

Supplementary Materials

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Supplementary Table 1. Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Title Page
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	3-4
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	5-6
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	6
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	7 Supplementary Table 2
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	6-7
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Supplementary Material A
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	6-9
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	8-9
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	7
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	6-7
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	8-9
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	N/A
Synthesis	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention	9-10, 11

Section and Topic	Item #	Checklist item	Location where item is reported
methods		characteristics and comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	9-10
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	9-10
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	9-10
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	9-10
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	8-9
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	10-11
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	N/A
Study characteristics	17	Cite each included study and present its characteristics.	11-13; Table 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Supplementary Table 3
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Figures 2-5; Supplementary Tables 4-7
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	11; Table 1; Supplementary Table 3
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	13-20
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A

Section and Topic	Item #	Checklist item	Location where item is reported
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	20-23
	23b	Discuss any limitations of the evidence included in the review.	23-25
	23c	Discuss any limitations of the review processes used.	N/A
	23d	Discuss implications of the results for practice, policy, and future research.	25
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	6
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	6
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	26
Competing interests	26	Declare any competing interests of review authors.	27
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	26

Supplementary Material A. Systematic Review's Search Terms

Pubmed MeSH Terms

((((((((pulmonary disease, chronic obstructive[MeSH Terms]) OR (classification[MeSH Subheading])) OR (diagnosis[MeSH Subheading])) OR (epidemiology[MeSH Subheading])) OR (mortality[MeSH Subheading])) OR (prevention & control[MeSH Subheading])) AND (((((((tobacco products[MeSH Terms]) OR (tobacco, smokeless[MeSH Terms])) OR (tobacco smoking[MeSH Terms])) OR (vaping[MeSH Terms])) OR (electronic nicotine delivery systems[MeSH Terms])) AND ((prevalence[MeSH Terms]) OR (epidemiology[MeSH Terms])) AND (united states[MeSH Terms]))

Ovid Medline/EMBASE4 Keywords

((US.ab,ti. OR USA.ab,ti.) OR (exp United States/ep [Epidemiology])) AND ((COPD.ab,ti. OR chronic obstructive pulmonary disease.ab,ti.) OR (Pulmonary disease chronic obstructive.mp. or exp Pulmonary Disease, Chronic Obstructive/)) AND (((cigarettes.ab,ti. OR cigars.ab,ti. OR snus.ab,ti. OR smokeless tobacco.ab,ti. OR e-cigarettes.ab,ti. OR ENDS.ab,ti. OR cigarillos.ab,ti. OR cigarette.ab,ti. OR "cigar".ab,ti. OR tobacco.ab,ti.) OR ((tobacco products.mp. or exp Smoking/ or exp Tobacco/ or exp Tobacco Products/ or exp Female/ or exp Tobacco, Smokeless/) OR (exp Vaping/ae, ep, mo, pc, td [Adverse Effects, Epidemiology, Mortality, Prevention & Control, Trends]) OR (electronic nicotine delivery systems.mp. or exp Electronic Nicotine Delivery Systems/))) AND (((prevalence.ab,ti. OR epidemiology.ab,ti. OR incidence.ab,ti.)) OR (exp Prevalence/) OR (exp Epidemiology/cl, di, sn, td [Classification, Diagnosis, Statistics & Numerical Data, Trends]))

Supplementary Table 2. Systematic Review’s Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
● COPD Trends/prevalence, Stratified by tobacco product and race ● Published in English language ● Data from US participants // National Studies ● Cross-sectional studies ● Research with well-established study protocols ● Data from disease-free participants other than COPD ● No medications or substances administered ● INCLUDE_COPD microsimulation. Label as “COPD-micosimulation” if it is from the US & include	● Not COPD prevalence, emphysema and chronic bronchitis, lower respiratory disease data (WRONG OUTCOME) ● No English (FOREIGN LANGUAGE) ● Not US data (WRONG POPULATION_ USA) ● No clinical trials or simulation models (WRONG STUDY DESIGN) ● Not study protocols, Conference procedures, abstracts, or systematic reviews, case reports (WRONG PUBLICATION TYPE) ● Diseased population (e.g., HIV, COVID-19, hospitalized population) (WRONG POPULATION_ Disease) ● Use of drugs, substances or other chemicals (e.g., marijuana, cocaine) (WRONG DRUGS)

Supplementary Material B. Description of US National Representative Health Surveys

National Health and Nutrition Examination Survey (NHANES)

The NHANES is a population-based, cross-sectional survey conducted by the CDC. It is designed to assess the health of the noninstitutionalized civilian household population in the US states but not territories.^{1,2} The survey was established in 1971 and became a continuous annual survey in 1999, with data released in two-year cycles. Approximately 5,000 individuals are selected each year through multistage probability sampling. NHANES gathers demographic, socioeconomic, dietary, laboratory, and health-related data through at-home interviews and health assessments conducted in Mobile Examination Centers (MECs). These assessments take place in 15 counties across the US, where trained professionals administer laboratory tests and medical, dental, and physiological examinations. Although NHANES was designed as a cross-sectional survey, it has included longitudinal follow-up components in certain cycles (NHANES III (1988-1994) and 2007-2014). NHANES collected spirometry values for adults aged 18 and older between the 1988-1994 and 2007-2012 cycles.

National Health Interview Survey (NHIS)

The NHIS is a population-based, cross-sectional survey that assesses the health of the noninstitutionalized US population aged 18 and older.³ It is conducted by the National Center for Health Statistics (NCHS), a part of the CDC. This survey began in 1957 and is designed to provide precise and current statistical data on the frequency, distribution, and effects of disease and disability across the nation (US states only). It also evaluates the services provided for or as an outcome of such conditions in the nation. The NHIS is administered annually, with field personnel employed and trained by the Census Bureau conducting more than 30,000 at-home interviews. The

survey gathers information on health conditions, health behaviors, and access to healthcare allowing for the assessment of health indicators across a broad spectrum of socioeconomic as well as demographic variables.

Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is a population-based, cross-sectional survey that monitors the health of the non-institutionalized adult population aged 18 years and older.⁴ The survey was established in 1984 and is conducted by the CDC in collaboration with US states and territories. It is considered the largest continuously health survey system in the world, conducting more than 400,000 interviews annually. The survey is administered via telephone interviews using random digit dialing and gathers information on sociodemographic characteristics, chronic diseases, health behaviors, and access to healthcare.

Population Assessment of Tobacco and Health (PATH)

The PATH study is an ongoing longitudinal cohort study that tracks tobacco use patterns, health behaviors, and medical history in the noninstitutionalized US population aged 12 years and older.^{5,6} The study began in 2013 and is sponsored by the National Institute on Drug Abuse (NIDA), the National Institutes of Health (NIH), and the Food and Drug Administration (FDA). PATH gathers self-reported data through in-person interviews and online self-administered surveys. The study follows participants across multiple waves of data collection, occurring annually or biennially. The first wave included 45,971 participants in its first wave and as of 2024, the study has completed seven waves, with Wave 8 in progress.⁷ PATH covers the US states but not territories.

Supplementary Table 3. NIH Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies

Criteria	Bang et al., 1993 [8]	Doney et al., 2015 [9]	Ford et al., 2013 [10]	Wang et al., 2023 [11]	Cadham et al., 2024 [12]	Kurth et al., 2019 [13]	Diaz-Guzman et al., 2011 [14]	Tilert et al., 2018 [15]	Dirisanala et al., 2023 [16]	Schiller et al., 2005 [17]	Bang et al., 2009 [18]	Bang et al., 2013 [19]	Doney et al., 2014 [20]	Ward et al., 2017 [21]	Steinberg A.W. et al., 2025 [22]	Ford et al., 2013 [23]	Kozac et al., 2012 [24]	Cunningham et al., 2015 [25]	Liu et al., 2023 [26]	Liu et al., 2019 [27]	Wheaton et al., 2019 [28]	Paulin et al., 2022 [29]
1. Was the research question or objective in this paper clearly stated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Was the study population clearly specified and defined?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3. Was the participation rate of eligible persons at least 50%?	Yes	Yes	Yes	CD	Yes	Yes	CD	Yes	CD	Yes	CD	CD	Yes	Yes	CD	Yes	Yes	Yes	No	No	No	CD
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Was a sample size justification, power description, or variance and effect estimates provided?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?																						
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?																						
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10. Was the exposure(s) assessed more than once over time?																						
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12. Were the outcome assessors blinded to the exposure status of participants?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
13. Was loss to follow-up after baseline 20% or less?	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Total Points	8/11	8/11	8/11	7/11	8/11	8/11	7/11	8/11	7/11	8/11	7/11	7/11	8/11	7/11	7/11	8/11	8/11	8/11	7/11	7/11	6/11	7/11
Quality Rating (Good, Fair, or Poor)	Good	Good	Good	Fair	Good	Good	Fair	Good	Fair	Good	Fair	Fair	Good	Good	Fair	Good	Good	Good	Fair	Fair	Fair	Fair

