**Physician Workforce, Primary Care and Life Expectancy in the United States.**

**ABSTRACT**

**Importance: Affordable Care Act has increased the insured population. Estimates of its effect on the demand for health services and outcomes such as life expectancy for the poor will be useful to design health policies and reduce disparities.**

**Objectives: To determine the association between life expectancy, supply of physician workforce, their specialty and geographic distributions and patients’ health behavior at the county level and the efficient mix of primary and specialty care physicians.**

**Design and Setting: The 2014-2015 Area Health Resources File (AHRF) and Health Inequality Project (HIP) datasets were merged by county identifier and analysis performed on this composite. The AHRF is a county based dataset of health factors. The HIP data was obtained from the general US population (> age 40) in the form of 1.4 billion de-identified tax records between 1999 and 2014. The HIP provided corresponding mortality data from the Social Security Administration death records. Analysts were not blinded while performing this analysis.**

**Exposures: Physician density and ratio of PCPs to all physicians in the highest and lowest income quartiles of counties**

**Main Outcome and Measures: Life expectancy at age 40.**

**Results: Life expectancy is positively associated (*p <* 0*.*001) with total physician density for lowest and highest income quartiles. The ratio of PCPs to all physicians is positively associated with life expectancy for lowest but not for the highest quartile. Geographic physician maldistribution and PCP shortage affects life expectancy in the lowest but not highest quartile. The optimum ratio of PCPs to all physicians for maximum life expectancy is 52.5%, significantly greater than the observed ratio of  33*.*4%. Excess supplies of all MDs and other specialists are 3*.*7% and 33*.*7% respectively and the shortage of PCPs is 83.*7*% of the current supply.**

**Conclusion and Relevance: The United States has significant maldistribution of patients, both between PCPs and other specialties, and geographically, rather than a shortage of physicians. Our formula for efficient PCP proportion is useful to design health policies and incentives for cost efficient physician supply, specialty mix and geographical redistribution of physicians across counties.**