

The Return to Green Space

The potential locations for new recycle bins on Texas State University main campus By GeoSolve

Project Description

In accordance with the Campus Master Plan, Texas State University has asked the Environmental Service Committee (E.S.C.) to replace all recycling bins located throughout the campus and replace them with new recycling bins that comply with the overall look the university is trying to achieve to maintain uniformity. The E.S.C. came to GeoSolve to find the best locations for new recycling bins on campus using a geographic information system. GeoSolve's goal is to deliver a ranked set of locations for the new bins based on highest priority to lowest priority locations to allow flexibility when purchasing the new receptacles.

Implications

The final result is a map showing a ranking system of potential locations of where recycling bins should be placed throughout campus. The Environmental Service Committee could focus on the areas they think are most beneficial and then place the recycle bins accordingly.

Data

Data was collected from various Texas State contacts, which provided shapefiles for buildings, sidewalks, parking lots, bus stops, bus traffic flow, and number of students faculty and staff throughout a weeks period. Satellite images from Capco were downloaded and merged for a visual reference. All secondary data were collected by February 22, 2006. Because no current source file existed for trashcan and vending locations, we determined that fieldwork was required to provide the most current information which would allow for more accurate results in our analysis. GPS locations were taken the week of March 13, 2006 to represent the number of trashcans and outdoor vending machines located throughout

Methodology

After collecting all of our primary data (trashcan and vending machine locations), collected with a Topcon HiPer Plus GPS system, and secondary data from the university, we then cleaned up the data using Microsoft Excel and Microsoft Access to condense the data down and prepare it for ArcMap 9.1. Once the importing process was completed, we then performed a series of density analyses to show the locations across campus with the highest concentrations of trashcans and vending machines (either glass or aluminum) and then weighted the results by population by overlaying the density rasters with a shapefile created to represent populated regions throughout campus over a week long period. With the three major criteria (population, source or recyclables, and current trashcan locations) we were able to come up with our final results.



Results

According to our analysis, overall there are several areas throughout campus that would be ideal to put the new recycle receptacles. The best area to place the new recycling bins on the west side of campus would be on the northwestern side of Harris dining hall (see Figure 8). Also, GeoSolve observed that there are several high-density gathering areas near residential halls Blanco and San Saba that would be good areas of possible locations for the recycle bins.

In the central part of Texas State University, there are many beneficial areas for recycle bins. Figure 9 shows locations with high priority under the breezeway of Alkek Library and near the Paws N Go kiosk by the southeast corner of Evans Liberal Arts building. The next best set of potential locations would be near Arnold Hall's smoking area, the entrance of Jackson and Tower Halls, the Texas Tram bus stop at L.B.J Student Center, the vending machine area on the eastern side of Evans Liberal Arts, and the north main entrance of the Evans building.

In addition to these areas, we suggest other bins be placed at the entrances of L.B.J Student Center, the walkways between Alkek Library and Evans Liberal Arts building, near the south entrance to the Chemistry building and by the north entrance of Flowers Hall. Also, the quad entrance of Derrick Hall would be an excellent location of recycle bins.

The east campus area includes Sewell Park and Bobcat Stadium parking lots. According to the Figure 10, the first priority locations would be both tram stops in the Bobcat lots. In addition to the areas above, GeoSolve recommends Environmental Service Committee to locate recycle bins near the trashcans in Sewell Park.

Conclusion

GeoSolve has performed a geographic information system analysis to determine the best beneficial areas for the Environmental Service Committee to locate newly designed recycle bins required by new Campus Master Plan on the Texas State University campus. To acquire the best results, GeoSolve used precise primary data and reliable secondary data and thoroughly reviewed our analysis for human errors.

From the results, we specifically identify the best locations for recycle bins. In addition, GeoSolve recommends that bins be located in bus stop areas in parking lots because of Texas State's large number of commuter students. With our model, future studies will be easily undertaken to adjust for the expected fast paced growth of Texas State University – San Marcos.

Data Sources

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www.capco.com

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<http://geosites.evans.txstate.edu/~g4427s06-03>

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