Supplementary Table 4. COPD Prevalence by Sex, Smoking Status, and Race

Study (Author, Survey, Design, Year)	Population Size	Measures		Prevalence Estimates (SE or 95% CI)			
		Definition and Diagnostic Criteria	Smoking status definition	Overall	By Sex	By Smoking Status	By Race
NHANES							
Bang, K. M et al 1992 ⁸ NHANES Cross-sectional, 1971-1975	Black adult examinees who had satisfactory spirometry trials for COPD diagnosis, aged between 25 and 74 yrs Weighted, (sample = 585) [‡]	Spirometry , COPD was defined as an FEV1 less than 65% of the predicted value.	Current smoker: Not defined. Former smoker: Not defined. Never smoker: An individual who had never smoked or smoked less than 100 cigarettes in his or her lifetime.	NA	M: 3.7 F: 6.7	Current and former smoker: M: 5.4 F: 5.0 Never smoker: M: 0 F: 8.4	Black individuals: 5.4
Doney, B. et al 2014 ⁹ (a) NHANES Cross-sectional, 1988 -1994	Adults 40-79 yrs N=89,151 (sample= 7,667) [*]	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%)	NA	Mild+ AO: 16.6 (0.8) Mod+ AO: 6.4 (0.5) Severe AO: 2.2 (0.2)	Mild+ AO: M: 19.0 (1.1) F: 14.6 (0.9) Mod+ AO: M: 6.8 (0.5) F: 6.1 (0.6) Severe AO: M: 2.4 (0.3) F: 2.2 (0.3)	Mild+ AO: Never smoker: 8.0 (0.8) Former smoker:16.2 (1.0) Current smoker: 31.8 (1.3) Mod+ AO: Never smoker: 1.9 (0.4) Former smoker: 6.0 (0.7) Current smoker:14.9 (1.0) Severe AO: Never smoker: 0.7 (0.2) Former smoker:1.8 (0.3)	Mild+ AO: NH White: 17.3 (0.8) NH Black: 15.9 (1.0) Mexican American:12.7 (0.8) Mod+ AO: NH White: 6.7 (0.5) NH Black: 5.8 (0.7) Mexican American: 3.7 (0.6) Severe AO: NH White: 2.5 (0.3) NH Black: 1.5 (0.3)

						Current smoker: 5.8 (0.7)	Mexican American: 0.8 (0.2)
Doney, B. et al 2014 ⁹ (b)	Adults aged 40-79 yrs,	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%) GOLD (Pre-Bronchodilator; Pre- BD) definition of AO: Mild+ AO (Stage 1): FEV1/FVC<70% Mod+ AO (Stage 2): FEV1/FVC<70% and FEV1<80%. Severe AO (Stage 3): Pre-BD FEV1/FVC < 0.7 and FEV1 < 50% predicted.	NA	By ATS/ERS Definition: Mild+ AO: 14.5 (0.7) Mod+ AO: 4.4 (0.4) Severe AO: 1.1 (0.2) By GOLD (Pre- BD) Definition: Mild+ AO (Stage 1): 20.0 (1.0) Mod+ AO (Stage 2): 9.0 (0.6)	By ATS/ERS Definition: Mild+ AO: M: 15.4 (0.9) F:13.8 (1.0) Mod+ AO: M: 4.5 (0.5) F:4.2 (0.4) Severe AO: M:1.1 (0.3) F: 1.0 (0.2) By GOLD (Pre-BD) Definition: Mild+ AO (Stage 1): M: 24.0 (1.1) F: 16.3 (1.2) Mod+ AO (Stage 2): M: 9.4 (0.8) F: 8.6 (0.7)	By ATS/ERS Definition: Mild+ AO: Never smoker: 8.2 (0.8) Former smoker:14.5 (1.3) Current smoker: 34.4 (1.8) Mod+ AO: Never smoker: 1.1 (0.2) Former smoker: 4.5 (0.7) Current smoker: 14.9 (1.3) Severe AO: Never smoker: 0.3 (0.1) Former smoker: 1.1 (0.3) Current smoker:3.4 (0.7) By GOLD (Pre- BD) Definition: Mild+ AO (Stage 1): Never smoker: 11.8 (1.1) Former smoker: 22.5 (1.2) Current smoker: 40.4 (1.9)	By ATS/ERS Definition: Mild+ AO: NH White: 15.9 (0.8) NH Black: 13.6 (1.2) Mexican American: 8.4 (0.8) Mod+ AO: NH White: 4.7 (0.5) NH Black: 4.7 (0.7) Mexican American: 1.7 (0.3) Severe AO: NH White: 1.0 (0.2) NH Black: 1.8 (0.5) Mexican American: 0.6 (0.3) By GOLD (Pre- BD) Definition: Mild+ AO (stage 1): NH White: 21.9 (1.1) NH Black: 16.3 (1.2)

						Mod+ AO (Stage 2): Never smoker: 3.9 (0.5) Former smoker: 9.4 (1.0) Current smoker: 24.0 (1.4)	Mexican American: 10.3 (0.8) Mod+ AO (stage 2): NH White: 9.8 (0.7) NH Black: 8.1 (0.8) Mexican American: 4.0 (0.5)
Ford, E.S. et al 2013 ¹⁰ (a) NHANES III Cross-sectional, 1988-1994	Adults aged 20-79 yrs Unweighted (sample= 14,360)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	13.3 (0.6) Obstructive: Mild: 7.3 (0.3) Mod: 5.7 (0.3) Sev: 1.5 (0.2) Any: 14.6 (0.5) Restrictive: 7.6 (0.4) None: 77.8 (0.6)	M: 14.6 (0.7) F: 12.3 (0.7) M Obstructive: Mild: 9.8 (0.5) Mod: 6.6 (0.5) Sev: 1.7 (0.2) Any: 18.1 (0.8) Restrictive: 6.5 (0.6) None: 75.4 (0.9) F Obstructive: Mild: 5.1 (0.3) Mod: 5.0 (0.3) Sev: 1.4 (0.2) Any: 11.5 (0.6) Restrictive: 8.5 (0.6) None: 79.9 (0.6)	Current smokers: 23.0 (0.9) Former smokers: 13.0 (0.9) Never smokers: 7.6 (0.6) Current smokers Obstructive: Mild: 9.4 (0.8) Mod: 10.8 (0.7) Sev: 3.8 (0.4) Any: 1.2 (0.2) Restrictive: 8.3 (0.7) None: 67.7 (0.9) Former smokers Obstructive: Mild: 8.9 (0.7) Mod: 5.5 (0.5) Sev: 1.2 (0.2) Any: 15.6 (1.0) Restrictive: 6.0 (0.7) None: 78.4 (1.2) Never smokers Obstructive: Mild: 4.8 (0.4)	White: 14.0 (0.7) Black: 11.9 (0.7) Mexican American: 10.4 (0.6) Other: 9.4 (2.0) White Obstructive: Mild: 7.9 (0.4) Mod: 5.9 (0.3) Sev: 1.6 (0.2) Any: 15.4 (0.6) Restrictive: 6.5 (0.5) None: 78.1 (0.6) Black Obstructive: Mild: 5.3 (0.5) Mod: 5.4 (0.5) Sev: 0.9 (0.2) Any: 11.6 (0.7) Restrictive: 9.5 (0.6) None: 78.9 (0.8) Mexican American Obstructive: Mild: 4.7 (0.4)

						Mod: 2.9 (0.3) Sev: 0.6 (0.1) Any: 8.2 (0.6) Restrictive: 8.2 (0.7) None: 83.5 (0.9)	Mod: 3.3 (0.4) Sev: 0.7 (0.1) Any: 8.7 (0.6) Restrictive: 6.7 (0.4) None: 84.6 (0.9) Other Obstructive: Mild: 4.5 (1.3) Mod: 5.7 (1.2) Sev: -- Any: 12.0 (1.6) Restrictive: 17.7 (2.3) None: 70.3 (2.3)
Ford, E.S. et al 2013 ¹⁰ (b) NHANES Cross-sectional, 2007-2010	Adults aged 20-79 yrs Unweighted (sample= 9,024)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	12.5 (0.5) Obstructive: Mild: 7.5 (0.4) Mod: 5.4 (0.3) Sev: 0.7 (0.1) Any: 13.5 (0.6) Restrictive: 6.5 (0.5) None: 79.9 (0.6)	M: 13.7 (0.9) F: 11.4 (0.7) M Obstructive: Mild: 10.1 (0.5) Mod: 6.1 (0.5) Sev: 0.7 (0.2) Any: 16.8 (0.8) Restrictive: 6.9 (0.6) None: 76.2 (0.9) F Obstructive: Mild: 5.0 (0.5) Mod: 4.7 (0.5) Sev: 0.7 (0.1) Any: 10.4 (0.7) Restrictive: 6.1 (0.5) None: 83.5 (0.6)	Current smokers: 25.6 (1.0) Former smokers :12.1 (1.1) Never smokers: 7.9 (0.6) Current smokers Obstructive: Mild: 11.3 (0.9) Mod: 13.0 (0.8) Sev: 2.1 (0.4) Any: 26.4 (1.0) Restrictive: 7.2 (0.8) None: 66.4 (1.3) Former smokers Obstructive: Mild: 8.8 (0.7) Mod: 5.7 (0.6) Sev: 0.7 (0.2) Any: 15.2 (1.0) Restrictive: 6.1 (0.7) None: 78.8 (1.3)	White: 13.8 (0.6) Black: 11.9 (0.9) Mexican American: 8.3 (0.6) Other: 8.1 (1.2) White Obstructive: Mild: 8.7 (0.4) Mod: 5.9 (0.4) Sev: 0.7(0.1) Any: 15.3 (0.6) Restrictive: 5.2 (0.5) None: 79.5 (0.7) Black Obstructive: Mild: 5.5 (0.5) Mod: 4.2 (0.5) Sev: 1.0 (0.3) Any: 10.7 (0.8) Restrictive: 7.3 (0.7) None: 82.0 (0.8)

