2012

Park Vandalism in Christchurch

Vandalism in Parks

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Abstract

City care has been collecting data on vandalism in the parks that they maintain for over the past five years. However, no analysis has been undertaken on this data to date. The aim of our research project is to analyse this data to provide any possible insights into where and why vandalism in parks takes place in Christchurch. To provide a context for this we began by reviewing current academic literature on the subject of vandalism with a specific focus on frequency and distribution, why vandalism takes place and how to minimize future incidents. This literature review was undertaken with the aim of analysing our findings from City Care's data and cross referencing this with the information and theories gathered from academic literature. We were given our dataset in the form of a log of 6500 repair jobs and after refining the data Exploratory spatial analysis was undertaken to show the frequency and distribution of vandalism incidents in parks across Christchurch. This was achieved through the use of geographic information systems (GIS), statistical analysis and the use of case studies. Our results indicated a positive correlation between parks with a high frequency of vandalism and the proximity of high schools and skate parks. In addition to this, we discovered a downward trend in the frequency of incidences of vandalism in Christchurch parks.

Executive Summary

Research context

- No analysis has been done on the dataset to date

- The research was carried out to provide CityCare with insight on where and why park Vandalism occurs around Christchurch

- Give CityCare information that can be used to lessen the amount of vandalism throughout Christchurch

Research questions

- What factors influence the frequency and distribution of vandalism in Christchurch

- What are the top 10 vandalised Parks within Christchurch

- What are the top 10 most vandalised assets in the parks

- Identify Trends in Vandalism over the past five years

- Do high level vandalism parks share common features

Method

- Microsoft excel, Arc Map and case studies were used to analyse and display the data

Key findings

- There are correlations between skate parks and the amount of vandalism

- There are weak correlations between skate parks and vandalism

- Vandalism over past five years is decreasing

- There is no clear distribution of vandalised parks in Christchurch

Limitations

- Changes of CityCare staff may have influenced the dataset distorting results

- The dataset did not provide specific enough information to complete asset analysis

Suggestions for future work

- Weighting of vandalism to park size may give clearer results

Introduction

CityCare are the Gardeners of garden city, a government owned company within New Zealand of which have the responsibility of keeping Christchurch's parks tidy (CityCare, 2008). CityCare have been collecting data on vandalism from Christchurch parks for the past 5 years, there has been very little analysis done on their dataset over this time. This research aims to provide CityCare with data that could be useful in reducing the amount of vandalism that is occurring. Key aims include finding the frequency and distribution of park vandalism throughout Christchurch and, finding the trend of vandalism in Christchurch parks over the past 5 years. The causes of Vandalism have been explained by many researchers most notably as a crime of opportunity or as a result of the broken windows theory. By reviewing earlier research and literature on park vandalism it can be seen that little research has been done using digital mapping software in the past, this research will therefore provide a valuable part of the foundation for similar studies in the future.

Literature Reviews

The critical review of existing literature related to different aspects of vandalism was undertaken. This was done in the pursuit of furthering our knowledge on the subject. The review of existing literature also served to help direct our research and provide insights into some of our results. Provided here are summaries of the literature reviewed in relation to our research topic and the key information taken into consideration to aid and direct our study.

- *Preventing Vandalism, What works? Crime Detection and Prevention series* (Barker M, 1994).

The focus of this research while being very dissimilar from ours still contained valuable relevant information on preventative techniques associated with vandalism.

Four main Vandalism responses were outlined:

- Education (anti vandalism publicity)

- Social programmes (programmes to promote social responsibility, also diversionary projects to eliminate boredom which may foster criminal behaviour)

- Opportunity reduction (CCTV surveillance, physical measures) and finally Criminal justice programmes (focus on detection and apprehension)

This paper put forward the theory that rather than a single preventative measure being the answer, the most successful anti vandalism programmes involved two or more responses working in conjunction. This was useful information to acquire as it can help to identify and address contributing factors to vandalism that may affect the frequency and distribution.

- *Environmental Cues and Vandalism : An Exploratory Study of Picnic Table Carving.* (Christense, 1985).

This report introduced and further sparked our research into the 'Broken Windows' theory. This theory, introduced in a 1982 article by social scientists James Q. Wilson and George L. Kelling, dictates that maintaining and monitoring urban areas in a tidy, well ordered state may help prevent further vandalism and escalation into more severe crime (Wilson. J, 1982). It was also discovered that grounds with greater prominence of authority were less likely to suffer damages than those with little or no visible authority.

