In 2004, after long and controversial consultations, study leaders adopted a household-based sampling strategy, a costly and labour-intensive decision meaning that participants from the 105 far-flung study locations will be more representative of the broad population than, say, those recruited from health facilities and doctor’s offices, a more common approach.

In May 2008, in a 140-page report, the National Research Council and the Institute of Medicine praised the study’s household-based sampling approach, as well as the statistical power rendered by its 100,000 participants. But it also identified a laundry list of weaknesses in the study’s design. The first was the absence of a pilot phase; because the vanguard centres’ data were to be part of the final data set, investigators would be less likely to experiment with methods and change things that weren’t working. That concern is being addressed, says Shurin, by turning the vanguard centres into long-term development platforms for the main study’s methodology and feasibility, and not, as initially intended, folding them into the main study. Study leaders have also pushed back the launch of the study’s main phase until late 2011, giving investigators time to tweak the methodology according to what’s learned at the vanguard centres.

Despite the rough waters, advocates remain passionate about the study’s potential, arguing that it is an investment that will more than pay for itself. Leonardo Trasande, a study investigator at the Mount Sinai School of Medicine in New York, notes that just six of the conditions the study explores — asthma, autism, diabetes, injury, obesity and schizophrenia — cost the United States at least $650 billion a year (L. Trasande and P. J. Landrigan Environ. Health Persp. 112, A789–A790; 2004). “If the study identifies preventive interventions that can reduce those annual costs by even 1% [a $3-billion] study repays itself twofold in one year,” he says.

Meanwhile, Duplin County continues to enrol participants. While recruiters work church dinners and organize soccer tournaments, data collectors recently finished enumerating 10,800 households — roughly half of those in the county — aiming to locate reproductive-age women.

“I have two daughters. Both have asthma. I have lived this,” says Entwisle. “But the scientific reason for my involvement has to do with the fact that there are so many questions that need answers. This design is exactly what needs to be done to begin to develop some of those answers.”

Meredith Wadman