						Never smokers Obstructive: Mild: 5.2 (0.4) Mod: 2.5 (0.3) Sev: --- Any: 8.0 (0.6) Restrictive: 6.5 (0.5) None: 85.4 (0.6)	Mexican American Obstructive: Mild: 4.0 (0.5) Mod: 2.1 (0.4) Sev: --- Any: 6.3 (0.5) Restrictive: 6.2 (0.6) None: 87.5 (0.8) Other Obstructive: Mild: 4.1 (0.9) Mod: 4.8 (0.9) Sev: --- Any: 9.7 (1.2) Restrictive: 15.2 (1.5) None: 75.1 (1.7)
Wang et al 2023 ¹¹ NHANES Retrospective cohort, 2007-2012	Young people aged 20-50 years N=9,234 (sample size:7,784) ⁸	Spirometry, GOLD criteria FEV1/FVC<0.7	N/A	Unweighted:1.67 Weighted: 1.64	Males: 2.59 Females: 0.72	N/A	N/A
Cadham et al 2024 ¹² (a) NHANES Cross-sectional, 2007-2012	Adults aged 20-79 yrs N=13,328 [‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	13.8 (12.8-14.90) Self-Reported - 5.9 (5.0-6.9)	NA	NA	NA

Cadham et al 2024¹² (b) NHANES Cross-sectional, 2007-2008	Adults aged 20-79 yrs N = 4,237*	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	14.3 (12.4-16.3) Self-Reported - 6.3 (4.7-8.7)	Male: GOLD (1-4): 17.4 (14.7-20.5) GOLD 1: 9.9 (8.6-11.4) GOLD 2: 6.6 (4.9-8.8) GOLD 3-4: 1 (0.4-2.2) Female: GOLD (1-4): 11.1 (9.2-13.5) GOLD 1: 4.4 (3.4-5.8) GOLD 2: 5.9 (4.4-8.0) GOLD 3-4: 0.8 (0.5-1.2)	Current smoker: GOLD (1-4): 22.1 (18.8-25.8) GOLD 1: 8.9 (6.8-11.6) GOLD 2: 11.8 (9.4-14.5) GOLD 3-4: 1.5 (0.6-3.5) Former smoker: GOLD (1-4): 19.7 (16.2-23.6) GOLD 1: 10.2 (8.1-12.8) GOLD 2: 8 (5.8-10.6) GOLD 3-4: 1.4 (0.7-2.6) Never smoker: GOLD (1-4): 9.3 (6.3-10.8) GOLD 1: 4.9 (3.6-6.7) GOLD 2: 3 (2.1-4.2) GOLD 3-4: 0.4 (0.2-0.9)	NHW: GOLD (1-4): 17.3 (15.5-19.2) GOLD 1: 9.3 (8.2-10.5) GOLD 2: 7.1 (5.8-8.6) GOLD 3-4: 0.9 (0.5-1.6) NHB: GOLD (1-4): 10.2 (7.9-13) GOLD 1: 1.9 (1.3-2.7) GOLD 2: 7.2 (5.2-9.8) GOLD 3-4: 1.1 (0.5-2.3) Mexican: GOLD (1-4): 3.8 (3-4.7) GOLD 1: 2.4 (1.7-3.3) GOLD 2: 1.3 (0.6-2.6) GOLD 3-4: 0.1 (0-0.6) Other Hispanic: GOLD (1-4): 6.7 (4.7-9.5) GOLD 1: 2.2 (1.3-3.7) GOLD 2: 4 (2.6-6) GOLD 3-4: 0.5 (0.2-1.6) Other: GOLD (1-4): 6.7 (3.5-12.4) GOLD 1: 2.1 (0.8-5.7)
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							GOLD 2: 3.5 (1.4-8.4) GOLD 3-4: 1.1 (0.2-5.7)
Cadham et al 2024 ¹² (c) NHANES Cross-sectional, 2009-2010	Adults aged 20-79 yrs N = 4,783 [‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	13.1 (11.2-15.4) Self-Reported - 4.6 (3.6-6.0)	Male: GOLD (1-4): 15.8 (13.6-18.3) GOLD 1: 9.3 (7.6-11.4) GOLD 2: 6 (4.9-7.3) GOLD 3-4: 0.5 (0.3-1.1) Female: GOLD (1-4): 10.5 (8.2-13.3) GOLD 1: 5.1 (3.4-7.7) GOLD 2: 4.5 (3.5-5.9) GOLD 3-4: 0.8 (0.5-1.5)	Current smoker: GOLD (1-4): 21.1 (17.9-24.6) GOLD 1: 9.5 (7.2-12.5) GOLD 2: 9.9 (8.2-11.9) GOLD 3-4: 1.7 (1.1-2.5) Former smoker: GOLD (1-4): 20.2 (16.8-24) GOLD 1: 11.6 (9.3-14.4) GOLD 2: 7.7 (6-9.7) GOLD 3-4: 0.9 (0.3-2.7) Never smoker: GOLD (1-4): 7.3 (5.7-9.3) GOLD 1: 4.6 (3.4-6.1) GOLD 2: 2.5 (2-3.2) GOLD 3-4: 0.2 (0.1-0.6)	NHW: GOLD (1-4): 15.5 (13.2-18) GOLD 1: 9.2 (7.5-11.2) GOLD 2: 5.7 (4.7-6.9) GOLD 3-4: 0.6 (0.4-1.1) NHB: GOLD (1-4): 10 (8.6-11.6) GOLD 1: 1.5 (0.9-2.8) GOLD 2: 6.9 (5.8-8) GOLD 3-4: 1.6 (0.9-2.9) Mexican: GOLD (1-4): 5 (3.6-7.1) GOLD 1: 3.6 (2.2-5.6) GOLD 2: 1.2 (0.6-2.4) GOLD 3-4: 0.3 (0.1-1.1) Other Hispanic: GOLD (1-4): 5.4 (3.6-8.1) GOLD 1: 2.8 (1.8-4.2) GOLD 2: 2.5 (1.2-5.2) GOLD 3-4: 0.1 (0-0.6)

							Other: GOLD (1-4): 11.7 (5.8-22.3) GOLD 1: 5.3 (1.8-14.3) GOLD 2: 5.8 (2.3-13.6) GOLD 3-4: 0.7 (0.2-3)
Cadham et al 2024 ¹² (d) NHANES Cross-sectional, 2011-2012	Adults aged 20-79 yrs N = 4,308*	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	14.1 (12.3-16) Self-Reported - 6.7 (5.2-8.6)	Male: GOLD (1-4): 17.9 (14.4-21.9) GOLD 1: 8.6 (6.1-12.0) GOLD 2: 8.1 (6.0-11.0) GOLD 3-4: 1.2 (0.6-2.2) Female: GOLD (1-4): 10.4 (8.0-13.4) GOLD 1: 4.4 (3.0-6.5) GOLD 2: 4.8 (3.6-6.4) GOLD 3-4: 1.2 (0.5-2.7)	Current smoker: GOLD (1-4): 25.7 (21.3-30.7) GOLD 1: 9.7 (8-11.8) GOLD 2: 12.9 (10.2-16.1) GOLD 3-4: 3.1 (1.8-5.3) Former smoker: GOLD (1-4): 22.3 (18.4-26.8) GOLD 1: 11 (7.9-15) GOLD 2: 9.8 (6.6-14.2) GOLD 3-4: 1.6 (0.7-3.6) Never smoker: GOLD (1-4): 6.4 (5.2-7.9) GOLD 1: 3.4 (2.5-4.7) GOLD 2: 2.8 (2-3.7) GOLD 3-4: 0.3 (0.1-0.7)	NHW: GOLD (1-4): 17.5 (15.2-20.1) GOLD 1: 8.2 (6.5-10.2) GOLD 2: 7.9 (6.3-10) GOLD 3-4: 1.4 (1-2) NHB: GOLD (1-4): 9.3 (7.8-11) GOLD 1: 1.7 (1.1-2.7) GOLD 2: 6.2 (5.1-7.4) GOLD 3-4: 1.4 (0.8-2.3) Mexican: GOLD (1-4): 4.7 (3.4-6.3) GOLD 1: 3.7 (2.6-5.1) GOLD 2: 1 (0.5-2) GOLD 3-4: 0 (0-0) Other Hispanic: GOLD (1-4): 5.9 (3.6-9.5) GOLD 1: 3.5 (2.2-5.5)