- *The Crime Triangle: Alcohol, Drug use and Vandalism* (Baker, 2003)

The Crime Triangle paper was a research project focused on highlighting the benefits of police-researcher co-operation in preventing park crime in a suburban community. Research for this paper was done using surveys before and after prevention methods were put in place in a suburban park area. offers information on where and why vandalism is occuring as well as stratagies that can be used to reduce the amount of crime that is occuring in an area.

- *An Aesthetic Theory of Vandalism* (Allen, 1978)

"An aesthetic Theory of Vandalism", has a unique approach to the crime of vandalism. It explores the psycholgical and social factors that can lead an individual to commit acts of vandalism. Overall it presents a new way of thinking into why vandalism occurs and will most likely not relate to our research project. The structure of the research itself was benificial because it gave us ideas on hoe to present our own data with clear and consise headings and titles.

- *Assessing the Geography of Vandalism: Evidence from a Swedish city* (Cecceto, 2005)

" Assessing the Geography of Vandalism", (Cecceto, 2005), investigates the occurrence of vandalism in a Swedish city. The project aimed to find what type of social and economic setting vandalism was occuring in, and to test whether predictions can be made as to where it will occur next. This paper was chosen because it is very similer to the reasearch project of our group especially because it was the only other research project that used GIS software to map and display vandalism.It give us vision and ideas on how to carry out our project and answer our question.

The final three articles critically reviewed relate to how vandalism occurs and the role it has in creating place.

- *The Costs of Urban Property Crime* (Gibbons, S. 2004)

- *Routine Activities And Vandalism: A Theoretical And Empirical Study* (Tewksbury, R & Mustaine, E. 2000)

- *Reducing Crime and the Fear of Crime by Reclaiming New Zealand's Suburban Street* (Doesken, H. 1997)

The Costs of Urban Property Crime explains the link between vandalism, property prices, downward spirals in criminal activity and the public perception of a place (Gibbons, S. 2004). Routine Activities And Vandalism: A Theoretical And Empirical Study tries to explain patterns found in data from the US and UK with routine activities theory and concludes that this theory successfully explains vandalism as an activity that is motivated by social norms, the lack of monitoring and social signalling (Tewksbury, R & Mustaine, E. 2000). Reducing Crime and the Fear of Crime by Reclaiming New Zealand's Suburban Street explores vandalism as fostered by an environment of social isolation that has grown to dominate New Zealand's urban communities through the putting up of fences and the loss of community ties with neighbours (Doesken, H. 1997).

Between them these three articles create an explanation of vandalism as a crime of opportunity that is both a reflection of our society and pivotal in the creation of the places that we live in. The public perception of a place is outlined as often being built on visible incidents of vandalism which is used in the creation of these perceptions as an indicator of overall crime rates in a particular area and as an important part of an overall measure of the desirability of a place. This is of interest to this research project and to City Care because it provides context for why the vandalism incidents are happening and what affect they have on how the parks are perceived by the public. In explaining why these vandalism incidents are happening these articles also provide insight into how they could be stopped by creating a place that is clean, tidy and in the public eye so that potential perpetrators of vandalism do not view the parks as areas they should vandalise.

In summary the critical review of these published documents outlining existing research on cases similar to our own research focus and theories presented that aid our study. This is a useful set of information as it helps address our stakeholder's research criteria by presenting its theories on controlling factors for vandalism that provoke critical thinking and the application of these findings to our research area (Christchurch parks).

Methods

Several different methods of data collection and analysis were used. Different computer based and real world information gathering and analysis techniques were used that included both qualitative and quantitative research methods. These included Excel, Arc GIS and case studies. Outlined below is the methodology for each of these.

Microsoft Excel methods

- After our initial client meeting we were given our dataset for analysis. The size of our data amounted to a total of 6785 individual jobs logged with City care from the previous 5 years.

- It was clear to begin that the dataset was far too large to be fully utilised within our timeframe. In addition to this, mapping and analysing over 6000 points is not necessary in order to answer our research questions. As a result, the data was narrowed to 2600 points by removing irrelevant information.

- Incomplete data for 2007 and 2012 made full analysis impossible for these years. However the available (albeit limited) data that was provided was used to infer the trends over these years.

