Specific objectives:

1. Is there a relationship between frequency of patients' visits to the ED and the frequency of primary care visits? "Primary care" is defined as care by an MD in Family Practice or by a Primary Care Nurse Practitioner (NP).

   Note: The study team is aware that HDNS does not currently hold records for nurse practitioner billings. HDNS is pursuing acquisition of these records and, depending on the result and timing of that effort, we hope to include them.

   1.1. Is there a relationship between frequency of patients' visits to the ED and the number of primary care visits over 3 years and individually by each of these three years?
      1.1.1. Is there a relationship between the number of non-admitted ED visits and the number of visits to a primary care provider over 3 years and individually by each of these 3 years?
      1.1.2. In comparing those admitted at least once in 2013-2014 vs those not admitted from the ED in 2013-2014, is there a difference in the number of primary care visits in the previous 2 years; is there a difference in the number of ED visits in the previous 2 years?
   1.2. How is the relationship between ED visits and primary care visits influenced by patient characteristics, by practice & provider characteristics derived from the survey data (age, sex, hours of availability; wait times for urgent and non-urgent care)?
   1.3. Does ED use vary by the number of primary care providers seen by the patient (e.g., patients who have seen only 1 care provider over 1 year, 2 years, 3 years versus patients who have seen multiple providers over 1 year, 2 years, 3 years.). We will also consider the number of providers seen each year as a continuous variable.

2. Are there more emergency department visits among patients of family physicians/nurse practitioners associated with those who do not provide afterhours care (derived from the survey data)?
   2.1. overall
   2.2. among those with mental illness?
   2.3. among those with specific chronic illnesses?

3. Are wait times for urgent and non-urgent care (from survey data) associated with ED use, additional provider use (i.e., any primary care provider and specifically walk-in clinics)? We can identify which providers work in walk-in clinics from the survey data.
   3.1. overall
   3.2. among those with mental illness?
   3.3. among those with specific chronic illnesses?

4. Is there as association between the models of primary care in which family physicians/nurse practitioners practice (and the individual characteristics of the models) and their patients' ED use? Is there as association between the models of primary care in which family physicians practice and Chronic Disease Prevention and Management?
   - 4.1. overall
   - 4.2. among those with mental illness?
   - 4.3. among those with specific chronic illnesses?

5. Is there as association between the models of primary care in which family physicians/nurse practitioners practice and lower to higher responsibility care provision and ED use?

6. Do patterns of family physician/nurse practitioner utilization (how many unique providers and number of visits) differ by models of primary care, geographic location, and accessibility or provider characteristics?
   - 6.1. overall
   - 6.2. among those with mental illness?
   - 6.3. among those with specific chronic illnesses?

7. Are a greater number of primary healthcare screening procedures (i.e., PAP smears, immunizations specific procedures listed below in Methodology for Objective #5) and chronic disease management services for diabetes and coronary heart disease associated with different models of primary care, accessibility, or provider characteristics?
   - 7.1. overall
   - 7.2. among those with mental illness?
   - 7.3. among those with specific chronic illnesses?

8. Do differences in scope of practice (defined by survey questions about specific services) lead to increased ED use? To increased use of primary care providers other than the patient's "usual" provider?
   - 8.1. overall
   - 8.2. among those with mental illness?
   - 8.3. among those with specific chronic illnesses?

9. How well do practice size estimates from providers match the number of unique patients seen over 1 year, 2 years, and 3 years?

10. Can the MAAP-NS dataset and HDNS datasets be used to validate and supplement each other where each contains similar variables (i.e., provider age and sex, work in ER, inpatient hospital work, and home visits)? (see table" Variables from both MAAP-NS and HDNS data sets - Additional uses" page 61)