							GOLD 2: 2.3 (1-5.1) GOLD 3-4: 0.1 (0-0.6) Other: GOLD (1-4): 8.3 (5-13.6) GOLD 1: 4.3 (2.1-8.5) GOLD 2: 3.3 (1.7-6.3) GOLD 3-4: 0.8 (0.3-1.9)
Kurth, L. et al 2019 ¹³ (a) NHANES Cross-sectional, 2007-2010	Adults aged 18-79 yrs Unweighted (sample= 13,044)*	Spirometry, ATS/ERS criteria, Pre-BD, Mild+ AO: FEV1/FVC<LLN Mod+ and Sev AO: FEV1/FVC < LLN and FEV1 < 70% pred.	Never smokers: Individuals aged 18-19 who have not used tobacco or nicotine products in the last 5 days and have not smoked cigarettes in the past 5 days, as well as individuals aged 20-79 who have smoked less than 100 cigarettes in their lifetime. Ever smokers: Those 18-79-year-olds who used cigarettes in the past 5 days and those aged 20-79 years who smoked at least 100 cigarettes during their entire life.	Airflow obstruction 12.40 (11.63-13.18) Moderate and more severe airflow obstruction 3.05 (2.67-3.43)	Airflow obstruction M: 13.57 (12.14-15.00) F: 11.25 (10.07-12.43) Moderate and more severe airflow obstruction M: 3.34 (2.69-3.99) F: 2.77 (2.26-3.28)	Airflow obstruction Never smokers: 7.15 (6.21-8.00) Ever smokers: 18.47 (17.29-19.55) Moderate and more severe airflow obstruction Never smokers: 0.81 (0.54-1.08) Ever smokers: 5.45 (4.70-6.20)	Airflow obstruction NH White: 13.56 (12.59 -14.53) NH Black: 11.24 (9.89-12.58) Mexican American: 8.18 (7.17-9.20) Other Hispanic: 8.54 (6.98-10.11) Moderate and more severe airflow obstruction NH White: 3.49 (3.02 -3.96) NH Black: 2.95 (2.17-3.74) Mexican American: 0.75 (0.43-1.07) Other Hispanic: 1.51 (1.00-2.01)
Kurth, L. et al 2019 ¹³ (b) NHANES	Adults aged 20-79 yrs Unweighted (sample= 15,777)*	Self-reported COPD (CB or E): COPD was self-reported, doctor or health professional diagnosis of chronic bronchitis (and still have	Never smokers: Individuals aged 18-19 who have not used tobacco or nicotine products in the last 5 days and have not	3.47 (1.93-4.01)	M: 3.06 (2.43-3.69) F: 3.89 (3.15-4.62)	Never smokers: 1.48 (1.12-1.84) Ever smokers: 5.62 (4.77-6.44)	NH White: 3.85 (3.13 -4.57) NH Black: 3.52 (2.76-4.38)

Cross-sectional, 2007-2010		chronic bronchitis) or self-reported emphysema	smoked cigarettes in the past 5 days, as well as individuals aged 20-79 who have smoked less than 100 cigarettes in their lifetime. Ever smokers: Those 18- 79-year-olds who used cigarettes in the past 5 days and those aged 20-79 years who smoked at least 100 cigarettes during their entire life.				Mexican American: 1.11 (0.75-1.48) Other Hispanic: 2.04 (1.31-2.77)
Diaz-Guzman. E. et al 2011 ¹⁴ NHANES III Cross-sectional, 1988 -1994	Adults aged ≥ 25 years Weighted (sample: 15,203) [‡]	Self-reported COPD (CB or E): "Yes" to "Has a doctor ever told you that you have CB or E?". Pre-bronchodilator lung function, modified COPD criteria: Obstructed: FEV1/FVC < 70% and FEV1 < 80% pred. Restricted: FEV1/FVC $\geq$ 70% and FVC < 80% of pred.	Smoking status as a former or current smoker was considered if the individual responded "yes" to have smoked more than 100 cigarettes.	5.3 Obstructed: 24.3 Restricted: 8.2	NA	NA	NA
Tilert, T. et al 2018 ¹⁵ NHANES Cross-sectional, 2007-2012	Adults aged 40-79 yrs Weighted (sample= 10,219) [*]	Self-reported COPD (CB or E): A "yes" to "Has a doctor ever told you that you have E?" or "Do you still have CB?" Lung obstruction severity through spirometry assessment ATS/ERS: No measured lung obstruction Mild Obstruction: FEV1 > 70% pred. Moderate or severe obstruction: FEV1 $\leq$ 70% pred.	Current smoker: reported smoking at least 100 cigarettes in their lifetime and at the time of the interview reported smoking every day or some days OR by a serum cotinine value greater than 10ng/mL. Former smoker: reported smoking at least 100 cigarettes during their lifetime but currently did not smoke. Never smoker: reported smoking fewer than 100 cigarettes during their lifetime.	5.2 (0.4) No measured lung obstruction: 55.7% (3.0) Mild: 7.9% (1.1) Moderate or worse: 36.4% (2.9)	M: 4.8 (0.5) F: 5.6 (0.5)	Current smoker: 10.2 (0.9) Former smoker: 6.6 (0.6) Never smoker: 2.1 (0.2)	NH White: 5.9 (0.5) NH Black: 4.6 (0.6) Hispanic: 2.0 (0.3)

Dirisanala et al 2023 ¹⁶ NHANES Cross-sectional, 2015-2018	Participants aged $\geq$ 18 years, diagnosed with lung disease (asthma, E, CB, COPD) N: 178,300 [‡]	Self-reported COPD: A "Yes" response to "Ever told you had COPD?".	Current smoking status: A "Yes" response to "Smoked at least 100 cigarettes in life?" or "Do you now smoke cigarettes?" E-Cigarette use: A "Yes" response to "Have you/SP ever used an e-cigarette?"	4.26	NA	NA	NA
NHIS							
Schiller, J. S. et al 2005 ¹⁷ NHIS Cross-sectional, 1997 - 2002	Adults aged 25 or older N:175,631 (sample=11,238) [‡]	Self-reported COPD (CB or E or both): Adults participants who had been told by a health professional that they either had E, CB or both the conditions were considered to have a COPD.	Smoking status was classified into current smoker, former smoker and never smoker groups. Participants who reported being current smokers were asked whether they had attempted to quit smoking by abstaining for at least one day during the previous year.	6.1	NA	NA	NA
Bang, K. M. et al 2009 ¹⁸ NHIS Cross-sectional, 1997-2004	Adults aged $\geq$ 18 yrs, who are currently employed N=127,624 [‡]	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Current smokers: smoked at least 100 cigarettes in lifetime and currently continue to smoke. Former smokers: smoked at least 100 cigarettes in a lifetime but currently do not smoke. Never smokers: never smoked or those who had smoked <100 cigarettes during their entire lifetime.	4.0 (3.9-4.1)	M: 2.8 (2.7-2.9) F: 5.4 (5.3-5.6)	Current smokers: 6.6 (6.3-6.9) Former smokers: 4.4 (4.1-4.6) Never smokers: 2.8 (2.7-2.9)	NH White: 4.2 (4.1-4.3) NH Black: 3.4 (3.1-3.7) Other: 2.4 (2.1-2.8)
Bang, K. M. et al 2013 ¹⁹ (a) NHIS Cross-sectional, 1997-2004	Non-smokers aged > 25 years N=62,255 [‡]	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	2.8 (2.7-3.0)	NA	NA	NA

Bang, K. M. et al 2013 ¹⁹ (b) NHIS Cross-sectional, 1997-2000	Non-smokers aged > 25 years N=59,165 [‡]	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	2.8 (2.6-3.0)	NA	NA	NA
Bang, K. M. et al 2013 ¹⁹ (c) NHIS Cross-sectional, 2001-2004	Non-smokers aged > 25 years N = 65,346 [‡]	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	2.9 (2.7-3.1)	NA	NA	NA
Doney, B. et al 2014 ²⁰ NHIS Cross-sectional, 2004-2011	Adults aged between 40-70 yrs N=73,799 [§]	Self-reported COPD (CB or E): A "Yes" response to "Have you ever been told by a doctor or other health professional that you had...E?" or "During the past 12 months, have you been told by a doctor or other health professional that you had... CB?"	NA	4.18 (4.01-4.34)	M: 3.07 (2.85-3.28) F: 5.40 (5.12-5.67)	Current smokers: 7.47 (6.96-7.97) Former smokers: 4.92 (4.50-5.33) Never smokers: 2.74 (2.54-2.94)	White: 4.40 (4.22-4.59) Black: 3.41 (2.98-3.83) Other: 2.15 (1.65-2.66)

Ward, B. W. et al 2017 ²¹ NHIS Cross-sectional, 2012-2014	Adults aged ≥ 18 yrs N = 105,779*	Self-reported COPD (COPD or CB or E): A "yes" response to "Have you ever been told by a doctor or other health professional that you had E?", "Have you ever been told by a doctor or health professional that you had COPD?", and "During the past 12 months, have you ever been told by a doctor or other health professional that you had CB?"	Smoking status was classified as never, former, or current smokers (definition NA)	E and/or CB: 4.7 (4.6-4.9) COPD: 3.0 (0.08) (2.8-3.1) Emphysema, chronic bronchitis, and/or COPD: 6.1 (5.9-6.3)	E and/or CB: M: 3.9 (3.7-4.2) F: 5.5 (5.3-5.8) COPD only: M: 2.9 (2.7-3.1) F: 3.0 (2.9-3.2) Emphysema, chronic bronchitis, and/or COPD: M: 5.3 (5.0-5.6) F: 6.9 (6.6-7.2)	E and/or CB: Never smoker: 2.6 (2.4-2.8) Former smoker: 7.1 (6.6-7.6) Current smoker: 9.1 (8.6-9.7) COPD only: Never smoker: 0.9 (0.8-1.0) Former smoker: 5.9 (5.6-6.4) Current smoker: 6.3 (5.9-6.8) Emphysema, chronic bronchitis, and/or COPD: Never smoker: 3.2 (3.0-3.3) Former smoker: 9.7 (9.2-10.2) Current smoker: 11.8 (11.1-12.4)	E and/or CB: NH White: 5.4 (5.2-5.7) NH Black: 4.8 (4.4-5.3) Hispanic: 2.5 (2.2-2.8) NH Asian: 1.7 (1.3-2.1) NH Other: 6.6 (5.5-7.8) COPD only: NH White: 3.8 (3.6-4.0) NH Black: 2.1 (1.8-2.4) Hispanic: 0.9 (0.8-1.1) NH Asian: 0.7 (0.5-1.0) NH Other: 3.3 (2.6-4.4) Emphysema, chronic bronchitis, and/or COPD: NH White: 7.1 (6.8-7.4) NH Black: 5.9 (5.5-6.4) Hispanic: 3.1 (2.8-3.4) NH Asian: 2.0 (1.7-2.5) NH Other: 7.9 (6.7-9.3)
Steinberg A.W. et al 2025 ²² NHIS Cross-sectional,	Adults aged ≥ 40 yrs, N=23,028 [§]	Self-reported COPD (COPD or CB or E): A "yes" response to "Have you ever been told by a doctor or other health professional that you had chronic obstructive pulmonary	Smoking history was categorized as never, former, or current based on respondents' self-reported cigarette use (defined as having smoked more than	7.2	M: 7.8 F: 6.5	Never Smoker: M: 1.7 F: 3.2 Ever Smoker:	NA