- Following the categorisation and analysis of the vandalism report, excel functions were used to produce graphical outputs.

	A	B	C	D	E	F	G
CH Parks Cause And Damage Report between 01/07/2007 and 31/07/2012 - Status:<All>							
	Cause Code	Damage Code	Maint Activity	EventJob	Customer Ref	Asset	Asset Name
	9000 - Vandalism	None Given	200 - Repair	1616462		3929011	CAMBRIDGE GREEN - Safety Barrier Grouping
	9005 - Illegal Dumping	9005 - Rubbish	305 - Remove Inorganic Waste	1588565		3749621	ABBERLEY PARK - Furniture
	9005 - Illegal Dumping	9005 - Rubbish	320 - Remove Organic Waste	1582244		3751715	ADDINGTON CEMETERY - Hard Surfaces
	9000 - Vandalism	9003 - Death - Plants	200 - Repair	1582125		3755492	CITY MALL - Garden Grouping

Figure 1: Example of the data obtained from City Care showing categorisation of the individual jobs

Arc GIS methods

- Geographic information systems (GIS) were used to produce digital maps based on the data collected from the vandalism dataset.

- Arc map was used to digitise the locations of the top 10 vandalised parks in Christchurch, based on the data collected from excel.

- The locations of shopping centres, high schools and skate parks were also digitised. This enabled the production of maps that showed the spatial and temporal aspects associated with vandalism.

- Proximity analysis was used in to design a map showing the spatial relationships based on how close different facilities in the Christchurch were to locations recording high incidences of vandalism.

- Spatial statistics were used to establish p-values showing correlations between different facilities in the city with high vandalism incidences.

Case study Methods

- Based on the top ten vandalised parks list, we established several case study parks to look at in more detail.

- Burnside and Jellie park were both local, easily accessible parks that featured on the top ten vandalised parks list, so they were natural choices for case studies

- Hanson's reserve was also selected as a case study due to local news coverage on a large scale vandalism incidence that occurred earlier this year.

- Photographs and observation was undertaken at these sites. This occurred over several days at different times of the day and in different weather conditions.

Results

Through the analysis of the data in excel, the top ten vandalised parks in Christchurch were identified and graphed. This answered our research question *'What are the top 10 vandalised Parks within Christchurch?'*
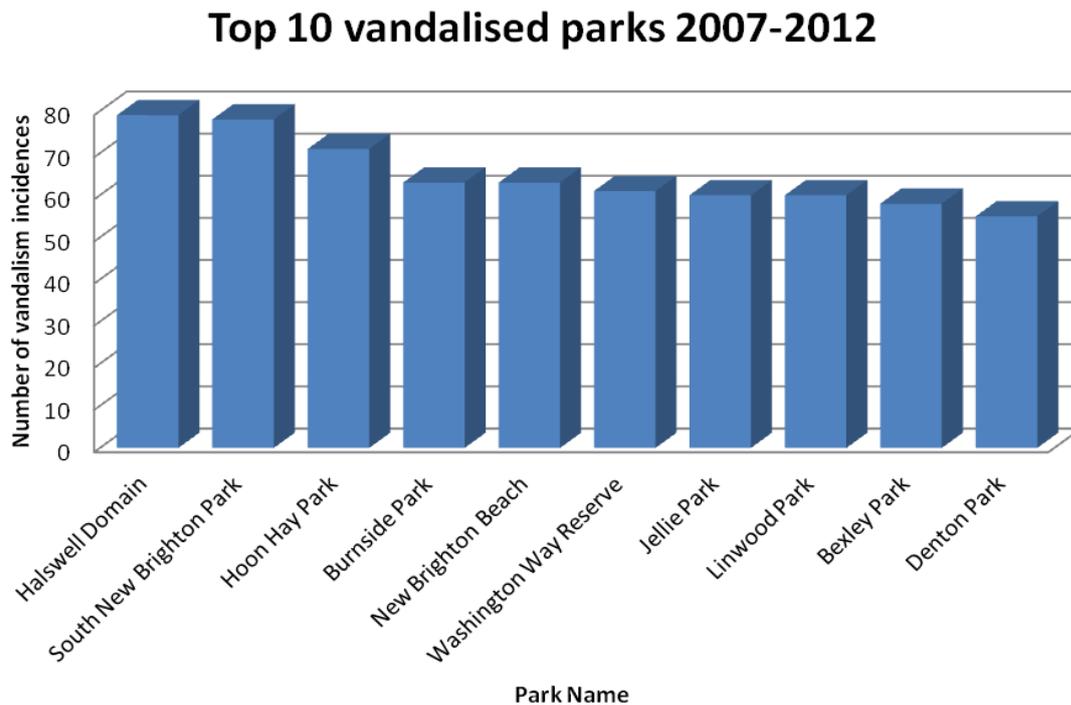
Graph 1: Top ten vandalised parks in Christchurch (02/07/2007- 26/7/2012)

