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# A Choice Experiment Analysis of the Management of the Stray Dog Population in the UK. 

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#### Abstract

In this paper we present the results of a pilot study investigating the public's view on the pet overpopulation problem. The Choice Experiment aims to understand the UK public's awareness of the issue, its views and its willingness to participate and pay for a reduction in the rate of animals being "put to sleep". Our preliminary results indicate that the public are willing to pay to keep healthy stray dogs alive for longer in Local Authority kennels beyond the current seven day statutory period.


Key Words: Animal Welfare, Choice Experiment, Pilot Study.

## 1. Introduction

One of the most alarming trends in our society regarding companion animals is the excess number of stray and unwanted pets. The surplus of the pet population worldwide is known as the pet overpopulation problem. It is estimated that there are more than 500 million homeless dogs worldwide (WSPA, 2012). The causes, however, and the extent of their contributions to the problem of this overpopulation have yet to be pinpointed (Nassar and Fluke, 1991). Some views place the blame on the dog owners due to the high volume of pets they surrender to animal shelters and their irresponsible ownership (Tilley, 2006). Others blame the excess supply of puppies each year that originate, mainly from, puppy mills (Whitcomb, 2010). There are also views that claim pet overpopulation is a myth and that it is simply a misallocation issue (Winograd, 2009). The true reasons may well be a combination of all. The American Humane Association holds both breeders and owners accountable. They consider the problem to be the result of irresponsible breeding such as illegal puppy mills and 'backyard' breeders, and from irresponsible owners who consider their pets as disposable surrendering them when they become unwanted (American Humane Association, n.d.). Due to the fact that precise information on how each factor contributes to the problem has yet to be estimated and evaluated, the management of the dog population has yet to be successfully addressed.

The UK is home to approximately 8 million owned dogs (PFMA, 2013). Almost a quarter of all pet owning households in the UK own at least one dog (ibid). Each year, however, Local Authorities pick up more than 100,000 stray dogs (Dogs Trust, 2012). The Local Authority of each district in the UK is responsible for all stray and lost dogs of their area. The Clean Neighbourhoods and Environment Act (2005), which was implemented in 2007, has assigned the responsibility of stray and lost dogs exclusively to Local Authorities (RSPCA, 2011). Prior to this act the police had the responsibility to receive dogs during outside hours ${ }^{1}$ (ibid). The annual number of dogs handled by Local Authorities has been estimated somewhere between 87,000 and 113,000 strays (RSPCA, 2009). Between the $1^{\text {st }}$ April 2010 and $31^{\text {st }}$ March 2011, the Dogs Trust estimated that Local Authorities handled 126,176 stray dogs (Dogs Trust, 2011). The report for 2012, revealed a decrease in stray apprehension by $6 \%$ with Local Authorities handling 118,932 strays (Dogs Trust, 2012).

[^0]Once these dogs are apprehended by Local Authorities, they enter into contracted holding kennels for their statutory seven day period (T. Oxley, personal communication, October 12, 2011). During this time, some dogs are reconnected with their owners ${ }^{2}$, some are adopted out, others are rescued by private rescue groups and the rest are put to sleep. In $2012^{3}$ the Dogs Trust Stray Survey revealed that $47 \%$ of the dogs handled by Local Authorities were returned to their owners, $9 \%$ were adopted out, $24 \%$ were transferred to private welfare organizations and approximately 7\% were put to sleep (Dogs Trust, 2012). The estimated total number of dogs that were put to sleep by all Local Authorities across the UK, including those not participating in Dogs Trust Survey, was approximately 8,903 dogs (ibid). This statistic represents the minimum number of dogs being put to sleep nationwide on an annual basis. This is due to the lack of data of all dogs euthanized in all dog welfare organizations in the UK. For example, in 2008 the Dogs Trust Stray Survey revealed that approximately 6,790 dogs were put to sleep by Local Authorities but the RSPCA revealed that they, too, had to put to sleep 1,595 healthy dogs (RSPCA, 2010). Therefore, the exact number of healthy dogs being put to sleep on an annual basis due to the pet overpopulation problem still remains unknown.

