Supplemental Figure 1. Flowchart of participant inclusion criteria.

15,792 participants at baseline

1,032 participants who are Asian, American Indian, not white from MN or MI, not black from MS

2,368 participants with self-reported asthma or chronic lung disease at Visit 1, or ICD-9 codes for COPD

13,321 participants remain

4,038 participants deceased by Visit 5

5,263 participants remain (included in multiple imputation for sensitivity analysis)

3,563 participants did not attend Visit 5

5,720 participants remain (included in main multiple imputation)

3,640 participants with incomplete or inadequate lung function measurements

661 participants with incomplete or inadequate arterial stiffness measurements

59 participants with outlying values of lung function or central arterial stiffness

3,360 participants in complete-case analysis
Supplemental Table 1. Demographic and health-related characteristics of the analytic sample at baseline, by vital status at ARIC Visit 5.

|                                         | Met inclusion criteria, no missing data | Missing/inadequate LF or cfPWV measurements | Alive, but did not attend Visit 5 |
|----------------------------------------|----------------------------------------|---------------------------------------------|----------------------------------|
|                                         | n (%)                                  | n (%)                                       | n (%)                           |
| Total analytic sample (n=9,283)         | 3,360 (36.2)                           | 2,360 (25.4)                                | 3,563 (38.4)                    |
| Study Center                           |                                        |                                             |                                 |
| Forsyth County, NC                     | 649 (19.3)                             | 603 (25.5)                                  | 1,144 (32.1)                    |
| Jackson, MS                            | 709 (21.1)                             | 553 (23.4)                                  | 760 (21.3)                      |
| Suburbs of Minneapolis, MN             | 1,054 (31.4)                           | 651 (27.6)                                  | 892 (25.0)                      |
| Washington County, MD                  | 948 (28.2)                             | 553 (23.4)                                  | 767 (21.5)                      |
| Female sex                             | 2,007 (59.7)                           | 1,355 (57.4)                                | 2,173 (61.0)                    |
| Race                                    |                                        |                                             |                                 |
| Black                                  | 749 (22.3)                             | 606 (25.7)                                  | 926 (26.0)                      |
| White                                  | 2,611 (77.7)                           | 1,754 (74.3)                                | 2,637 (74.0)                    |
| Age at Visit 1, mean (SD)              | 51.4 (4.9)                             | 53.0 (5.4)                                  | 54.1 (5.7)                      |
| Body Mass Index at Visit 1, mean (SD)  | 26.5 (4.1)                             | 28.2 (5.6)                                  | 27.8 (5.3)                      |
| High Fasting Plasma Glucose at Visit 1  | 130 (3.9)                              | 195 (8.3)                                   | 314 (8.9)                       |
| Missing                                | 21                                     | 19                                          | 33                              |
| Cigarette Smoking Status at Visit 1    |                                        |                                             |                                 |
| Current                                | 498 (14.9)                             | 412 (17.5)                                  | 795 (22.3)                      |
| Former                                 | 1,115 (33.2)                           | 791 (33.6)                                  | 1,131 (31.8)                    |
| Never                                  | 1,744 (52.0)                           | 1,155 (49.0)                                | 1,634 (45.9)                    |
| Missing                                | 3                                      | 2                                           | 3                               |
| Adjusted\(^1\) FEV\(_1\) at Visit 1, mean (SD) | 3.1 (0.6) | 2.9 (0.6) | 2.8 (0.6) |
| Missing                                | 0                                      | 321                                         | 510                             |
| Adjusted\(^1\) FVC at Visit 1, mean (SD) | 4.0 (0.8) | 3.8 (0.8) | 3.8 (0.8) |
| Missing                                | 0                                      | 321                                         | 510                             |
| cfPWV at Visit 5, mean (SD)            | 1,161.2 (302.9)                        | 1,230.8 (538.8)                             | ---                             |
| Missing                                | 0                                      | 1,053                                       | 3,563                           |