As shown above, the highest incidences of vandalism occurred in Hallswell domain and South New Brighton Park. This information was further used to map the affected parks to provide a bird's eye view on the spatial distribution and help to establish any trends in vandalism occurrence.
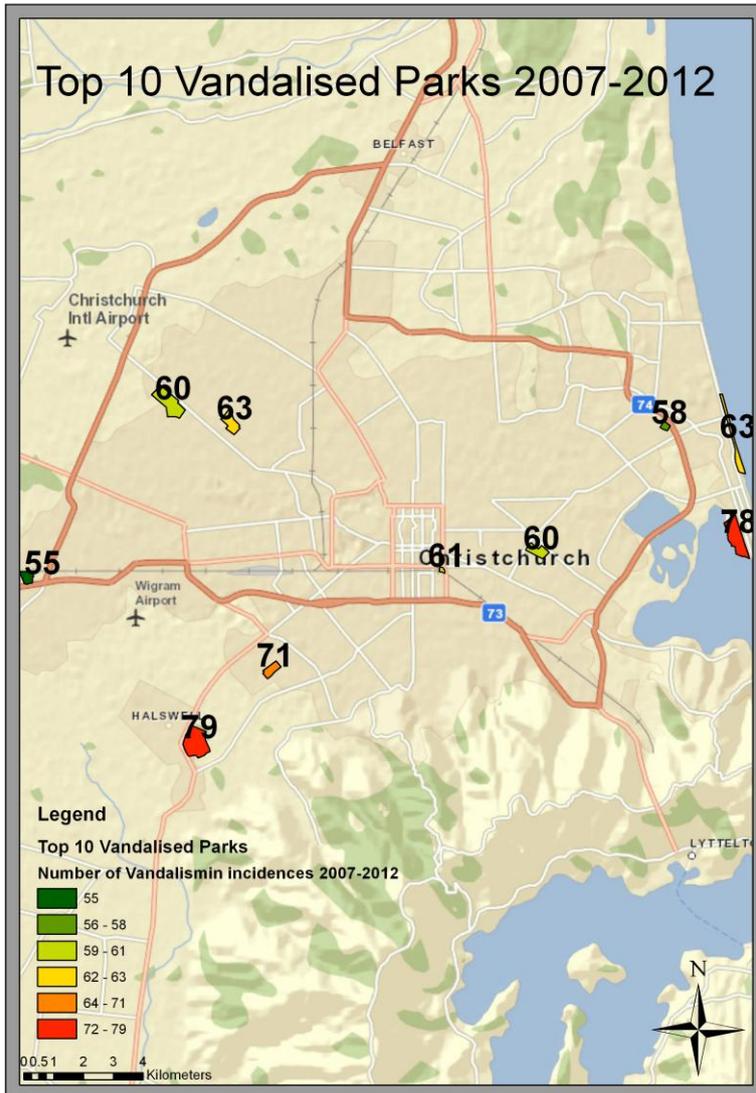
Figure 2: Birds eye view of the total recorded vandalism incidences over the top ten vandalised parks (02/07/2007- 26/7/2012)

The production of this map showing the total vandalism over the top vandalised parks helped to give an aesthetically pleasing visualisation that answered the research question 'What are the top 10 vandalised Parks within Christchurch?'

This image also had merits in explaining 'What factors influence the frequency and distribution of vandalism in Christchurch?' as it showed the spatial distribution of highly vandalised parks within the city and established early in the research that there was no specific pattern to this distribution. It was expected the certain suburbs would have consistently highly vandalised parks however this was not the case as high levels of vandalism can be seen here as well distributed. To conclude, no clear distribution patterns could be established from this analysis.