Quoting Dr. J. O'Quin 'Overpopulation threatens the lives of companion animals more than any infectious disease' (Whitcomb, 2010). The most widespread practice, worldwide, of addressing the overpopulation is putting to sleep the stray and unwanted dogs. Many animal rights and welfare organizations along with researchers have assessed the current practices and have proposed alternative policies that aim to manage the stray dog population (see Jöchle, 1991; Sturla, 1993; Lane, 1998; Frank and Carlisle-Frank, 2004; RSPCA, 2010). Alternative methods include sterilization programmes, dog licensing, programmes raising awareness and encouraging responsible dog ownership, etc.

The maintenance and up keeping of dogs entering Local Authorities and dog welfare private organizations is of a certain cost. The total expenditure, in 2011, of animal welfare organizations and Local Authorities was estimated to be $£ 57.5$ million (HL Deb, 8 Feb., 2012, c251). The cost for caring for each dog Local Authorities try to rehome has been estimated to be $£ 1,100$ (ibid). There is, also, a significant cost in keeping stray dogs alive until they can be rehomed; it is estimated that the daily rate

[^1]cost of animal welfare organizations for the overall care of a dog is $£ 15$, including food, housing and staff (RSPCA, n.d.). Kennel space was estimated to cost $£ 7.54$ per day for each dog (RSPCA, 2010).

Given that studies addressing the stray population management involve the public as the source of the cause, as irresponsible owners, and as the source of the solution, as the funding body for the alternative policies, this paper aims to investigate and understand the public's view on the pet overpopulation problem. A survey using the Choice Experiment Method was conducted in order to reveal the UK public's awareness of the issue, its views and its willingness to participate and pay for the reduction of the euthanasia rate. The primary objective is to discover whether the public would be willing to pay to keep healthy stray dogs alive in Local Authority kennels beyond their seven day statutory period giving them more time in getting rehomed. In addition, this study seeks to investigate the factors that influence this willingness to pay. Lastly, an additional goal is to reveal the public's opinion on euthanasia and the alternative policies.

The structure of the paper is as follows: Section 2 outlines the questionnaire construction and the methodology; Section 3 presents the results; Section 4 discusses the public views on alternative policies and the paper's limitations. The paper ends with a brief conclusion.

## 2. Methods and Materials

According to Czaja and Blair (2005) the development and completion of a survey consists of five stages, namely: (1) the questionnaire design and preliminary planning; (2) the pretesting; (3) the final survey design and planning; (4) the data collection; and (5) the data coding, data-file construction, analysis and final report. This section will report the four first stages and the last will be presented in Section 3.

## Stage one: Questionnaire design and preliminary planning

The questionnaire was constructed in such a way as to elucidate the UK public's views on pet overpopulation and their willingness to pay to reduce the euthanasia rate. It was grouped into seven sections starting with a brief introduction into the topic explaining the current situation of stray dog management in the UK. This then was followed by some preliminary warm up questions regarding their connection with dogs and their knowledge of the current situation, i.e. whether they
own dogs, what characteristics they consider important in selecting a pet dog, whether they were aware that healthy dogs were being put to sleep if not rehomed, etc. In order to reveal whether the public would be willing to pay to extend the lives of the stray dogs, in Local Authority kennels, a hypothetical scenario of a Voluntary Sponsorship Scheme was developed and introduced in the third section. In the following section, using the Choice Experiment Method they were asked to indicate their choice of sponsorship depending on the choice sets given. The next section included some follow up questions in order to understand how the respondents chose a particular choice option and asked whether they would be willing to pay for any dog in the kennel. In the fifth section the respondents were asked to answer questions regarding policies on managing the stray population and finally, the last section included some socio-demographic questions ensuring that the survey sample was diverse.

## Choice Experiment Method

The methodology chosen to examine the public's willingness to pay is the Choice Experiment Method. A Choice Experiment is a technique based on the combination of Lancaster's theory of consumer demand and random utility theory (Hanley et al, 1998). According to Adamowicz et al. (1998) this method requires the creation of a hypothetical scenario in which the individual is asked to choose between realistically constructed options. The individual's decision is based on the bundle of different levels of attributes each option offers. They also suggest the inclusion of an opt-out choice within this choice set in order for the individual's response to have an element of 'real market behavior' (Adamowicz et al, 1998). In addition, the assumption of random utility theory, that individuals behave rationally when choosing between alternatives, is applied expecting the individual to choose the option with the highest utility (Garrod and Willis, 1999; Loureiro and Umberger, 2007). By decomposing the situation in question down to its attributes, this method is able to convey the stated preferences of an individual depending on the change of the levels of these attributes (Garrod and Willis, 1999).

