BY DAVE PETERSON AND CARTER MARSHALL

Knock It Out Of The Park!

Use GIS technology to get the most out of your facilities

Park and recreation providers are tasked with answering tough questions every day. How are we doing? How can we do better? Important resources, such as trails, playgrounds, and shelters, are critical to quality of life for users, yet no nationally accepted standards exist to evaluate these or other important assets. There are ways, however, to shed light on the level of service provided by a recreation system using GIS (Geographic Information System) technology.

Let's consider sports fields. How might an agency determine the number of athletic fields it should provide? Are there enough fields currently available? Are they adequate? Are they properly distributed? Whom do they serve? Where are new fields needed?

GIS applications are used to create a digital model of the real world. This powerful technology is utilized in a wide range of industries to answer real-world questions, and can be a valuable analysis and planning tool for park and recreation professionals. GIS analysis provides more robust evidence for action than traditional master-planning techniques, and yields decisions based on customizable factors specific to an agency or community. It can identify gaps and allow service providers to prioritize improvements based on data.

Where To Begin

A recent study in Stafford County, Va., used GIS analysis, along with public and staff input, to determine current demand and capacity for sports fields. The study also determined target locations for new fields based on user access and population density. Although a full assessment of multi-purpose fields was also conducted, this article focuses on baseball and softball diamonds to illustrate the concepts and techniques that were used.

"We knew there was high demand for diamond sports fields, and there were waiting lists, but we didn't know how many more we needed or where they were needed," says Jaime Porter, Director of Stafford County Parks, Recreation & Community Facilities. "We knew we wouldn't have many opportunities to get it right."

The study relied on a few assumptions to assist Stafford County leadership in their efforts to make justifiable, evidence-based decisions.

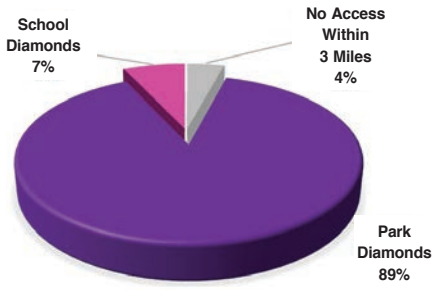
- The entirety of the county, a rapidly growing part of Virginia near Washington, D.C., was included, except for Quantico Marine Corps Base in the northern part of the county.
- Demographic analysis focused on the 5 to 19 age group, since school-age youth are considered the primary users of ballfields.
- Any fields planned and funded for construction at the time of the analysis were considered part of the current inventory.
- Demand for playing fields and existing field availability was determined from feedback of focus groups, stakeholders, and public meeting attendees, as well as staff input.

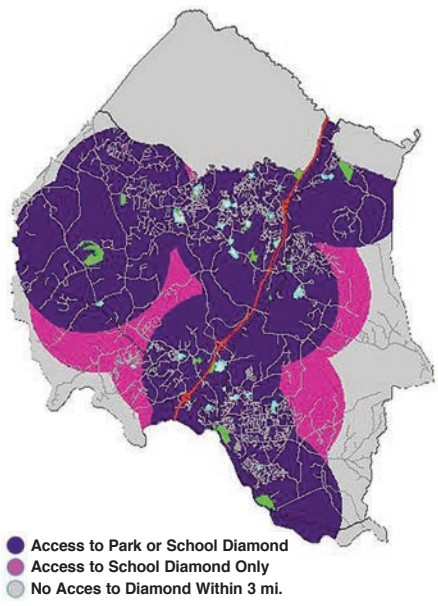
The study of ballfields in Stafford County served to improve public access and focus future development of new fields. Image courtesy of Stafford County.

Top Photo: © Can Stock Photo Inc. / 33ft • Bottom Photo: Stafford County

GIS analysis was a key tool in the study. First, all baseball and softball diamonds owned or maintained by the county parks were identified. Public school fields were also included as critical but limited-access facilities. A total of 45 ballfields were identified and located.

Initial GIS analysis showed excellent distribution and location of ballfields. Further, population data revealed that 96 percent of the 5 to 19 age group has access to at least one diamond within 3 miles of home.





Rating Fields

Though these findings were valuable, additional exploration was needed to understand the bigger picture. A field evaluation was conducted for each of the 45 ballfields to gather details about each field and site. A scoring system was developed to assess the value of each ballfield based on criteria of field quality and desirability, including:

- Overall field quality
- Turf quality
- Infield condition
- Backstop condition
- Dugout
- Field fencing
- Warm-up area/batting cage
- Irrigation
- Field lighting
- Bleachers
- Team storage
- Scoreboard
- Utilities.

