important than managing these growing environmental threats. This suggests that residents of Chichester may underestimate the importance of the environmental issues and the rate at which they are increasing in intensity. One factor which has been overlooked in this study is that environmental sustainability costs money and economic growth would provide funding for these projects as well as alleviating further social justice issues, which may be why economic growth was voted as more important than environmental sustainability, as those surveyed could view economic growth could be considered the solution to environmental sustainability.

The shift in value orientation in the future is a completely different story in Brighton, with the percentage of residents who voted environmental sustainability as the most important issue rising from 30.4% currently to 67.3% in 2050. This is clear evidence that most residents in Brighton recognise the growing intensity of environmental threats and it is logical that with growing danger, increasing mitigation is required.

This knowledge could be valuable for encouraging the residents of Chichester and Brighton to behave in a more environmentally sustainable manner. The residents of Brighton require approaches which increase their understanding of the concept of environmental sustainability. In context to what was introduced in the literature review, these approaches would be those where the individual is actively aware of the approach. The residents of Chichester may require passive approaches which encourage environmental sustainability without the need for the individual to be aware of the process, this is necessary as residents of Chichester have displayed a firm belief that environmental issues aren't as important as scientific research suggests and are unlikely to make the lifestyle changes that will alleviate these issues (Strengers and Maller 2016). However, this is not to say that just because an individual is older that effort should not be made to actively encourage an individual to make lifestyle changes. However, an older person is less likely to change their habits than a younger person, this is mostly because they have had a longer amount of time to establish those habits and establish a greater threshold of effort to produce a change.

Those surveyed were presented a list of approaches for encouraging environmental sustainability in their area asked to select whether they used, had heard of but had not used or not heard for each approach. The purpose of this section of the survey was to identify which approaches had successful levels of engagement, which approaches were not encouraging individuals to interact with them, and which approaches needed more advertisement. If an individual had selected "heard of but do not use" or "have not heard of" they were asked to rank how likely they were to interact with this service.

Table two shows that in Chichester, nobody had not heard of the cycle routes or bins. 90% of all surveyed used the bins, indicating that they are an effective approach and that there are an adequate number of bins in appropriate locations (Grodzinska-Jurczak et al. 2003). While everybody in Chichester had heard of the cycle routes, less than half used the approach (46%), this is likely due to Chichester being an aging population and many people are unable to cycle and use this service. The Sussex energy tariff is an approach any home owner can use regardless of age or physical ability, almost a third (32%) of those surveyed had heard of but do not use the approach, suggesting there are strong reasons for not using the approach as they are already aware of the approach. The majority of those surveyed in Chichester had not heard of the biodiversity action plan, single use plastic ban or carpooling, suggesting that they main barrier preventing the approaches from being successful is a lack of awareness, therefore these approaches require greater publicity.

Like the 5p carrier bag, the single use plastic ban is a policy change approach, and everybody will interact with this approach. Table 3 shows that when ranking the likelihood of interacting with an approach that they have heard of but do not use, most residents of Chichester voted 1, the least likely to interact with this service. The Sussex energy tariff received 62% for 1, this implies that homeowners are satisfied with their current energy plan and have no plans to switch. Carpooling received 40% for 1, the likely reasons for this are safety concerns or a lack of available journeys (Neoh et al. 2014). Table 4 shows that the likelihood of interacting with an approach was far greater for those who had not heard of the approach than those that had heard of but not use the approach. This suggests that Chichester council would see more success in ecological sustainability by targeting those who have not yet heard of the approach through increased publicity.

Table 5 shows similar results to Chichester for the number of people that have heard of or used cycle routes and bins in Brighton, nobody had not heard of cycle routes or bins in Brighton. 65% of those surveyed in Brighton used cycle routes, compared to 46% in Chichester, suggesting that Brighton has a more physically active population. The exact same percentage of people in Brighton use bins as in Chichester. Green spaces in Brighton were equally used as bins in Brighton, indicating that a significant percentage of residents of Brighton enjoy interacting with the natural environment. Several projects in Brighton were largely unheard of these include; the free fruit forest, the biodiversity garden and carpooling. Bike hire was largely heard of but not used. Table 6 shows that the majority (60%) of those who selected that they had heard of but do not use the bike approach in Brighton selected 1, they were highly unlikely to use this service. This suggests it is not an attractive option, perhaps it is unaffordable or inconvenient, or perhaps residents of Brighton prefer to own their own bike. Table 7 shows that at least more than half of the residents of Brighton voted for 5, that they are most likely to interact with the approach for the free fruit forest, the biodiversity garden and carpooling, suggesting that more public awareness of these approaches is needed to increase environmental sustainability.