Number of Vandalism incidents
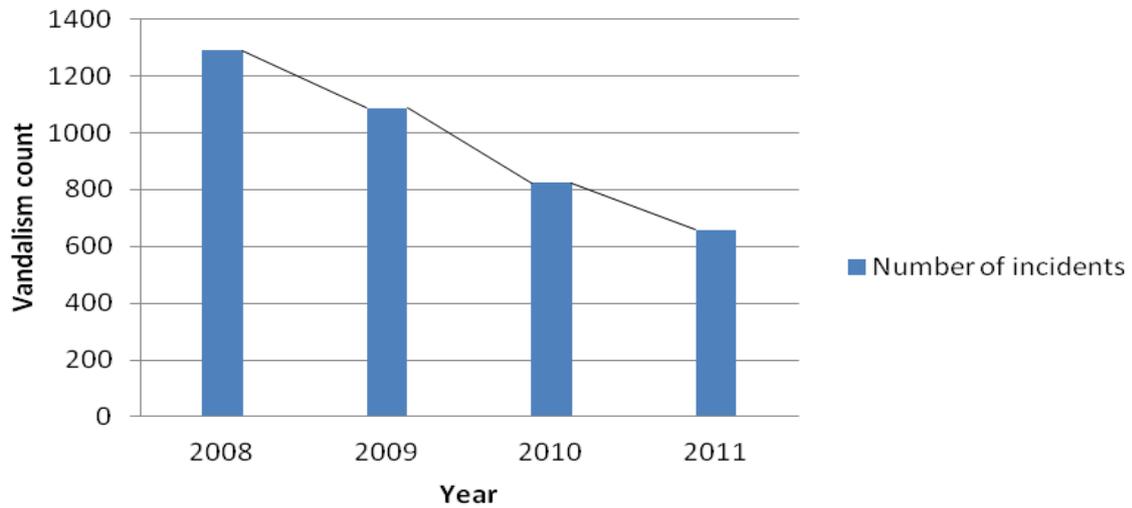
Graph 2: Total incidences of vandalism in Christchurch over the 2008-2011 periods.

Due to the dataset ranging from 02/07/2007- 26/7/2012 complete analysis was unable to be conducted on the years 2007 and 2012. The remaining years with complete datasets (2008-2011) showed a 48.148 % decrease. These results were graphed and overall a strong downwards trend was established in vandalism frequency in Christchurch parks.
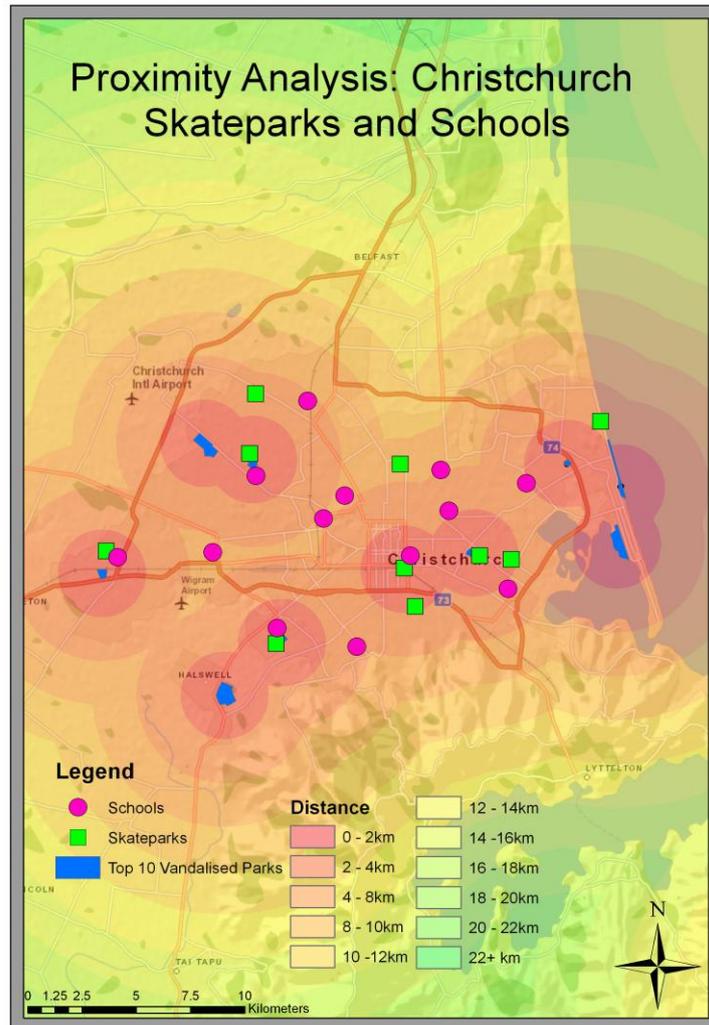
Figure 3: GIS map showing proximity analysis on high schools, skate parks and the top ten vandalised parks in Christchurch.