More specifically, the observed utility the individual, $n$, gains from each option, í, can be represented by:

$$
\widehat{U}_{\text {in }}=X_{\text {in }} \beta
$$

where $X_{\text {in }}$ denotes the attributes that each individual is presented in each option.

Given that the utility also has an unobserved random term, the overall utility equation can be rewritten as:

$$
U_{\mathrm{in}}=\widehat{U}_{\mathrm{in}}+\varepsilon_{\mathrm{in}}
$$

As dictated by utility maximization, when the individual will be asked to choose between two alternatives, option í and option $\mathfrak{j}$, the probability to select $\mathfrak{i}$ depends on the utility gained:

$$
\operatorname{Prob}(\hat{i} \mid \mathrm{C})=\operatorname{Prob}\left\{\widehat{U}_{\mathrm{in}}+\varepsilon_{\mathrm{in}}>\widehat{U}_{\mathrm{jn}}+\varepsilon_{\mathrm{jn}} ; \quad \hat{i} \neq \mathrm{j} ; \text { all } \mathrm{j}, \mathrm{i} \in \mathrm{C}\right\}
$$

where C denotes the complete choice set. The estimation of the above equation needs to be done under a given assumption regarding the distributions of the error terms (Hanley et al, 1998). According to Hanley et al (1998), the most common assumption is that they are independently and identically distributed and follow the Gumbel distribution. Hence, the equation can be formed into the following:

$$
\operatorname{Prob}(\mathrm{i} \mid \mathrm{C})=\frac{\exp ^{\mu v i}}{\sum_{j \in C} \exp ^{\mu v j}}
$$

where the scale parameter $\mu$ is assumed to be 1 in order to indicate constant error variance (Hanley et al, 1998). The basic model is estimated by employing Multinomial Logit regression.

## The Hypothetical Scenario

Inspired by programmes developed by a few animal welfare organizations regarding sponsoring dogs in their care, the hypothetical scenario was constructed as a Voluntary Sponsorship Scheme. Dogs Trust has a sponsorship scheme that allows people to choose which dog they will sponsor from a given gallery of dogs from their rehoming centres including the option of a mystery dog. They have set the donation to $£ 1$ per week (Dogs Trust, n.d.). Battersea Dogs and Cats Home has developed a sponsorship programme asking people to donate $£ 5$ a month in order to sponsor a kennel space (Battersea Dogs and Cats Home, n.d.) and the Blue Cross has initiated a $£ 2$ monthly sponsorship asking people to contribute to their efforts of pulling dogs out of Local Authority kennels before the seven day statutory period is over. (Blue Cross, n.d.). Hence, in order to examine whether people would be willing to contribute in reducing the euthanasia rate of healthy dogs in Local Authority kennels, a hypothetical scenario was designed based on these sponsorship schemes.

The scenario given was that the UK government was seeking to raise funds to reduce the number of healthy stray dogs that are being put to sleep each year. In order
to achieve this, they would establish a Voluntary Sponsorship Scheme in which the public would be asked to "virtually" adopt a dog of their choice. By "virtually" it was meant that they would not take the dog home, it would simply be looked after in a kennel. The monthly donation of this 'virtual' adoption would allow the dog of choice to have a prolonged kennel stay, beyond the seven day statutory period.

In order to decide whether the public would make this payment or not, they were provided with a set of characteristics that would assist in their decision. According to Garrod and Willis (1999) the selection of the attributes and their levels is a crucial element in designing the experiment. Alpizar et al (2001) report that a study conducted by Mozotta and Opaluch (1995) revealed that the optimum design of the option should not exceed more than five attributes as it could complicate the task and, consequently, have a negative impact on the quality of the data collected. Hence, taking this under consideration when designing the choice sets, the characteristics included were five attributes and the monetary value. Namely the attributes included in each option were the age of the dog, the size of the dog, whether it was a purebred or a cross breed, whether or not it was micro-chipped, whether or not it was neutered/spayed and finally, the monthly contribution. These particular attributes were chosen in order to investigate whether the public had a specific preference in the dog's characteristics (age, size, pedigree), whether they had a preference in a current alternative policy aiming in reducing the stray dog population (micro-chipping, sterilization) and the amount they would be willing to contribute to this sponsorship. They were presented with a total of six choice cards each having two alternative options and a no choice option.

