Background

There is a serious overpopulation of homeless companion animals in the United States. While it is extremely difficult to assess the actual number of stray cats and dogs, it is estimated that there are approximately 70 million stray cats throughout the US. This results in an annual estimate of 7.6 million companion animals entering the 13,600 animal shelters nationwide. Of these, 2.7 million animals are euthanized each year simply because there is not enough space in the shelters and no one to adopt them. Meanwhile, approximately 70-80 million dogs and 74-96 million cats are owned as pets in the US. However, only 29% of these animals have been adopted from shelters.

The creation of new animal shelters can help decrease the number of animals that are euthanized by providing more space to house these animals until they can be adopted. It can also help with the overpopulation of companion animals in general by taking in more animals and spaying and neutering these animals to prevent any future unwanted litters. This suitability model will determine locations within Suffolk County, MA, where the introduction of new animal shelters would be the most useful and the most successful. The analysis incorporates factors such as distances to resources like animal hospitals, pet stores, and dog parks, the density of existing animal shelters in the area, as well as accessibility by public transportation for volunteers and potential pet adopters. The final result of this analysis will determine which existing buildings in Suffolk County are the most suitable for opening new animal shelters.

Methods

Selected Outcomes

**Background**

The maximum average suitability score of any commercial building in this analysis was 22 out of 25. This analysis identified twelve buildings with this maximum suitability score that also had an area larger than 1000 meters². All twelve of these buildings were located within several blocks of each other in East Boston. However, two of these twelve buildings were later excluded from the list of suitable locations because they were identified as residential buildings using Google Maps. Other highly suitable buildings were located in the Back Bay and Fenway neighborhoods. The four buildings that were highlighted under Selected Outcomes were chosen because they were the four largest buildings with an average suitability score of 22.

This analysis reveals that animal resources such as dog parks, pet stores, and animal hospitals are concentrated within certain Boston neighborhoods, which explains why the suitable locations for a new animal shelter are also concentrated within these same neighborhoods. Future research may include looking at factors such as lot size, availability of the buildings, and whether or not the building has previously been used as some sort of kennel. Additionally, it may be helpful to look for commercial buildings that are located within more residential areas so that the animal shelters will be located closer to people’s homes, hopefully increasing the chances that they will want to bring home a new furry family member.

**Results and Conclusions**

The creation of new animal shelters can help decrease the number of animals that are euthanized by providing more space to house these animals until they can be adopted. It can also help with the overpopulation of companion animals in general by taking in more animals and spaying and neutering these animals to prevent any future unwanted litters. This suitability model will determine locations within Suffolk County, MA, where the introduction of new animal shelters would be the most useful and the most successful. The analysis incorporates factors such as distances to resources like animal hospitals, pet stores, and dog parks, the density of existing animal shelters in the area, as well as accessibility by public transportation for volunteers and potential pet adopters. The final result of this analysis will determine which existing buildings in Suffolk County are the most suitable for opening new animal shelters.

**Sources**


Data Sources: MassGIS, BostonMaps

References


Photo Sources

https://upload.wikimedia.org/wikipedia/commons/thumb/5/51/Paw-print.svg/419px-Paw-print.svg.png

Google Maps

Acknowledgements

I would like to thank Carolyn Talmadge for all of her help and guidance throughout the semester and over the course of this project.

Grace Kwon

MCM 591

December 2016

**Background**

There is a serious overpopulation of homeless companion animals in the United States. While it is extremely difficult to assess the actual number of stray cats and dogs, it is estimated that there are approximately 70 million stray cats throughout the US. This results in an annual estimate of 7.6 million companion animals entering the 13,600 animal shelters nationwide. Of these, 2.7 million animals are euthanized each year simply because there is not enough space in the shelters and no one to adopt them. Meanwhile, approximately 70-80 million dogs and 74-96 million cats are owned as pets in the US. However, only 29% of these animals have been adopted from shelters.

The creation of new animal shelters can help decrease the number of animals that are euthanized by providing more space to house these animals until they can be adopted. It can also help with the overpopulation of companion animals in general by taking in more animals and spaying and neutering these animals to prevent any future unwanted litters. This suitability model will determine locations within Suffolk County, MA, where the introduction of new animal shelters would be the most useful and the most successful. The analysis incorporates factors such as distances to resources like animal hospitals, pet stores, and dog parks, the density of existing animal shelters in the area, as well as accessibility by public transportation for volunteers and potential pet adopters. The final result of this analysis will determine which existing buildings in Suffolk County are the most suitable for opening new animal shelters.

**Methods**

Suffolk County Land Use, Building information, and T information was obtained from MassGIS.

- Select by Attributes to select for commercial land use
- Euclidean Distance Tool and Reclassify Tool were used on T Information
- Locations of dog parks, pet stores, animal hospitals, and existing animal shelters within Suffolk County were obtained using Google Maps.
- Euclidean Distance Tool and Reclassify Tool were used on dog parks, pet stores, and animal hospitals
- Kernel Density Tool and Reclassify Tool were used on existing animal shelters

Raster Calculator was used to compute each of the factors listed in the table below.

**Tables**

<table>
<thead>
<tr>
<th>Factors</th>
<th>Low</th>
<th>Medium Low</th>
<th>Medium</th>
<th>Medium High</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance to Public Transportation</td>
<td>0-984</td>
<td>984-1968</td>
<td>1968-2952</td>
<td>2952-3936</td>
<td>3936+</td>
</tr>
<tr>
<td>Distance to Dog Parks</td>
<td>0-1968</td>
<td>1968-3936</td>
<td>3936-5904</td>
<td>5904-7872</td>
<td>7872+</td>
</tr>
<tr>
<td>Density of Animal Shelters</td>
<td>0-984</td>
<td>984-1968</td>
<td>1968-2952</td>
<td>2952-3936</td>
<td>3936+</td>
</tr>
<tr>
<td>Density of Animal Shelters</td>
<td>0-3936</td>
<td>3936-7872</td>
<td>7872-11811</td>
<td>11811-15748</td>
<td>15748+</td>
</tr>
</tbody>
</table>

Zonal Statistics Tool was used to provide an average unweighted suitability layer and buildings larger than 1000 meters² were selected.

**Results and Conclusions**

The maximum average suitability score of any commercial building in this analysis was 22 out of 25. This analysis identified twelve buildings with this maximum suitability score that also had an area larger than 1000 meters². All twelve of these buildings were located within several blocks of each other in East Boston. However, two of these twelve buildings were later excluded from the list of suitable locations because they were identified as residential buildings using Google Maps. Other highly suitable buildings were located in the Back Bay and Fenway neighborhoods. The four buildings that were highlighted under Selected Outcomes were chosen because they were the four largest buildings with an average suitability score of 22.

This analysis reveals that animal resources such as dog parks, pet stores, and animal hospitals are concentrated within certain Boston neighborhoods, which explains why the suitable locations for a new animal shelter are also concentrated within these same neighborhoods. Future research may include looking at factors such as lot size, availability of the buildings, and whether or not the building has previously been used as some sort of kennel. Additionally, it may be helpful to look for commercial buildings that are located within more residential areas so that the animal shelters will be located closer to people’s homes, hopefully increasing the chances that they will want to bring home a new furry family member.

**Sources**


Data Sources: MassGIS, BostonMaps

References


Photo Sources

https://upload.wikimedia.org/wikipedia/commons/thumb/5/51/Paw-print.svg/419px-Paw-print.svg.png

Google Maps

Acknowledgements

I would like to thank Carolyn Talmadge for all of her help and guidance throughout the semester and over the course of this project.

Grace Kwon

MCM 591

December 2016