Our results following proximity analysis showed strong relationships between schools and the top ten vandalised parks. Weak relationships were also established between high schools and the top ten vandalised parks.

- Further analysis using spatial autocorrelation tools discovered strong correlations between skate parks and the top ten vandalised parks. The p-value of this relationship was 0.46

- A lower p-value of 0.29 showed a weak correlation between high schools and the top ten vandalised parks.

- Analysis of shopping centres returned a p-value of 0.07 indicating no correlation with the top ten vandalised parks.

This analysis helped to answer "What factors influence the frequency and distribution of vandalism in Christchurch" by identifying relationships and common factors between highly vandalised parks in the Christchurch region.
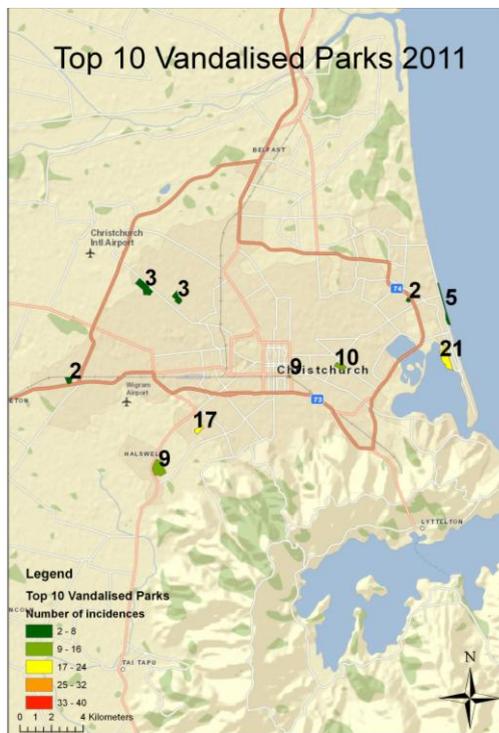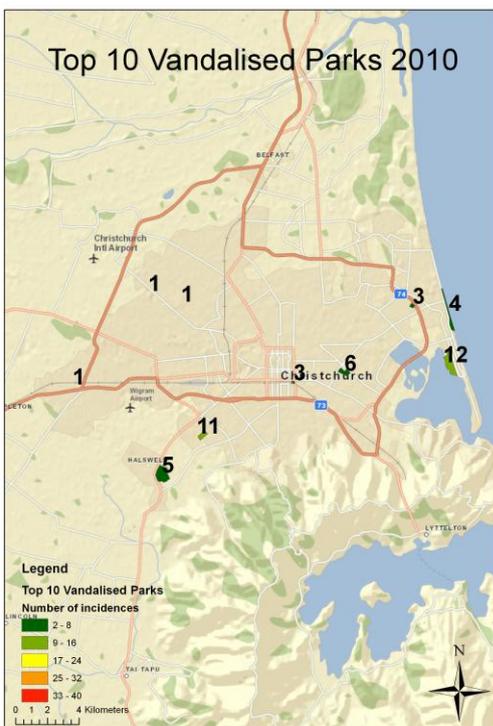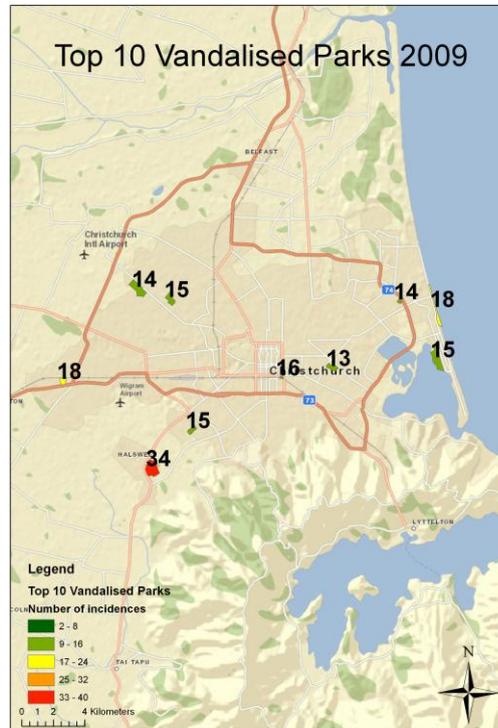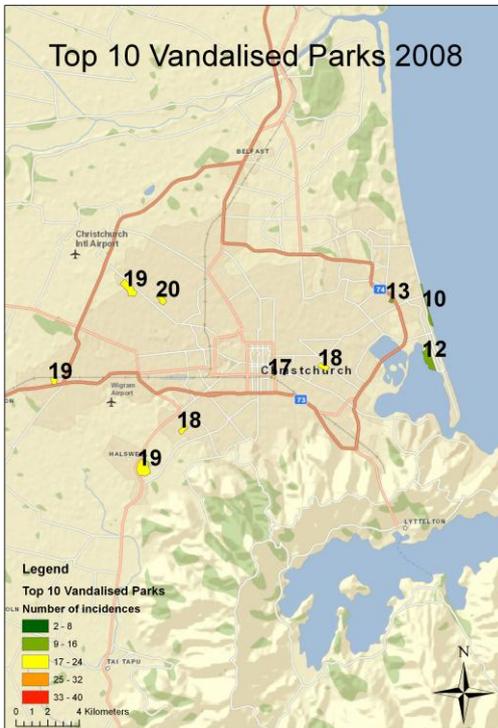
Figures 4-7: Individual breakdown of vandalism incidences per year: Top ten parks.