## Stage two: The pretesting

Once the questionnaire was drafted, a focus group was employed in order to ensure that it was conducted comprehensively. This group consisted of seven individuals with the same educational level, same gender, and approximately same age, complying to Greenbaum's suggestion of creating a group with similar characteristics (Czaja and Blair, 2005). In addition, as recommended by Czaja and Blair (2005), the participants of the group were asked to individually complete the survey and then provide feedback on all questions discussing them within the group.

## Stage three: The final survey design and planning

The final questionnaire was drafted after the focus group's consultation. The feedback given was used to modify certain questions, ensuring they were thoroughly understood. In addition, the comments and suggestions of the focus group assisted in finalizing the monetary value within the choice set. The final attributes and their levels are indicated in Table 1 and an example of a final choice card is given in Figure 1.

Table 1: Final Attributes and their levels.

| Age | Two levels: <br> - a younger dog between the ages of 8 weeks old to 2 years old <br> - an older dog from 2 years old or older. |
| :---: | :---: |
| Size |  |
| Pedigree | Two levels: <br> - a purebred <br> - a mixed/cross breed |
| Neutered/Spayed | Two levels: <br> - Neutered/spayed <br> - Not neutered/spayed |
| Micro-chipped: | Two levels: <br> - Micro-chipped <br> - Not micro-chipped |
| Monthly Contribution | Five levels: $£ 5, £ 10, £ 15, £ 20, £ 25$ |

Figure 1: An example of a final choice card.

| Attributes | Option A | Option B | Option C |
| :--- | :---: | :---: | :---: |
| Age | older | younger |  |
| Size | small | big |  |
| Pedigree | purebred | mixed breed | No choice |
| Neutered/spayed | no | yes |  |
| Micro-chipped | yes | no |  |
| Monthly <br> contribution | $£ 5$ | $£ 10$ |  |

Please indicate your preferred option. *

- Option A
(C) Option B
- Option C


## Stage four: The data collection

In order to ensure the survey was finalized and ready to be conducted, a pilot survey was undertaken. The questionnaire was formatted in an internet survey format via an online survey software called 'surveygizmo'. The advantages of conducting it through the internet are the low cost and the speed of collecting the data (Czaja and Blair, 2005). The disadvantages include, among others, the high rate of incomplete questionnaires, the limitation of the sample to internet users only and the limited amount of time the respondent will spare on it (ibid). In order to prevent non responsiveness and high rates of incomplete questionnaires, the survey's duration was kept below 15 minutes.

The pilot survey was available for approximately two weeks and was distributed via email and social media. Four different links containing four different blocks of choice cards were sent out. A total of 176 questionnaires were returned, of which 109 were complete and 67 were disqualified due to partial completion. Therefore the response rate was approximately $62 \%$.

## 3. Results

From the 109 people that completed the pilot survey, the majority was female ( $86 \%$ ) and the average age and household income was 39 and $£ 30,000$, respectively, while the mean education level was reported as being a university undergraduate degree. Half of the respondents reported to be married and $22 \%$ reported to have dependent children in their households. Approximately $80 \%$ had owned a dog, either currently or in the past, $64 \%$ of which currently own one or more dogs and $31 \%$ reported not currently having any pets in their household. Approximately half of the respondents ( $58 \%$ ) are aware of the fact that there are over 500 million homeless dogs worldwide and $85 \%$ are aware that they are put to sleep if not rehomed. When asked whether they were concerned about the number of healthy stray dogs being put to sleep annually in the UK, $91 \%$ reported to be concerned and when asked whether they supported the current policy, of putting dogs to sleep if not rehomed, $82 \%$ opposed it. Almost half of the respondents ( $48 \%$ ) have volunteered for an animal welfare organization and $77 \%$ have donated to one. An interesting $86 \%$ of the respondents would consider adopting a dog but only $65 \%$ would be willing to foster one under a UK fostering scheme aiming to reduce euthanasia rates in Local Authority kennels. Summary statistics is given in Table 2.