2020		disease, COPD, emphysema or chronic bronchitis?"	100 cigarettes in their lifetime), including age of initiation, smoking frequency, and quitting status. Former and current smokers were combined as ever smokers for analysis			M: 11.5 F: 15.9	
Ford E.S. et al 2013 ²³ (a) NHIS Cross-sectional 1999-2011	Adults aged ≥ 25 yrs, 1999: 30,801 2000: 32,374 2001: 33,326 2002: 31,044 2003: 30,852 2004: 31,326 2005: 31,428 2006: 24,275 2007: 23,393 2008: 21,781 2009: 27,731 2010: 27,157 2011: 33,014 Unweighted Sample: ≥18 yrs respondents; analytic sample ≥25 yrs*	Self-reported COPD (CB or E): "Have you ever been told by a doctor or other health professional that you had emphysema?" and "During the past 12 months, have you been told by a doctor or other health professional that you had chronic bronchitis?"	NA	1999 5.7 age-adjusted 5.6 unadjusted 2000 6.1 age-adjusted 6.0 unadjusted 2001 6.9 age-adjusted 6.9 unadjusted 2002 5.9 age-adjusted 5.9 unadjusted 2003 5.3 age-adjusted 5.3 unadjusted 2004 5.7 age-adjusted 5.7 unadjusted 2005 5.6 age-adjusted 5.6 unadjusted 2006 5.8 age-adjusted 5.9 unadjusted 2007 4.9 age-adjusted 5.0 unadjusted 2008	M 1999: 4.6 2000: 4.8 2001: 5.6 2002: 4.8 2003: 4.3 2004: 4.5 2005: 4.6 2006: 4.9 2007: 4.1 2008: 4.3 2009: 4.9 2010: 4.7 2011: 4.3 F 1999: 6.7 2000: 7.3 2001: 8.1 2002: 6.9 2003: 6.3 2004: 6.8 2005: 6.6 2006: 6.7 2007: 5.6 2008: 6.9 2009: 7.1 2010: 6.5 2011: 7.0	NA	NH White 1999: 6.1 2000: 6.6 2001: 7.5 2002: 6.2 2003: 5.7 2004: 6.3 2005: 6.1 2006: 6.3 2007: 5.4 2008: 6.4 2009: 6.7 2010: 6.1 2011: 6.0 NH Black 1999: 4.3 2000: 5.4 2001: 6.3 2002: 6.0 2003: 5.0 2004: 4.8 2005: 5.2 2006: 5.4 2007: 4.2 2008: 4.6 2009: 5.3 2010: 5.5 2011: 6.2 Hispanic 1999: 3.6 2000: 3.9 2001: 4.3 2002: 3.7 2003: 3.6 2004: 3.9

				5.6 age-adjusted 5.8 unadjusted 2009 6.0 age-adjusted 6.2 unadjusted 2010 5.7 age-adjusted 5.8 unadjusted 2011 5.7 age-adjusted 5.9 unadjusted			2005: 3.3 2006: 3.5 2007: 3.3 2008: 3.1 2009: 4.1 2010: 3.9 2011: 4.3 NH Other: 1999: 4.0 2000: 2.8 2001: 3.9 2002: 3.2 2003: 3.3 2004: 3.6 2005: 2.9 2006: 4.1 2007: 2.9 2008: 3.1 2009: 3.4 2010: 3.1 2011: 3.9
BRFSS							
Ford E.S. et al 2013 ²³ (b) BRFSS Cross-sectional 2011	Adults aged ≥ 25 yrs, Unweighted Sample: ≥18 yrs: 475,616 respondents; analytic sample ≥25 yrs*	Self-reported COPD (COPD or CB or E): “Have you ever been told by a doctor or other health professional that you have chronic obstructive pulmonary disease (COPD), emphysema, or bronchitis?”	NA	6.5 age-adjusted 6.8 unadjusted	Age-adjusted M: 5.7 F: 7.3 Unadjusted M: 5.8 F: 7.8	NA	Age-adjusted NH White: 6.9 NH Black: 6.5 Hispanic: 4.1 Asian/Pacific Islander: 2.5 AI/AN: 11.0 NH Other: 11.2 Unadjusted NH White: 7.6 NH Black: 6.4 Hispanic: 3.6

							Asian/Pacific Islander: 2.2 AI/AN: 11.5 NH Other: 11.3
Kosacz, N. M. et al 2012 ²⁴ BRFSS Cross-sectional, 2011	Adults aged ≥ 18 yrs, N=489,225 [§]	Self-reported COPD (COPD or CB or E): A response of "Yes" to "Have you ever been told by a doctor or health professional that you have COPD, E, or CB?". If "Yes" the respondents were asked: "Have you ever been given a breathing test to diagnose your COPD, CB, or E?"	NA	6.3 (6.2-6.4) crude estimate 6.0 (5.9-6.1) age-adjusted	M: 5.2 (5.1-5.4) F: 6.7 (6.5-6.9)	Current smokers: 13.3 (12.9-13.7) Former smokers: 6.8 (6.5-7.1) Never smokers: 2.8 (2.7-3.0)	NH White: 6.3 (6.2-6.5) NH Black: 6.1 (5.7-6.6) Hispanic: 4.0 (3.6-4.3) NH Other: 5.8 (5.3-6.3)
Cunningham, T. J. et al 2015 ²⁵ BRFSS Cross-sectional, 2011	Adults aged ≥ 18 years N=405,856 [†]	Self-reported COPD (COPD or CB or E): A response of "Yes" to "Has a doctor, nurse, or other health professional ever told that you have COPD, CB or E?"	Current smokers: Smoked at least 100 cigarettes during their lifetime and reported smoking "every day" or "somedays" at the time of the interview. Former smokers: smoked at least 100 cigarettes but reported smoking "not at all" at the time of the interview. Never smokers: smoked fewer than 100 cigarettes during their lifetime.	NA	NA	Current smokers: 14.1 (13.6-14.7) Former smokers: 7.1 (6.6-7.6) Never smokers: 2.9 (2.7-3.0)	NA
Liu et al 2023 ²⁶ (a) BRFSS Cross-sectional, 2011	Noninstitutionalized US adults ≥ 18 N=478,788 [*]	Self-reported COPD (COPD or CB or E): A "yes" response to the question, "Has a doctor, nurse, or other health professional ever told you that you had chronic obstructive pulmonary disease or COPD, emphysema, or chronic bronchitis?"	N/A	Crude: 6.4 (6.2 to 6.5) Age-standardized: 6.1 (6.0 to 6.3)	Male: 5.4 (5.2 to 5.5) Female: 6.9 (6.7 to 7.0)	Current: 13.7 (13.3 to 14.2) Former: 7.0 (6.7 to 7.4) Never: 2.9 (2.7 to 3.0)	White, non-Hispanic: 6.4 (6.3 to 6.6) Black or African American, non-Hispanic: 6.2 (5.8 to 6.7) Hispanic or Latino: 4.1 (3.7 to 4.5) Hispanic: 2.3 (1.7 to 2.9) American Indian or Alaska Native,

							non-Hispanic: 10.4 (9.0 to 11.9) Asian, Native Hawaiian, or Pacific Islander, non- Other, non- Hispanic: 10.7 (9.4 to 12.0)
Liu et al 2023 ²⁶ (b) BRFSS Cross-sectional, 2021	Noninstitutionalized US adults ≥ 18 N=386,439*	Self-reported COPD (COPD or CB or E): A “yes” response to the question, “Has a doctor, nurse, or other health professional ever told you that you had chronic obstructive pulmonary disease or COPD, emphysema, or chronic bronchitis?”	N/A	Crude: 6.5 (6.4 to 6.7) Age-standardized: 6.0 (5.9 to 6.2)	Male: 5.5 (5.3 to 5.7) Female: 6.5 (6.3 to 6.7)	Current: 16.2 (15.6 to 16.9) Former: 7.7 (7.3 to 8.0) Never: 2.8 (2.6 to 2.9)	White, non-Hispanic: 6.5 (6.3 to 6.7) Black or African American, non-Hispanic: 6.2 (5.7 to 6.7) Hispanic or Latino: 3.9 (3.5 to 4.4) Hispanic: 1.9 (1.2 to 2.8) American Indian or Alaska Native, non-Hispanic: 10.2 (8.8 to 11.8) Asian, Native Hawaiian, or Pacific Islander, non-Other, non-Hispanic: 8.0 (7.1 to 9.1)
Liu, Y. et al 2019 ²⁷ BRFSS Cross-sectional, 2016	Adults aged, ≥ 18 years N: 408,774 [§]	Self-reported COPD (COPD or CB or E): A "Yes" response to "Has a doctor, nurse, or other health professional ever told that you have chronic obstructive pulmonary disease (COPD), E, or CB?".	Current smoker: Individuals were current smokers if they reported having smoked at least 100 cigarettes during their lifetime and currently smoked every day or some days. Former smoker: Individuals who reported	6.4	NA	NA	NA