An effective approach to encourage sustainability in Chichester could be green pathways. This is an approach that would increase the environmental sustainability of the area by increasing biodiversity and ecosystem function. The increase in environmental sustainability would occur without the individual needing to be aware of the change from a regular pathway to a green pathway. However, the green pathway could be a cause for discussion in the area and could have potential to direct individuals towards an interest in environmental sustainability, especially with appropriate marketing which could stimulate the minds of individuals walking past, prompting them to think about the consequences of their behaviour on the environment. Carpooling bears the potential to be an important approach to fighting climate change however it is not well publicized in Chichester and those that are aware of the approach are unlikely to use it (Table 3). Since the residents of Chichester have not been particularly accepting of environmental issues, the council could encourage environmentally sustainable behaviour through advertisement of alternative benefits of the approaches, such as carpooling being a way of reducing fuel costs and meeting new people. The results of this study have found that the city of Brighton is more welcoming to environmentally sustainable approaches and so could adopt more active and obvious environmentally sustainable approaches such as carpooling or free fruit forests. By comparing table 4 and table 7 the people of Brighton are more open to new ideas that they had not previously heard of. For example, more people that had not heard of carpooling voted that they are highly likely to interact with the approach in Brighton (66%) compared to Chichester (48%). This suggests that Brighton city is better setup for adopting big and bold approaches for environmental sustainability than Chichester. This is backed up by the recent news that has arisen during the construction of this report. Chichester council proposed a revolutionary new approach for environmental sustainability known as a “car free day” where certain areas would ban vehicular access for one day in attempt to contribute to climate change mitigation, yet this approach has seen strong backlash from the residents of Chichester (Morton 2019).

5. Conclusion:

There are many significant environmental threats throughout the Anthropocene. Environmental sustainability, the act of providing for the present generation whilst attempting to have as little impact on natural capital is a potential solution but is often plagued in subjectivity and this massively influences the success of these approaches. Attitudes towards sustainability vary and Brighton and Chichester were ideal cities for due to differences in age, gender and political opinion. There are several approaches which encourage environmentally sustainable behaviour, but they function in different ways and benefit different types of people. Overall, the population of Chichester understood the concept of environmental sustainability to a greater extent than Brighton yet ranked environmental issues as less important and economic growth as more important than environmental sustainability in the present and the future. The report confirmed that an older, more right-wing population is less open minded to environmentally sustainable behavioural changes than a younger, more left-wing population. Therefore, in the case of Chichester, councils are better off using approaches that do not require an individual to be aware of such changes. However, the population of Brighton are more welcoming to new ideas and thus Brighton bears the potential to implement unique and potentially largely impactful environmentally sustainable approaches, its main hurdle currently is increasing public awareness.

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Appendix:

This survey is in word format but is the exact same questions as those asked on the online format. This example is the Chichester version. The Brighton version is almost identical, only the approaches for sustainability used are different.

1) Gender

Male	Female	Other

2) Age:

0-18	19-29	30-49	49-64	65+

3) On a scale of 1-5 (5 being the highest) to what extent do you understand the meaning of sustainability?

1	2	3	4	5

4) On a scale of 1-5 (5 being the highest) how important is the issue of economic growth?

1	2	3	4	5

5) On a scale of 1-5 (5 being the highest) how important is the issue of plastic in the oceans?

1	2	3	4	5

6) Which factor would you consider more important currently?

Economic stability	Both factors are equally important	Sustainability

7) Which factor would you consider more important for the future?

Economic stability	Both factors are equally important	Sustainability

8) Which approaches have you heard of, not heard of or used?

Project	I have participated in/used this project	I have heard of this project	I have not heard of this project
The local cycle paths			
Car club scheme			
Sussex energy tariff			
CDC local biodiversity action plan			
Single use plastic action plan			
Recycling			

9) If you selected "I have heard of this project" please rank the likely out of 5 (5 being the most likely) that you would interact with this project?

Approaches	1	2	3	4	5
The local cycle paths					
Car club scheme					
Sussex energy tariff					
CDC local biodiversity action plan					
Single use plastic action plan					
Recycling					

10) If you selected "I have not heard of this project" please rank the likely out of 5 (5 being the most likely) that you would interact with this project?

Approaches	1	2	3	4	5
The local cycle paths					
Car club scheme					
Sussex energy tariff					
CDC local biodiversity action plan					
Single use plastic action plan					
Recycling					