Table 2: Summary statistics of sample's socio-demographic variables

| Variable | Description | Mean | Standard deviation |
| :---: | :---: | :---: | :---: |
| Gender | 0 if female, 1 if male | 0.144 | 0.356 |
| Age | In years | 39.054 | 12.373 |
| Income | In Sterling pounds ( $\mathfrak{f}$ ) | 26,790 | 27,397 |
| Education | Basic school education up to 16 year (GCSE) | 7.34\% |  |
|  | A-levels or equivalent | 11.01\% |  |
|  | Further educational qualification University undergraduate degree | $16.51 \%$ $23.85 \%$ |  |
|  | Higher University education | 38.53\% |  |
|  | Undisclosed | 3.67\% |  |
| Marital status | Single | 41.28\% |  |
|  | Married | 49.54\% |  |
|  | Undisclosed | 11.01\% |  |
| Dependent children | 0 if no children, 1 if household has dependent children | 0.216 | 0.416 |
| Owned dog | 0 if never owned a dog, 1 if otherwise | 0.802 | 0.403 |
| Currently own dog(s) | 1 if owning 1 dog | 0.279 | 0.448 |
|  | 2 if owning 2-3 dogs | 0.243 | 0.428 |
|  | 3 if owning 4 or more dogs | 0.117 | 0.307 |
| No pets | 0 if pets live in household, 1 if no pets | 0.306 | 0.465 |
| Aware of the 500 million strays | 0 if not aware, 1 if aware | 0.577 | 0.498 |
| Aware of euthanasia | 0 if not aware, 1 if aware | 0.847 | 0.364 |
| Concerned about UK strays being put to sleep | 0 if not concerned, 1 if concerned | 0.910 | 0.290 |
| Support current euthanasia policy | 0 if opposed, 1 if supports | 0.180 | 0.382 |
| Volunteered | 0 if have not volunteered, 1 if they have volunteered | 0.477 | 0.501 |
| Donated | 0 if have not donated, 1 if they have donated | 0.775 | 0.422 |
| Consider adopting | 0 if no, 1 if yes | 0.865 | 0.346 |
| Willing to foster | 0 if no, 1 if yes | 0.649 | 0.482 |

All individuals were then asked to complete the choice set that contained six consecutive cards. Each card included two alternative dog profiles and a no choice option. The coefficients that were found to be statistically significant were those of age, micro-chipped and monthly contribution. The age of the dog was found to be statistically significant at the $1 \%$ level, while micro-chipped and monthly contribution at the $5 \%$ level of significance. As expected an older dog yields a lower utility, a dog micro-chipped offers higher utility and a lower monthly donation yields a higher
utility for the respondent. The rest of the variables did not appear to be statistically significant. It is noteworthy, however, to comment on the signs of the coefficients of the pedigree and the neuter/spay variables. The model gave both a negative sign indicating that purebred dogs are not preferred over mixed breed and sterilized dogs are not preferred over unaltered dogs. Lastly, the constant was not found to be statistically significant indicating that the no-choice option did not have an effect on the respondent's choice. The results are also reported in Table 3.

Table 3: Results of the Multinomial Logit Regression for the Voluntary Sponsorship Scheme

| Variable | Coefficient | Standard Error |
| :--- | :---: | ---: |
| Age | $-0.367^{* * *}$ | 0.131 |
| Size | 0.053 | 0.060 |
| Pedigree | -0.031 | 0.130 |
| Neuter/spay | -0.010 | 0.131 |
| Micro-chipped | $0.347^{* *}$ | 0.142 |
| Monthly Contribution | $-0.032^{* *}$ | 0.014 |
| Constant | -0.428 | 0.458 |
| Log-likelihood value | -711.762 |  |

Note: ${ }^{* * *}$, ${ }^{* *}$, ${ }^{*}$, Significance at $1 \%, 5 \%, 10 \%$ level.

