**Table 1.** ICEES feature variables: name, description, and binning strategy.\*

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| **Feature Variable** | **Description and binning strategy** |
| CohortID | *Cohort ID# & input variables used to define cohort* |
| PatientID | *Randomly assigned patient identifier* |
| StudyPeriod | *Years 2010, 2011, 2012, 2013, 2015* |
| AgeStudyStart | *Age at ‘study’ start date: calculated from birth date and binned as 0...2, 3...17, 18...34, 35...50, 51...69, 70–89 years*† |
| Sex | *Male, Female, Unknown* |
| Race | *Caucasian, African American, Asian, Native Hawaiian/Pacific Islander, American/Alaskan Native, Other* |
| Ethnicity | *Hispanic (1=Yes, 0=No)* |
| ObesityICD | *ICD code†† for obesity anytime over 'study' period (1=Yes, 0=No)* |
| ObesityBMI | *BMI ≥ 30 anytime over 'study' period (1=Yes, 0=No)* |
| Diagnosis: AsthmaDx, CroupDx, ReactiveAirwayDx, CoughDx, PneumoniaDx | *One or more diagnoses of select respiratory disorders (defined by high-level ICD categories) over 'study' period; 1=Yes, 0=No)* |
| EstResidentialDensity | *US Census Bureau ACS 2012-2016 estimated total population [block group], binned as quintiles (1, 2, 3, 4, 5)* |
| EstResidentialDensity25Plus | *US Census Bureau ACS 2012-2016 estimated total population aged 25 years or older [block group], binned as quintiles (1, 2, 3, 4, 5)* |
| EstProbabilityNonHispWhite | *US Census Bureau ACS 2012-2016 estimated proportion of persons who are non-Hispanic white [block group], binned as quartiles (1, 2, 3, 4)* |
| EstProbabilityHouseholdNonHispWhite | *US Census Bureau ACS 2012-2016 estimated proportion of households that are non-Hispanic white [block group], binned as quartiles (1, 2, 3, 4)* |
| EstProbabilityHighSchoolMaxEducation | *US Census Bureau ACS 2012-2016 estimated proportion persons aged 25 y or older with a HS diploma or less at their highest level of schooling [block group], binned as quartiles (1, 2, 3, 4)* |
| EstProbabilityNoAuto | *US Census Bureau ACS 2012-2016 estimated proportion of households without an automobile [block group], binned as quartiles (1, 2, 3, 4)* |
| EstProbabilityNoHealthIns | *US Census Bureau ACS 2012-2016 estimated proportion of persons without health insurance [block group], binned as quartiles (1, 2, 3, 4)* |
| EstProbabilityESL | *US Census Bureau ACS 2012-2016 estimated proportion of persons 5 y or older who sometimes speak a language other than English at home [block group], binned as quartiles (1, 2, 3, 4)* |
| EstHouseholdIncome | *US Census Bureau ACS 2012-2016 estimated median household income [block group], binned as quintiles (1, 2, 3, 4, 5)* |
| MajorRoadwayHighwayExposure | *US Census TIGERline distance in meters from household to nearest major road/highway (1 = 0-49, 2 = 50-99, 3 = 100-199, 4 = 200-299, 5 = 300-499, 6 = >=500 meters)* |
| RoadwayDistanceExposure | *US DOT distance in meters from household to nearest roadway (1 = 0-49, 2 = 50-99, 3 = 100-199, 4 = 200-299, 5 = 300-499, 6 = >=500 meters)* |
| RoadwayType | *UNC DOT roadway classification (e.g., major highway)* |
| RoadwayAADT | *US DOT Annual average daily traffic estimate* |
| RoadwaySpeedLimit | *US DOT Roadway speed limit* |
| RoadwayLanes | *UNC DOT Roadway number of lanes* |
| AvgDailyPM2.5Exposure | *UNC IE average estimated average daily PM2.5 exposure over 'study' period, binned as quintiles (1, 2, 3, 4, 5)* |
| MaxDailyPM2.5Exposure | *UNC IE average estimated maximum daily exposure over 'study' period, binned as quintiles (1, 2, 3, 4, 5)* |
| AvgDailyOzoneExposure | *UNC IE average estimated average daily ozone exposure over ‘study’ period, binned as quintiles (1, 2, 3, 4, 5)* |
| MaxDailyOzoneExposure | *UNC IE average estimated maximum daily exposure over ‘study’ period, binned as quintiles (1, 2, 3, 4, 5)* |
| Medications Prescribed or  Administered: Prednisone, Fluticasone, Mometasone, Budesonide, Beclomethasone, Ciclesonide, Flunisolide, Albuterol, Metaproterenol, Diphenhydramine, Fexofenadine, Cetirizine, Ipratropium, Salmeterol, Arformoterol, Formoterol, Indacaterol, Theophylline, Omalizumab, Mepolizumab | *One or more prescriptions/administrations of medication over 'study' period (1=Yes, 0=No)* |
| Laboratory Tests at Visit: WBC, HCT, PLT, FEV, FVC | *Flags for first laboratory measure at visit, binned as quintiles (1, 2, 3, 4, 5)* |
| TotalEDInpatientVisits | *Total # ED/inpatient visits for respiratory issue(s) (defined by same ICD codes used to pull patients with asthma-like conditions) over ‘study’ period (0, 1, 2, 3, …)* |

*Abbreviations: ACS = American Community Survey; DOT = Department of Transportation; ED = Emergency Department; IE = Institute for the Environment; PM25 = particulate matter ≤ 2.5 µm in diameter*

\*The feature variables listed in the table are those for the patient-level tables, which include data on each patient for each year of available data (i.e., data on individual patients are represented as rows in the table). Similar feature variables are available for the visit-level tables, although the variables are sometimes treated differently. For example, PM2.5 exposures are expressed in relation to the 24-hour and two-week period before visits, not in relation to the one-year ‘study’ period, as was done for the patient-level tables. Additional feature variables (e.g., laboratory measures) are available for select years. Further information can be accessed via the [ICEES OpenAPI](https://icees.renci.org/apidocs).

†Maximum age is 89 years, per HIPAA regulations

††The ICD codes for obesity and for the selection of patients with asthma-like conditions can be found in footnote two of the main manuscript.