

# Our Experience with TAVR Accessibility

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Access to care is essential for both a safe and stable health care system. It is imperative that we continue to refine individual programs and better address the unique needs of populations that are often overlooked. It has been documented that rural populations in the United States (US) face barriers to health care that in turn negatively impact their health (1). The US Census Bureau defines rural as all population, housing,

and territory not included within an urbanized area or urban cluster (2), in which nearly 1/5 of the US population resides.

Transcatheter aortic valve replacement (TAVR) continues to evolve as a minimally invasive approach that enables percutaneous implantation of an aortic valve bioprosthesis in patients with aortic stenosis who would otherwise require open cardiac surgery. However, candidates within rural populations may not directly or fully receive its benefits. The barriers to adequate cardiovascular care that rural TAVR candidates endure are compounded by the well-documented hemodynamic changes observed post-procedure. There is evidence, however, that aortic stenosis patients living in these rural areas or clusters, especially those above the age of 80, can receive benefit from TAVR procedures performed at smaller, rural centers comparable or superior to the results documented at urban tertiary care centers (3). In addition to the scarcity of data suggesting that cardiac device implantation does not apply to CVD prevention and treatment disparities in rural designations, there is little evidence concerning access of TAVR procedures to candidates in these areas or clusters (4). As severe valvular disease increases with age and given that the number of residents aged 65 and over in the Appalachian region of the US exceeds the national average by over 2% (5), we chose to geocode TAVR cases performed by our Structural Heart Program at Charleston Area Medical Center (CAMC), a rural tertiary care center in Kanawha County, West Virginia. We aimed to identify TAVR patients from rural territories and housing who have limited access through spatial analysis.

We selected 323 TAVR cases that were performed at the Charleston Area Medical Center (CAMC) Memorial Campus. These cases were pulled from the CAMC data warehouse. Of the 323 chosen, 232 had a complete home address for analysis. We then geocoded 232, in which we conducted a collective study and hot spot analysis.

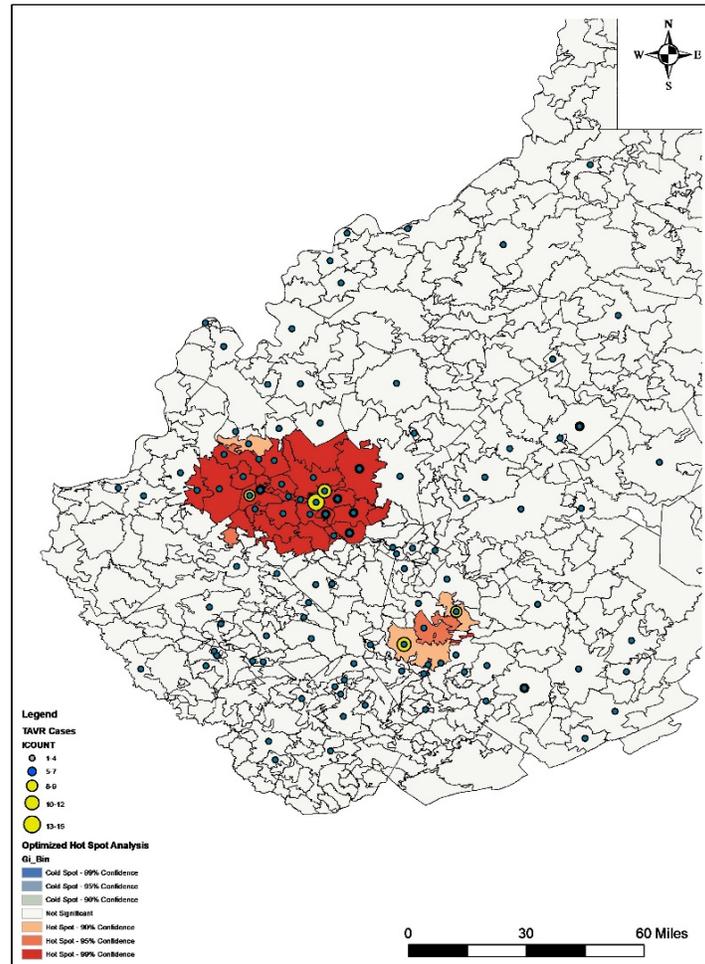
The results we obtained suggest that within a 30-mile distance of our TAVR center, the majority of our cases being treated with limited access appear to come from the coalfields of Southern West Virginia. The collective analysis illustrates this in Figure 1 with circles denoting cases 1-15. The majority of cases were then analyzed using a hot spot analysis which demonstrated the areas in which our program is valid within a zip code function ( $p < 0.001$ ). The hot spot analysis also showed that there are more significant concentrations of TAVR cases with host zip codes around our center shown in Figure 1.

As health delivery networks continue to improve nationally, access remains a challenge for large-scale organizations. As the largest tertiary health care network in the state of West Virginia we, along with other centers like us, must improve health delivery access. Establishing mobile screening through referrals for conditions such as aortic stenosis may help us and other institutions remove or reduce some barriers that rural populations face.

## Figure Legend

### Figure 1 – TAVR Accessibility Map

## Our experience with TAVR accesability



This map was created by Frank Annie who is located at CAMC Institute

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