## Estimating willingness-to-pay to prolong healthy stray dog kennel stay

The estimation of the mean willingness to pay for each attribute within the choice card is calculated by using the ratio of each attribute's coefficient over the monetary value coefficient (Louriero and Umberger, 2007; Kerr and Sharp, 2009). This is interpreted as a change in value associated with an increase of the attribute by one unit. More specifically, the ratio is given by the following function:

$$
-\frac{\hat{\beta}_{\text {attribute }}}{\hat{\beta}_{\text {monetary value }}}
$$

The estimations reveal that the age of the dog has a negative effect on the individual's willingness-to-pay for a prolonged kennel stay if the dog was an older dog. The willingness-to-pay for an older dog would decrease by $£ 11.47$. This attribute appears to have the highest (negative) effect on the willingness-to-pay of the respondents. The mean value associated with the size of the dog is reported to be £1.656. This is interpreted as the, on average, value that makes the respondent indifferent between the presented dog sizes. The ratio for the pedigree indicates that the willingness-to-pay for a purebred dog over a mixed breed dog would decrease by £0.97. The lowest value is reported for the attribute associated with the dog's
sterilization. It appears that respondents would prefer an unaltered dog but would be indifferent by just $£ 0.31$. Lastly, the results indicate that the willingness-to-pay associated with a micro-chipped dog would increase by $£ 10.84$. The results can also be viewed in Table 4.

Table 4: Mean willingness-to-pay for each attribute

| Variable | Mean willingness-to-pay in $£$ |
| :--- | :---: |
| Age | -11.47 |
| Size | 1.656 |
| Pedigree | -0.97 |
| Neutered/spayed | -0.31 |
| Micro-chipped | 10.84 |

## 4. Discussion

The pilot survey continued with questions regarding the public's views on alternative policies. This section reports these findings and also reports this survey's limitations.

## Views on alternative policies

Followed by the choice cards, the respondents were asked to indicate their views on alternative policies in managing the UK stray dog population. The survey included the most popular by animal welfare organizations and researchers. Those include micro-chipping, neutering and spaying, dog license and investment in education.

One of the most important policies discussed in the literature is the compulsory micro-chipping for all dogs. Micro-chipping is the surgical implantation of a small metal chip under loose skin, usually at the back area between the shoulder blades, of the dog (FSFACC, n.d.). This chip bears a 10 digit number that corresponds to the dog owner's details when scanned and serves as a mean of identification. Compulsory micro-chipping is widely well received by stakeholders interested in animal welfare (i.e. the Dogs Trust, the RSPCA, the Kennel Club etc). The Kennel Club initiated the National Micro-chipping Month campaign that is held every June in an effort to promote micro-chipping and responsible ownership (Bateson, 2010). It estimated that approximately $60 \%$ of all owned dogs have already been voluntarily micro-chipped (Defra, 2013). In 2012 the proposal of compulsory micro-chipping was introduced in the UK (HL Deb, 8 February, 2012, c251) and the law now states that
all dogs must be micro-chipped by April $6^{\text {th }}, 2016$ (Defra, 2013). When asked whether compulsory micro-chipping would help regulate the stray dog population, only $55 \%$ of the respondents agreed. The percentage remained similar ( $60 \%$ ) when they were asked to indicate useful policies in managing the stray and unwanted dogs. These results do not concur with the results of the Defra consultation (2013) that revealed that $96 \%$ of their respondents were in favour of some form of compulsory microchipping.

Another alternative policy presented in this survey was a sterilization policy of neutering or spaying. According to Frank's (2004) analysis, investing in spaying and neutering programmes seems to be the most effective policy in managing the stray and unwanted pet population. Recognizing the impact on the pet population this policy has, the Humane Society of the United States holds a special global annual event on the last Tuesday of February, promoting and providing, through partnerships, low or no-cost spaying and neutering (HSUS, 2013). The event is called World Say Day. In the UK in particular, most private animal welfare organizations have pledged to neuter or provide low cost neutering services to all dogs that are rehomed from their shelters. However, all spaying/neutering efforts still remain on a voluntary basis. A few attempts were made to make spaying and neutering compulsory, i.e. in San Mateo County in California in 1991(Sturla, 1993) and in the city of Los Angeles in 2008 (LAAS, 2008; Nolen, 2008) but both attempts have not seemed to have yielded the expected outcome (see Sturla, 1993; Heisen et al., 2009). When respondents were asked whether neutering and spaying should be compulsory for all pets not owned for breeding purposes, $68 \%$ agreed to it and when asked to indicate useful policies in managing the stray pet population, $52 \%$ indicated mandatory spaying/neutering as useful. Both results contradict the results of the choice experiment which indicated that unaltered dogs would be preferred over sterilized dogs, although these results were not found to be statistically significant.