\(^1\)Excluding participants with inadequate spirometry measurements defined as meeting at least one of these conditions: data recording error (computer started after the start of expiration), breath-hold leak >5%, submaximal participant effort, spirogram not calibrated correctly, spirogram not reproducible; adjusted for age, height, sex, and race at Visit 1.
### Supplemental table 2. Complete case analysis of the minimally and fully adjusted, predicted difference in pulse wave velocity (cm/s) prospectively associated with a 1 L greater lung function at Visit 1 and cross-sectionally at Visit 5, and the minimally and fully adjusted, predicted difference in pulse wave velocity (cm/s) associated with a 1 L decline in lung function over 20 years, (N=3,360)

|                      | Model 1 |                | Model 2 |                |
|----------------------|---------|----------------|---------|----------------|
|                      | β estimate | 95% CI          | β estimate | 95% CI          |
| **Lung function at Visit 1** |         |                |         |                |
| FEV₁                | -92.6  | -113.6, -71.5  | -39.6  | -64.4, -14.8   |
| FVC                 | -69.5  | -86.2, -52.8   | -28.6  | -49.2, -8.0    |
| **Lung function at Visit 5** |         |                |         |                |
| FEV₁                | -81.9  | -103.6, -60.2  | -28.3  | -52.7, -3.9    |
| FVC                 | -63.1  | -80.2, -46.0   | -22.0  | -42.5, -1.4    |
| **Decrease in lung function*** |         |                |         |                |
| FEV₁                | -55.3  | -107.2, -3.5   | -37.8  | -88.9, 13.2    |
| FVC                 | -29.8  | -71.7, 12.1    | -19.8  | -60.6, 20.9    |

FEV₁: forced expiratory volume in 1 second in liters; FVC: forced vital capacity in liters; cfPWV: carotid-femoral pulse wave velocity in cm/s; 95% CI: 95% confidence interval; β: the adjusted, predicted difference in pulse wave velocity (cm/s) associated with a 1 L difference in the lung function parameter.

*Mean centered decrease in lung function per 20 years.

Associations of lung function at Visit 1 and Visit 5 with continuous cfPWV assessed using multivariable linear regression.

Associations of predicted 20-year decrease in lung function from Visit 1 to Visit 5 with continuous cfPWV assessed using linear mixed effects regression and linear regression models.

Model 1 adjusted for height of the participant.

Model 2 adjusted for race-center, sex, smoking status, age, time between measurements, height, BMI, high fasting plasma glucose, and relevant interaction terms.

### Supplemental table 3. Complete case analysis of the adjusted, predicted odds of “high cfPWV” (quartile 4 of cfPWV vs. quartiles 1-3) prospectively associated with a 1 L greater lung function at Visit 1 and cross-sectionally at Visit 5, and the adjusted, predicted odds of “high cfPWV” associated with a 1 L decline in lung function over 20 years, (N=3,360)

|                      | Model 1 |                | Model 2 |                |
|----------------------|---------|----------------|---------|----------------|
|                      | OR  | 95% CI          | OR  | 95% CI          |
| **Lung function at Visit 1** |         |                |         |                |
| FEV₁                | 0.52  | 0.44, 0.62      | 0.79  | 0.64, 0.97     |
| FVC                 | 0.60  | 0.52, 0.68      | 0.81  | 0.68, 0.97     |
| **Lung function at Visit 5** |         |                |         |                |
| FEV₁                | 0.59  | 0.50, 0.70      | 0.87  | 0.71, 1.08     |
| FVC                 | 0.65  | 0.57, 0.74      | 0.88  | 0.74, 1.05     |
| **Decrease in lung function*** |         |                |         |                |
| FEV₁                | 0.65  | 0.43, 0.96      | 0.77  | 0.50, 1.19     |
| FVC                 | 0.77  | 0.56, 1.06      | 0.86  | 0.61, 1.21     |

Referent group: quartiles 1-3 of cfPWV

FEV₁: forced expiratory volume in 1 second in liters; FVC: forced vital capacity in liters; cfPWV: carotid-femoral pulse wave velocity in cm/s; OR: odds ratio; 95% CI: 95% confidence interval.

“High cfPWV” defined as cfPWV = 1324-2855 cm/s

*Mean centered decrease in lung function per 20 years.

Associations of lung function at Visit 1 and Visit 5 with "high cfPWV" assessed using multivariable logistic regression.

Associations of predicted decrease in lung function from Visit 1 to Visit 5 with "high cfPWV" assessed using linear mixed effects regression and logistic regression models.

Model 1 adjusted for height of the participant.

Model 2 adjusted for race-center, sex, smoking status, age, time between measurements, height, BMI, high fasting plasma glucose, and relevant interaction terms.