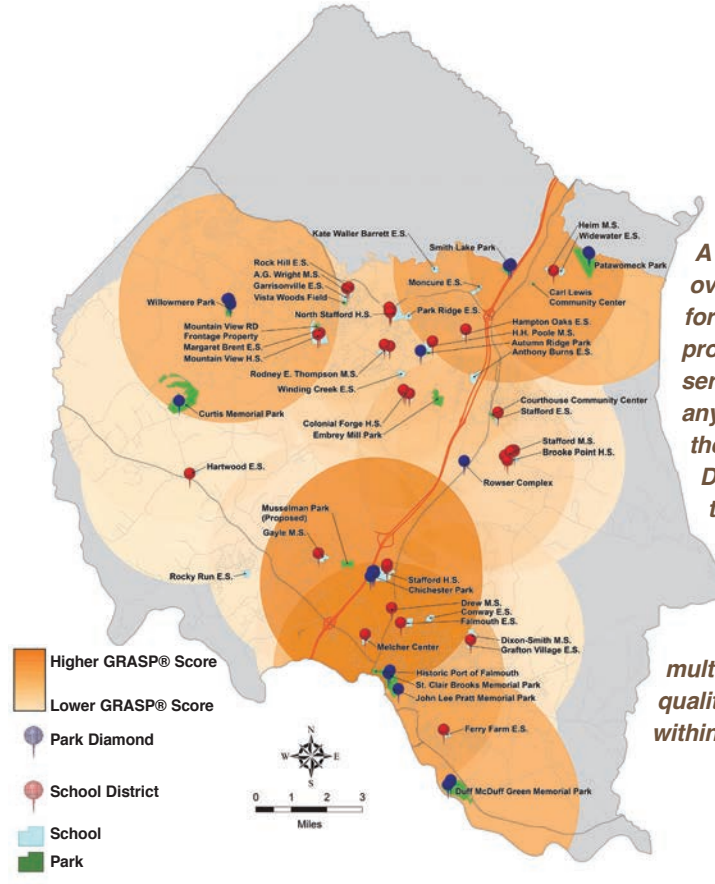
Field scores were entered into a database on-site using a mobile tablet. Additional park or site assets were also identified, such as availability of restrooms, parking, security lighting, storage, drinking water, and

Diagrams: Design Concepts

concessions. As these elements serve to make a ballfield more inviting and comfortable, the scores were used to amplify field scores. A final numerical value for each ballfield was calculated, and each field was ranked on the basis of these values.

Final values were then extended for 3 miles around each field and overlapped on a map. The resulting "heat map" showed the cumulative value of all ballfields within 3 miles of any location in the study area, a distance that approximates a drive of 20 minutes or less (see heat map).

The resulting map data allowed the team to paint a picture of ballfield access for any location in the study area. Values ranged from a low of 0, in places with no available ballfields within a 3-mile proximity, to a high of nearly 700 points, where multiple high-scoring facilities exist within a 3-mile radius.

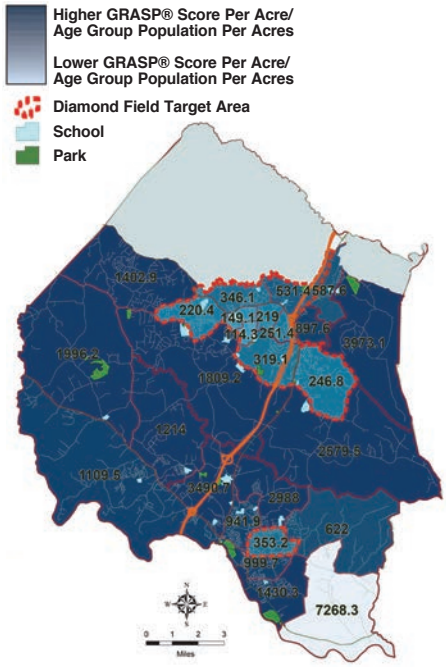


A "heat map" overlaid values for each ballfield to produce a level of service value for any location within the study area. Darker shades on the map show areas with high cumulative scores, an indication of multiple and/or high quality fields nearby, within 3 miles.

This analysis built upon the earlier analysis, which simply examined proximity to fields, by providing a more complete understanding that accounted for field quantity and quality. However, it failed to address where young people, the target user group, actually live in the county. The final step of the study will be to account for this dynamic.

Upon Further Inspection

Population density for county residents, ages 5 to 19, based on U.S. census data, was integrated with the field-scoring dataset. Using a calculated value per person per acre, a new map was drawn to reveal parts of the study area with relatively high youth populations and low field scores. Two primary focus areas emerged as target areas to add or improve ballfields.



By combining demographic data with ballfield locations and scoring data, target areas were revealed, shown outlined in red on this map. These parts of Stafford County are most in need of field improvements or additional fields to serve youth populations.

This analysis provided county staff clear answers for use in their future planning efforts. More importantly, this study has already had a real-world impact. The GIS analysis was used as justification to secure additional funding for needed ballfield improvements, despite tight budgets in recent years. A partnership agreement is also in the works with Stafford County Public Schools to expand utilization of school ballfields for county programming.

"Prioritizing projects and their locations based on the data collected and the results of the study, we are now confident in our investment choices, knowing we are addressing actual needs," says Porter. "We found out that we didn't need new parks necessarily; we needed to enhance and build out current parks with the required amenities to address current and long-term capacity."

This study highlights the value of GIS technologies in assisting parks and recreation providers to improve quality of life for their users. As agency and department budgets have been tightened or reduced, well-founded guidance ensures that a limited budget may best serve a local community. In this game, everyone comes out a winner. **PRB**

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