One of the most controversial alternative policies is dog licensing. A UK dog licensing scheme had been implemented in 1878 but was subsequently abolished in 1987 due to being inefficient (RSPCA, 2010). The inefficiency was derived by firstly, the fact that the fee did not increase throughout the years according to inflation, with the fee being approximately 37 pence in 1987 and secondly, because the compliance rate was low, under $50 \%$ (ibid). Despite its abolishment, many researchers and welfare organizations, i.e. RSPCA, are in favour of a more efficient dog licensing
scheme to be implemented. The Dogs Trust is one of the organizations that have expressed its opposition in such a policy. They believe that firstly, it will not generate enough funds to finance dog control and secondly, will not give incentives to dog owners to be more responsible (Dogs Trust, n.d.).

As stated by the Dogs Trust and Coate and Knight (2010) the dog license scheme could be considered a tax on dog ownership. Under the previous dog licensing scheme, a uniform fee was set for all dog owners. However many researchers (see Carding, 1969; Sturla, 1993; Coate and Knight, 2010) discuss that a differentiated licence fee would be more appropriate in addressing the pet overpopulation issue. More specifically, Carding (1969) and Sturla (1993) propose the fee to be depended upon whether the dog is altered or not with owners of unaltered dog to have to pay a higher price. Carding (1969) also points out that owners in specific categories (aged, sick, blind, etc.) should be exempted from the tax.

According to this survey's results, $73 \%$ of the respondents are in favour of an introduction of a dog licensing scheme. When asked which type they would prefer, $41 \%$ indicated a flat rate for all dogs, $26 \%$ indicated a reduced rate for senior dogs, $53 \%$ indicated a reduced rate for sterilized dogs, $9 \%$ indicated a reduced rate for mixed breed dogs and $11 \%$ chose none of the above. When asked to state if they suggest an alternative type, the most popular were a reduced rate for rescue dogs and a reduced rate for different social groups such as pensioners, disabled, etc.

Another popular alternative policy is investing in public education on responsible ownership. Currently the UK Government has provided funding of $£ 50,000$ to animal welfare organizations (RSPCA, Dogs Trust and Battersea Cats and Dogs Home) in order to develop community educational projects promoting responsible ownership (Defra, 2013). A staggering $90 \%$ of the respondents believe that the Government should invest in educating the public on responsible dog ownership. Also, when asked to indicate whether it would be a useful policy, $74 \%$ of the respondents selected it.

Lastly, $18 \%$ of the respondents believe that other or additional alternative policies should be taken into consideration. Most of them believe that a stricter breeder licensing scheme should be implemented with some respondents suggesting that even a single litter should be produced under licence. Additional suggestions included, among others, the ban of puppy farms, the ban of online purchasing, and a cap on certain breeds such as the Staffordshire bull terrier

## Limitations

The main limitation of this study could be found in the sample representativeness. Given the survey was conducted through email and social media, there could be a degree of sample selection bias as it is possible that the people who had an interest in the well-being of stray dogs decided to complete the survey. In addition, given that these results were yielded from the pilot survey, the sample size reported was of only 109 individuals. Hence, we acknowledge that the results may not fully represent the general public's view.

## 5. Conclusion

This paper has reported on a choice experiment survey used to investigate and understand the public's view on the pet overpopulation problem. The overall results of the survey have revealed that the respondents would be willing to pay in order to reduce the euthanasia rates in UK Local Authority Kennels. Their decision on whether they would participate in this hypothetical Voluntary Sponsorship Scheme depends upon the dog's age, whether it has been micro-chipped and on the monthly donation fee. The dog's age and the monthly donation have a negative effect on this decision indicating their preference lays on the younger dogs and the smallest donation fee. In addition, respondents appear to favour micro-chipping as an alternative policy. The survey also revealed that a large majority is aware of the current policy of euthanasia and is concerned about it. The alternative policies that the majority supports are an investment in education and the introduction of a dog licensing scheme.

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[^0]:    ${ }^{1}$ The Scottish police still hold responsibility for accepting dogs (RSPCA, 2011).

[^1]:    ${ }^{2}$ Through microchipping and other means.
    ${ }^{3}$ Between $1^{\text {st }}$ April 2011 and $31^{\text {st }}$ March, 2012 (Dog's Trust, 2012).

