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State-Level Variations in the Utilization of Lung Cancer Screening Among Medicare Fee-for-Service Beneficiaries

An Analysis of the 2015 to 2017 Physician and Other Supplier Data

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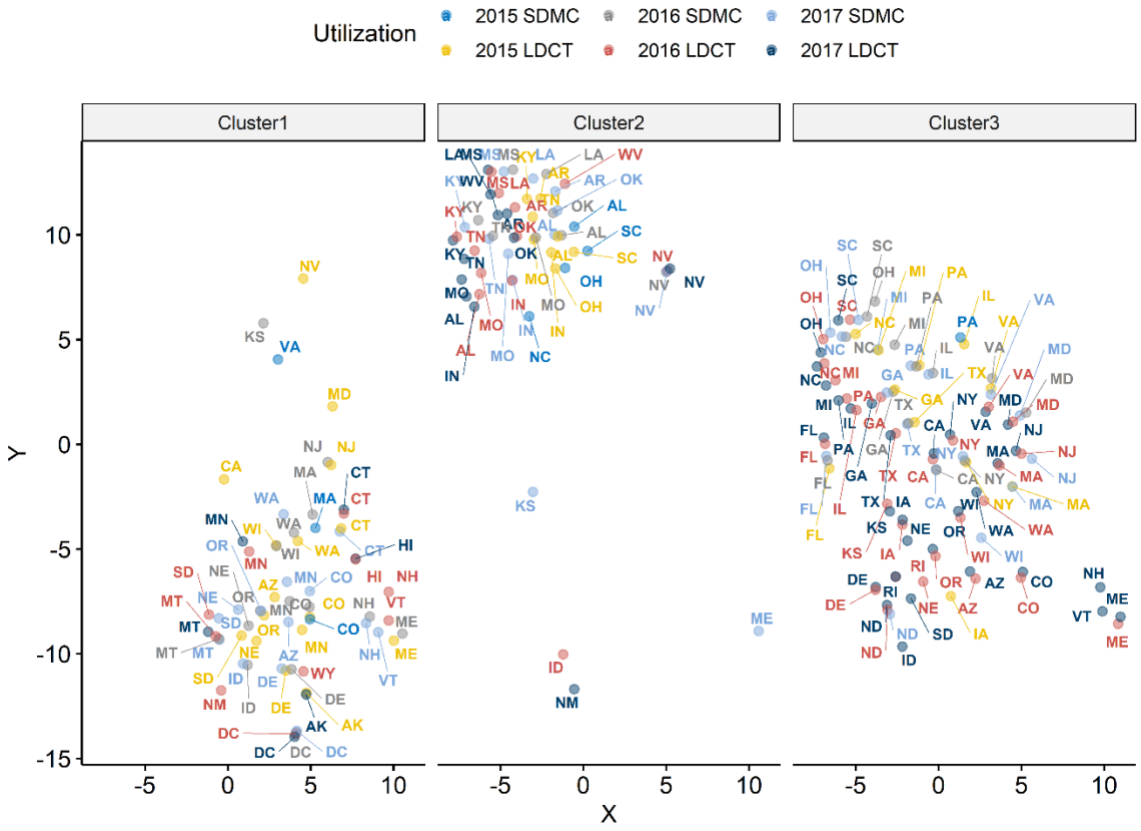
Supplemental Information

e-Figure 1. Scattered plots of the identified three clusters.

Note: Cluster analysis was conducted on a complete data set including 3 utilization variables (numbers of utilizations in low-dose computed tomography (LDCT) or shared decision making and counseling (SDMC), FFS beneficiaries, and unique providers), as well as the 4 state-level factors (lung cancer mortality rate, prevalence of current smokers aged 65+ years and former smokers, and median household income). All the variables were log transformed and normalized at the same scale using z-scores. Because the utilization of LDCT and SDMC by year were treated as separate data points, it was possible for a state to be in different clusters depending on a particular utilization type and its state-level factors. For example, the 2015 LDCT and 2016 SDMC utilization in New Jersey (NJ) were grouped in Cluster 1, while 2016 LDCT, 2017 LDCT, and 2017 SDMC utilization in NJ were grouped in Cluster 3. For visualization, the clusters were partitioned using the Rtsne R package, which rendered the data set (220 rows*7 columns) into a 2-D (X-Y) space is with t-distributed stochastic



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e-Figure 2. Comparisons of state-level factors by quartiles of utilization density in low-dose computed tomography (LDCT) shared decision making and counseling (SDMC), where state-level factors include lung cancer mortality, prevalence of current smokers aged 65+ years and former smokers, and household income, which were scaled to z-scores as such a (positive/negative) z-score indicates a state level factor is z-score times (above/below) the national average. State names were colored (black, red, and green) according to the three identified clusters.