These figures show the changes in vandalism across the years 2008-2011 (the years that were fully covered by the data with no missing dates). These maps address the research question 'Identify trends in place for vandalism over the past 5 years'. Our research into the trends was limited to observations in the previous 4 years due to an incomplete dataset for 2007 and 2012. Outlined below are the trends observed.

- 2008 experiences the highest levels of vandalism. This is well distributed throughout the top ten vandalised parks.

- In 2009 from the previous year there is a noted drop in vandalism incidences over most parks barring Washington way reserve, Linwood Park, Hoon Hay Park and Hallswell Park.

- There was a major irregularity in the data in 2010, we have been unable to pinpoint an exact cause for the major drop in offending across all parks, the earthquake is the most obvious and easiest culprit to blame however this data covers the whole year so clearly other forces were at play influencing vandalism incidences.

- The final map for the year 2011 shows a small rise in vandalism incidences, this is another reason we have ruled out the earthquake as influencing our results. What was discovered from consultation with our City care representative was that a change in input methods on their data recording occurred around this time. This could help to explain the radical changes in these values.

What we can conclude from those maps is there is no clear vandalism distribution pattern
There were drastic drops over 2009-2010 however a cause has not been located as of yet. One established trend is that Hallswell park and South New Brighton beach consistently have high values across all years shown, indicating them as high risks areas for vandalism.

Discussion

Case Studies:

- *Hansons reserve*

Hansons reserve is an example of the disjunction between the public perception of vandalism and the view supported by data. The data we have shows Hansons reserve as only having experienced a single vandalism incident between January 2011 and July 2012 and only five incidents of vandalism since July 2007. Further, these vandalism incidents all have an accompanying explanation and four of these five are of a minor nature that affects an isolated area within the reserve (for example, on the 15th of January 2008 there was an incident of vandalism that only affected the belt of one of the swings). The data shows Hansons reserve as a place that is rarely vandalised and has experienced only a single incident recently and only five over the five years we have data for. However, the public perception of this place is different despite this perception being, at least in part, crafted by the incidents of vandalism. A news article entitled 'Vandalism outrage' in the local Christchurch newspaper 'The Star' describes an attack on Hansons Reserve in March of 2012 where multiple trees were ruined by being cut down and ripped out of the ground and rubbish had been strewn through the playground (Cullen Smith, 2012). This article continues with quotes from members of the local community describing both the incident and the park, with the following being one of the quotes published: "Clearly a group of people have done loads of damage … not a place you want your kids to go to play." (Cullen Smith, 2012). This view and others like it have been sourced from the local community surrounding Hansons reserve and then published in the local paper that is in the view of both the immediate community and wider Christchurch area.

- *Burnside Park and Jellie Park*

Both Burnside Park and Jellie Park were in our top ten vandalised parks over the period our dataset covered. Both parks boarder on main roads which, according to routine activity theory, we expected that this would be a deterrent to vandalism because it reduced the opportunity to vandalise without being witnessed in an environment the perpetrator would usually be occupying as discussed in Routine Activities And Vandalism (Tewksbury, R. & Mustaine, E. 2000). Jellie Park has a Skate Park inside it which helps explain why it made it into the top ten vandalised parks but Burnside Park is primarily open fields with a small playground. Burnside high school is nearby to both Jellie Park and Burnside Park, but Jellie Park is closer to this school than Burnside. The location and contents of Burnside Park made it difficult to pinpoint why it was one of the top ten vandalised parks.

Both Burnside Park and Jellie Park shared a downward trend in number of vandalism incidents per year that was in excess of the overall trend of vandalism incidents in the parks included in City Care's database. This downward trend is explainable by broken windows theory as outlined in The Police and Neighbourhood Safety: Broken Windows article (Wilson, J, K, 1982). In Burnside Park we found evidence of graffiti being regularly covered up and an overall clean and tidy park. In Jellie Park we

also found a clean and tidy park with graffiti reasonably contained to the skate park area. Kerri advised us that their Gardner for Jellie Park visits the park four times more often than usual to clean rubbish and keep the area tidy. According to broken windows theory we would expect this to impact how the users of the park view the area and contribute to the decline in vandalism incidents.

Case Studies Overview

In the article The Costs of Urban Property Crime the author explains that vandalism is important in the public creation of place because it is the crime statistic that has the highest correlation with drops in property prices and rise in overall crime rates (Gibbons S. 2004). Hansons reserve is an example of the role that vandalism has in the public perception of a place, it only takes one significant incident to create a bad impression even if the empirical evidence doesn't match the impression created. Broken windows theory also explains the decline found in our case studies of Burnside Park and Jellie Park (Wilson, J. K. 1982). We found evidence that City Care works hard to keep the areas clean and tidy and this could contribute positively to the perception of these parks and discourage incidents of vandalism.

Limitations

Throughout the research process we found that there were a number of factors that limited the accuracy of some of our data and as well as found flaws with the data set itself and the amount of information it offered to us in terms of our research questions.

One of the research questions included finding the top 10 damaged assets this would have been valuable information for City care. The data set we had was not concise enough for us to be able to answer this because it was too large and was usually too vague for us to be able to identify the damaged assets for each logged job.

Another factor that could have affected our results was that City care had a change in the way they record and log the data. This change occurred in 2010 which is the same time we found there to be a sharp decrease in the amount of vandalism throughout the city. This would mean the decreasing trend we observed could be a result this and not the broken windows theory or other mitigation techniques we observed.

Lastly the data set we used to do the bulk of our research is set for administrative purposes and as a reference for City care and is not specifically for our research project. This means we were limited in what we could do with the data as it didn't offer us all the information required to answer our questions.

Conclusion

Findings

We found that there is a correlation between parks with high numbers of vandalism incidents and placement near skate parks and (to a lesser extent) high schools. We also found that there has been a steady decline since 2007 in the total incidents of vandalism in the parks that City Care looks after and we attribute these findings to the effort City Care has invested in keeping the parks clean and tidy. Our reviews of academic literature found that this effort is pivotal in the creation of the public perception of the parks and works to foster perceptions that discourage vandalism incidents. These findings are based on (and potentially limited by) the data provided to us by city care, reviews of academic literature and case studies of Christchurch parks.

Directions for future research

The research we have done appears to only be the tip of the ice berg in terms of park vandalism in Christchurch there are so many unexplored variables which could be influencing the results.

We did notice that in the bigger parks there was more vandalism occurring. This was something we overlooked but there did appear to be a relationship between these two variables. Future research might include weighting the data by land area to see if park size is influencing the distribution of vandalism.

Another unexplored area of research is the distribution of Graffiti vandalism. Graffiti is removed by another company within the Care Business and thus didn't appear in our dataset. If the amount of graffiti vandalism is known correlations could be made with the amount of vandalism which could provide valuable information to City care.

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