			having smoked at least 100 cigarettes during their lifetime but did not currently smoke. Never smoker: Individuals who reported not having smoked at least 100 cigarettes during their lifetime.				
Wheaton, A.G. et al 2019 ²⁸ BRFSS Cross-sectional, 2017	Adults aged ≥ 18 yrs N = 418,378 *	Self-reported COPD (COPD or CB or E): A "Yes" to "Has a doctor, nurse, or other health professional ever told that you have (COPD), E, or CB?"	Never smokers: reported never smoking or smoked less than 100 cigarettes during their lifetime. Former smokers: smoked at least 100 cigarettes in their life but were not current smokers. Current smokers: Individuals who had smoked at least 100 cigarettes and currently smoked some days or every day.	6.2 (6.0-6.3)	M: 5.5 (5.4-5.7) F: 6.8 (6.6-7.0)	Current smokers: 15.2 (14.7-15.7) Former smokers: 7.6 (7.3-8.0) Never smokers: 2.8 (2.7-2.9)	NH White: 6.7 (6.5-6.8) NH Black: 6.6 (6.1-7.1) Hispanic: 3.6 (3.2-3.9) AI/AN: 11.9 (10.3-13.7) Asian: 1.7 (1.2-2.5) NH Native HI/PI: 3.3 (1.8-6.0) NH Other: 9.3 (8.3-10.5)
PATH							
Paulin, L. M. et al 2022 ²⁹ PATH (Wave 1-5) Longitudinal cohort, 2013-2014	Adults aged 40 or older Unweighted (sample = 13,752)*	Self-reported COPD (COPD or CB or E): A "Yes" response to "Has a doctor, nurse or other health professional EVER told you that you had any of the following lung or respiratory conditions? Choose all that apply: COPD, CB, E, asthma, some other lung or respiratory condition, none of the above, don't know, refused." Wave 1 questionnaire; Subsequent waves asked about respiratory disease diagnoses over the past 12 months. NOTE: For the analyses part, COPD, CB & E diagnoses were combined to create one COPD diagnosis measure.	Never users: lifetime use of < 100 cigarettes or never used other products fairly regularly. Former established user: lifetime use of more than 100 cigarettes; or ever used other products fairly regularly, and who haven't used any tobacco products in the past 30 days. Exclusive past 30-day use of products: cigarettes, e-cigarettes, cigars traditional, cigarillo, and filtered cigars, smokeless smokeless tobacco and snus, hookah, pipe.	Overall: 7.7 (0.3) COPD: 5.1 (0.3) CB: 4.4 (0.2) E: 2.4 (0.1) Ever been diagnosed with COPD, CB or E: 8.4 (0.3)	M: 6.6 (0.4) F: 8.5 (0.4)	Never use (never or former experimental tobacco): 3.2 (0.3) Former tobacco use: 10.1 (0.7) Exclusive past-30-day cigarette use: 16.7 (0.7)	NH White: 8.5 (0.4) NH Black: 6.9 (0.6) Hispanic: 4.5 (0.5) NH Other: 4.4 (0.6)

			Past 30-day use of combinations: cigarettes and e-cigarettes: Polycombusted; poly combusted and non-combusted; & e-cigarettes and smokeless.				
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+Increased severity

*Age-specific and age-standardized prevalence estimates were calculated using the direct method with 2000 U.S. census projections (e.g., adults aged ≥ 18 or 20-79 years) and are reported as percentages (%) with standard error (SE) or 95% confidence intervals (CI).

*Weighted prevalence estimates based on survey sampling weights (e.g., NHANES), reported as percentage or per 1,000 population.

§Unweighted prevalence estimates, reported as annual averages or percentages for the sample population. No weighting or age adjustment was applied.

ABBREVIATIONS: NHANES: National Health and Nutrition Examination Survey; NHANES III: The third National Health and Nutrition Examination Survey; NHIS: National Health Interview Survey; BRFSS: Behavioral Risk Factor Surveillance System; PATH: Population Assessment of Tobacco and Health; NA: Not available; Mod: Moderate; M: Males; F: Females; AI/AN: American Indian/Alaska Native; HI/PI: Hawaiian/Pacific Islander; AO: airflow obstruction; COPD: chronic obstructive pulmonary disease; CB: chronic bronchitis; E: Emphysema; MEC: Mobile Examination Centers; Center FEV1: forced expiratory volume in one second; FVC: forced vital capacity; % pred: percent predicted; GOLD: Global Initiative for Chronic Obstructive Lung Disease; ATS=American Thoracic Society; ERS=European Respiratory Society; SE: Standard Error; 95% CI: 95% Confidence Interval; a, b, c, and d refer to the same survey but different survey periods or different COPD measures (spirometry vs. self-report), or to two separate surveys.

Supplementary Table 5. COPD Prevalence by Severity Levels

Study (Author, Survey, Design, Year)	Population Size	Measures		Prevalence Estimates (SE or 95% CI)			
		Self-reported disease type, definition	Smoking status definition	Overall	By Sex	By Smoking Status	By Race
NHANES							
Doney, B. et al 2014 ⁹ (a) NHANES Cross-sectional, 1988 - 1994	Adults 40-79 yrs N=89,151 (sample=7,667)*	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%)	NA	Mild+ AO: 16.6 (0.8) Mod+ AO: 6.4 (0.5) Severe AO: 2.2 (0.2)	Mild+ AO: M: 19.0 (1.1) F: 14.6 (0.9) Mod+ AO: M: 6.8 (0.5) F: 6.1 (0.6) Severe AO: M: 2.4 (0.3) F: 2.2 (0.3)	Mild+ AO: Never smoker: 8.0 (0.8) Former smoker: 16.2 (1.0) Current smoker: 31.8 (1.3) Mod+ AO: Never smoker: 1.9 (0.4) Former smoker: 6.0 (0.7) Current smoker: 14.9 (1.0) Severe AO: Never smoker: 0.7 (0.2) Former smoker: 1.8 (0.3) Current smoker: 5.8 (0.7)	Mild+ AO: NH White: 17.3 (0.8) NH Black: 15.9 (1.0) Mexican American: 12.7 (0.8) Mod+ AO: NH White: 6.7 (0.5) NH Black: 5.8 (0.7) Mexican American: 3.7 (0.6) Severe AO: NH White: 2.5 (0.3) NH Black: 1.5 (0.3) Mexican American: 0.8 (0.2)
Doney, B. et al 2014 ⁹ (b) NHANES Cross-sectional, 2007-2010	Adults aged 40-79 yrs, N=126,199 (sample=5,476)*	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%) GOLD (Pre-Bronchodilator; Pre-BD) definition of AO: Mild+ AO (Stage 1): FEV1/FVC<70% Mod+ AO (Stage 2): FEV1/FVC<70% and FEV1<80%. Severe AO (Stage 3): Pre-BD FEV1/FVC < 0.7 and FEV1 < 50% predicted.	NA	By ATS/ERS Definition: Mild+ AO: 14.5 (0.7) Mod+ AO: 4.4 (0.4) Severe AO: 1.1 (0.2) By GOLD (Pre-BD) Definition: Mild+ AO (Stage 1): 20.0 (1.0) Mod+ AO (Stage 2): 9.0 (0.6)	By ATS/ERS Definition: Mild+ AO: M: 15.4 (0.9) F: 13.8 (1.0) Mod+ AO: M: 4.5 (0.5) F: 4.2 (0.4) Severe AO: M: 1.1 (0.3) F: 1.0 (0.2) By GOLD (Pre-BD) Definition: Mild+ AO (Stage 1): M: 24.0 (1.1) F: 16.3 (1.2)	By ATS/ERS Definition: Mild+ AO: Never smoker: 8.2 (0.8) Former smoker: 14.5 (1.3) Current smoker: 34.4 (1.8) Mod+ AO: Never smoker: 1.1 (0.2) Former smoker: 4.5 (0.7) Current smoker: 14.9 (1.3) Severe AO: Never smoker: 0.3 (0.1) Former smoker: 1.1 (0.3) Current smoker: 3.4 (0.7) By GOLD (Pre-BD) Definition: Mild+ AO (Stage 1): Never smoker: 11.8 (1.1) Former smoker: 22.5 (1.2)	By ATS/ERS Definition: Mild+ AO: NH White: 15.9 (0.8) NH Black: 13.6 (1.2) Mexican American: 8.4 (0.8) Mod+ AO: NH White: 4.7 (0.5) NH Black: 4.7 (0.7) Mexican American: 1.7 (0.3) Severe AO: NH White: 1.0 (0.2) NH Black: 1.8 (0.5) Mexican American: 0.6 (0.3) By GOLD (Pre-BD) Definition:

					Mod+ AO (Stage 2): M: 9.4 (0.8) F: 8.6 (0.7)	Current smoker: 40.4 (1.9) Mod+ AO (Stage 2): Never smoker: 3.9 (0.5) Former smoker: 9.4 (1.0) Current smoker: 24.0 (1.4)	Mild+ AO (stage 1): NH White: 21.9 (1.1) NH Black: 16.3 (1.2) Mexican American: 10.3 (0.8) Mod+ AO (stage 2): NH White: 9.8 (0.7) NH Black: 8.1 (0.8) Mexican American: 4.0 (0.5)
Ford, E.S. et al 2013 ¹⁰ (a) NHANES III Cross-sectional, 1988-1994	Adults aged 20-79 yrs Unweighted (sample=14,360)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	13.3 (0.6) Obstructive: Mild: 7.3 (0.3) Mod: 5.7 (0.3) Sev: 1.5 (0.2) Any: 14.6 (0.5) Restrictive: 7.6 (0.4) None: 77.8 (0.6)	M: 14.6 (0.7) F: 12.3 (0.7) M Obstructive: Mild: 9.8 (0.5) Mod: 6.6 (0.5) Sev: 1.7 (0.2) Any: 18.1 (0.8) Restrictive: 6.5 (0.6) None: 75.4 (0.9) F Obstructive: Mild: 5.1 (0.3) Mod: 5.0 (0.3) Sev: 1.4 (0.2) Any: 11.5 (0.6) Restrictive: 8.5 (0.6) None: 79.9 (0.6)	Current smokers: 23.0 (0.9) Former smokers: 13.0 (0.9) Never smokers: 7.6 (0.6) Current smokers Obstructive: Mild: 9.4 (0.8) Mod: 10.8 (0.7) Sev: 3.8 (0.4) Any: 1.2 (0.2) Restrictive: 8.3 (0.7) None: 67.7 (0.9) Former smokers Obstructive: Mild: 8.9 (0.7) Mod: 5.5 (0.5) Sev: 1.2 (0.2) Any: 15.6 (1.0) Restrictive: 6.0 (0.7) None: 78.4 (1.2) Never smokers Obstructive: Mild: 4.8 (0.4) Mod: 2.9 (0.3) Sev: 0.6 (0.1) Any: 8.2 (0.6) Restrictive: 8.2 (0.7) None: 83.5 (0.9)	White: 14.0 (0.7) Black: 11.9 (0.7) Mexican American: 10.4 (0.6) Other: 9.4 (2.0) White Obstructive: Mild: 7.9 (0.4) Mod: 5.9 (0.3) Sev: 1.6 (0.2) Any: 15.4 (0.6) Restrictive: 6.5 (0.5) None: 78.1 (0.6) Black Obstructive: Mild: 5.3 (0.5) Mod: 5.4 (0.5) Sev: 0.9 (0.2) Any: 11.6 (0.7) Restrictive: 9.5 (0.6) None: 78.9 (0.8) Mexican American Obstructive: Mild: 4.7 (0.4) Mod: 3.3 (0.4) Sev: 0.7 (0.1) Any: 8.7 (0.6) Restrictive: 6.7 (0.4) None: 84.6 (0.9) Other Obstructive: Mild: 4.5 (1.3) Mod: 5.7 (1.2) Sev: -- Any: 12.0 (1.6) Restrictive: 17.7 (2.3) None: 70.3 (2.3)

Ford, E.S. et al 2013 ¹⁰ (b) NHANES Cross-sectional, 2007-2010	Adults aged 20-79 yrs Unweighted (sample=9,024)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	12.5 (0.5) Obstructive: Mild: 7.5 (0.4) Mod: 5.4 (0.3) Sev: 0.7 (0.1) Any: 13.5 (0.6) Restrictive: 6.5 (0.5) None: 79.9 (0.6)	M: 13.7 (0.9) F: 11.4 (0.7) M Obstructive: Mild: 10.1 (0.5) Mod: 6.1 (0.5) Sev: 0.7 (0.2) Any: 16.8 (0.8) Restrictive: 6.9 (0.6) None: 76.2 (0.9) F Obstructive: Mild: 5.0 (0.5) Mod: 4.7 (0.5) Sev: 0.7 (0.1) Any: 10.4 (0.7) Restrictive: 6.1 (0.5) None: 83.5 (0.6)	Current smokers: 25.6 (1.0) Former smokers :12.1 (1.1) Never smokers: 7.9 (0.6) Current smokers Obstructive: Mild: 11.3 (0.9) Mod: 13.0 (0.8) Sev: 2.1 (0.4) Any: 26.4 (1.0) Restrictive: 7.2 (0.8) None: 66.4 (1.3) Former smokers Obstructive: Mild: 8.8 (0.7) Mod: 5.7 (0.6) Sev: 0.7 (0.2) Any: 15.2 (1.0) Restrictive: 6.1 (0.7) None: 78.8 (1.3) Never smokers Obstructive: Mild: 5.2 (0.4) Mod: 2.5 (0.3) Sev: --- Any: 8.0 (0.6) Restrictive: 6.5 (0.5) None: 85.4 (0.6)	White: 13.8 (0.6) Black: 11.9 (0.9) Mexican American: 8.3 (0.6) Other: 8.1 (1.2) White Obstructive: Mild: 8.7 (0.4) Mod: 5.9 (0.4) Sev: 0.7(0.1) Any: 15.3 (0.6) Restrictive: 5.2 (0.5) None: 79.5 (0.7) Black Obstructive: Mild: 5.5 (0.5) Mod: 4.2 (0.5) Sev: 1.0 (0.3) Any: 10.7 (0.8) Restrictive: 7.3 (0.7) None: 82.0 (0.8) Mexican American Obstructive: Mild: 4.0 (0.5) Mod: 2.1 (0.4) Sev: --- Any: 6.3 (0.5) Restrictive: 6.2 (0.6) None: 87.5 (0.8) Other Obstructive: Mild: 4.1 (0.9) Mod: 4.8 (0.9) Sev: --- Any: 9.7 (1.2) Restrictive: 15.2 (1.5) None: 75.1 (1.7)
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Cadham et al 2024¹² (a) NHANES Cross-sectional, 2007-2008	Adults aged 20-79 yrs N = 4,237[‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	6.3 (4.7-8.7)	Male: GOLD (1-4): 17.4 (14.7-20.5) GOLD 1: 9.9 (8.6-11.4) GOLD 2: 6.6 (4.9-8.8) GOLD 3-4: 1 (0.4-2.2) Female: GOLD (1-4): 11.1 (9.2-13.5) GOLD 1: 4.4 (3.4-5.8) GOLD 2: 5.9 (4.4-8.0) GOLD 3-4: 0.8 (0.5-1.2)	Current smoker: GOLD (1-4): 22.1 (18.8-25.8) GOLD 1: 8.9 (6.8-11.6) GOLD 2: 11.8 (9.4-14.5) GOLD 3-4: 1.5 (0.6-3.5) Former smoker: GOLD (1-4): 19.7 (16.2-23.6) GOLD 1: 10.2 (8.1-12.8) GOLD 2: 8 (5.8-10.6) GOLD 3-4: 1.4 (0.7-2.6) Never smoker: GOLD (1-4): 9.3 (6.3-10.8) GOLD 1: 4.9 (3.6-6.7) GOLD 2: 3 (2.1-4.2) GOLD 3-4: 0.4 (0.2-0.9)	Mexican: GOLD (1-4): 3.8 (3-4.7) GOLD 1: 2.4 (1.7-3.3) GOLD 2: 1.3 (0.6-2.6) GOLD 3-4: 0.1 (0-0.6) Other Hispanic: GOLD (1-4): 6.7 (4.7-9.5) GOLD 1: 2.2 (1.3-3.7) GOLD 2: 4 (2.6-6) GOLD 3-4: 0.5 (0.2-1.6) NHW: GOLD (1-4): 17.3 (15.5-19.2) GOLD 1: 9.3 (8.2-10.5) GOLD 2: 7.1 (5.8-8.6) GOLD 3-4: 0.9 (0.5-1.6) NHB: GOLD (1-4): 10.2 (7.9-13) GOLD 1: 1.9 (1.3-2.7) GOLD 2: 7.2 (5.2-9.8) GOLD 3-4: 1.1 (0.5-2.3) Other: GOLD (1-4): 6.7 (3.5-12.4) GOLD 1: 2.1 (0.8-5.7) GOLD 2: 3.5 (1.4-8.4) GOLD 3-4: 1.1 (0.2-5.7)
Cadham et al 2024¹² (b) NHANES Cross-sectional, 2009-2010	Adults aged 20-79 yrs N = 4,783[‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	4.6 (3.6-6.0)	Male: GOLD (1-4): 15.8 (13.6-18.3) GOLD 1: 9.3 (7.6-11.4) GOLD 2: 6 (4.9-7.3) GOLD 3-4: 0.5 (0.3-1.1) Female: GOLD (1-4): 10.5 (8.2-13.3) GOLD 1: 5.1 (3.4-7.7) GOLD 2: 4.5 (3.5-5.9) GOLD 3-4: 0.8 (0.5-1.5)	Current smoker: GOLD (1-4): 21.1 (17.9-24.6) GOLD 1: 9.5 (7.2-12.5) GOLD 2: 9.9 (8.2-11.9) GOLD 3-4: 1.7 (1.1-2.5) Former smoker: GOLD (1-4): 20.2 (16.8-24) GOLD 1: 11.6 (9.3-14.4) GOLD 2: 7.7 (6-9.7) GOLD 3-4: 0.9 (0.3-2.7) Never smoker: GOLD (1-4): 7.3 (5.7-9.3) GOLD 1: 4.6 (3.4-6.1) GOLD 2: 2.5 (2-3.2) GOLD 3-4: 0.2 (0.1-0.6)	Mexican: GOLD (1-4): 5 (3.6-7.1) GOLD 1: 3.6 (2.2-5.6) GOLD 2: 1.2 (0.6-2.4) GOLD 3-4: 0.3 (0.1-1.1) Other Hispanic: GOLD (1-4): 5.4 (3.6-8.1) GOLD 1: 2.8 (1.8-4.2) GOLD 2: 2.5 (1.2-5.2) GOLD 3-4: 0.1 (0-0.6) NHW: GOLD (1-4): 15.5 (13.2-18) GOLD 1: 9.2 (7.5-11.2) GOLD 2: 5.7 (4.7-6.9) GOLD 3-4: 0.6 (0.4-1.1) NHB:

							GOLD (1-4): 10 (8.6-11.6) GOLD 1: 1.5 (0.9-2.8) GOLD 2: 6.9 (5.8-8) GOLD 3-4: 1.6 (0.9-2.9) Other: GOLD (1-4): 11.7 (5.8-22.3) GOLD 1: 5.3 (1.8-14.3) GOLD 2: 5.8 (2.3-13.6) GOLD 3-4: 0.7 (0.2-3)
Cadham et al 2024¹² (c) NHANES Cross-sectional, 2011-2012	Adults aged 20-79 yrs N = 4,308*	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	6.7 (5.2-8.6)	Male: GOLD (1-4): 17.9 (14.4-21.9) GOLD 1: 8.6 (6.1-12.0) GOLD 2: 8.1 (6.0-11.0) GOLD 3-4: 1.2 (0.6-2.2) Female: GOLD (1-4): 10.4 (8.0-13.4) GOLD 1: 4.4 (3.0-6.5) GOLD 2: 4.8 (3.6-6.4) GOLD 3-4: 1.2 (0.5-2.7)	Current smoker: GOLD (1-4): 25.7 (21.3-30.7) GOLD 1: 9.7 (8-11.8) GOLD 2: 12.9 (10.2-16.1) GOLD 3-4: 3.1 (1.8-5.3) Former smoker: GOLD (1-4): 22.3 (18.4-26.8) GOLD 1: 11 (7.9-15) GOLD 2: 9.8 (6.6-14.2) GOLD 3-4: 1.6 (0.7-3.6) Never smoker: GOLD (1-4): 6.4 (5.2-7.9) GOLD 1: 3.4 (2.5-4.7) GOLD 2: 2.8 (2-3.7) GOLD 3-4: 0.3 (0.1-0.7)	Mexican: GOLD (1-4): 4.7 (3.4-6.3) GOLD 1: 3.7 (2.6-5.1) GOLD 2: 1 (0.5-2) GOLD 3-4: 0 (0-0) Other Hispanic: GOLD (1-4): 5.9 (3.6-9.5) GOLD 1: 3.5 (2.2-5.5) GOLD 2: 2.3 (1-5.1) GOLD 3-4: 0.1 (0-0.6) NHW: GOLD (1-4): 17.5 (15.2-20.1) GOLD 1: 8.2 (6.5-10.2) GOLD 2: 7.9 (6.3-10) GOLD 3-4: 1.4 (1-2) NHB: GOLD (1-4): 9.3 (7.8-11) GOLD 1: 1.7 (1.1-2.7) GOLD 2: 6.2 (5.1-7.4) GOLD 3-4: 1.4 (0.8-2.3) Other: GOLD (1-4): 8.3 (5-13.6) GOLD 1: 4.3 (2.1-8.5) GOLD 2: 3.3 (1.7-6.3) GOLD 3-4: 0.8 (0.3-1.9)

Kurth, L. et al 2019¹³ NHANES Cross-sectional, 2007-2010	Adults aged 18-79 yrs Unweighted (sample=13,044)*	Spirometry, ATS/ERS criteria, Pre-BD, Mild+ AO: FEV1/FVC<LLN Mod+ and Sev AO: FEV1/FVC < LLN and FEV1 < 70% pred.	Never smokers: Individuals aged 18-19 who have not used tobacco or nicotine products in the last 5 days and have not smoked cigarettes in the past 5 days, as well as individuals aged 20-79 who have smoked less than 100 cigarettes in their lifetime. Ever smokers: Those 18-79-year-olds who used cigarettes in the past 5 days and those aged 20-79 years who smoked at least 100 cigarettes during their entire life.	Airflow obstruction 12.40 (11.63-13.18) Moderate and more severe airflow obstruction 3.05 (2.67-3.43)	Airflow obstruction M: 13.57 (12.14-15.00) F: 11.25 (10.07-12.43) Moderate and more severe airflow obstruction M: 3.34 (2.69-3.99) F: 2.77 (2.26-3.28)	Airflow obstruction Never smokers: 7.15 (6.21-8.00) Ever smokers: 18.47 (17.29-19.55) Moderate and more severe airflow obstruction Never smokers: 0.81 (0.54-1.08) Ever smokers: 5.45 (4.70-6.20)	Airflow obstruction NH White: 13.56 (12.59 - 14.53) NH Black: 11.24 (9.89-12.58) Mexican American: 8.18 (7.17-9.20) Other Hispanic: 8.54 (6.98-10.11) Moderate and more severe airflow obstruction NH White: 3.49 (3.02 -3.96) NH Black: 2.95 (2.17-3.74) Mexican American: 0.75 (0.43-1.07) Other Hispanic: 1.51 (1.00-2.01)
Diaz-Guzman. E. et al 2011¹⁴ NHANES III Cross-sectional, 1988 - 1994	Adults aged ≥ 25 years Weighted (sample: 15,203)‡	Self-reported COPD (CB or E): "Yes" to "Has a doctor ever told you that you have CB or E?". Pre-bronchodilator lung function, modified COPD criteria: Obstructed: FEV1/FVC < 70% and FEV1< 80% pred. Restricted: FEV1/FVC ≥70% and FVC<80% of pred.	Smoking status as a former or current smoker was considered if the individual responded "yes" to have smoked more than 100 cigarettes.	5.3 Obstructed: 24.3 Restricted: 8.2	NA	NA	NA
Tilert, T. et al 2018¹⁵ NHANES Cross-sectional, 2007-2012	Adults aged 40-79 yrs Weighted (sample=10,219)*	Self-reported COPD (CB or E): A "yes" to "Has a doctor ever told you that you have E?" or "Do you still have CB?" Lung obstruction severity through spirometry assessment ATS/ERS: No measured lung obstruction Mild Obstruction: FEV1>70% pred. Moderate or severe obstruction: FEV1≤70% pred.	Current smoker: reported smoking at least 100 cigarettes in their lifetime and at the time of the interview reported smoking every day or some days OR by a serum cotinine value greater than 10ng/mL. Former smoker: reported smoking at least 100 cigarettes during their lifetime but currently did not smoke. Never smoker: reported smoking fewer than 100 cigarettes during their lifetime.	5.2 (0.4) No measured lung obstruction: 55.7 (3.0) Mild: 7.9 (1.1) Moderate or worse: 36.4 (2.9)	NA	NA	NA

+Increased severity

*Age-specific and age-standardized prevalence estimates were calculated using the direct method with 2000 U.S. census projections (e.g., adults aged ≥ 18 or 20-79 years) and are reported as percentages (%) with standard error (SE) or 95% confidence intervals (CI).

‡Weighted prevalence estimates based on survey sampling weights (e.g., NHANES), reported as percentage or per 1,000 population.

§Unweighted prevalence estimates, reported as annual averages or percentages for the sample population. No weighting or age adjustment was applied.

ABBREVIATIONS: NHANES: National Health and Nutrition Examination Survey; NHANES III: The third National Health and Nutrition Examination Survey; NHIS: National Health Interview Survey; BRFSS: Behavioral Risk Factor Surveillance System; PATH: Population Assessment of Tobacco and Health; NA: Not available; Mod: Moderate; AO: airflow obstruction; COPD: chronic obstructive pulmonary disease; CB: chronic bronchitis; E: Emphysema; FEV1: forced expiratory volume in one second; FVC: forced vital capacity; % pred: percent predicted; GOLD: Global Initiative for Chronic Obstructive Lung Disease; ATS=American Thoracic Society; ERS=European Respiratory Society; SE: Standard Error; 95% CI: 95% Confidence Interval; a, b, and c refer to the same survey but different survey periods or different COPD measures (spirometry vs. self-report), or to two separate surveys.

Supplementary Table 6. COPD Prevalence by Smoking Status

Study (Author, Survey, Design, Year)	Population, Size	Measures		Prevalence Estimates by Smoking Status (SE or 95% CI)			
		Definition & Diagnostic Criteria	Smoking Status Definition	Ever Smokers	Current Smokers	Former Smokers	Never Smokers
NHANES							
Bang, K. M et al 1992 ⁸ NHANES Cross-sectional, 1971-1975	Black adult examinees who had satisfactory spirometry trials for COPD diagnosis, aged between 25 and 74 yrs Weighted, (sample = 585)*	Spirometry , COPD was defined as an FEV1 less than 65% of the predicted value.	Current smoker: Not defined. Former smoker: Not defined. Never smoker: An individual who had never smoked or smoked less than 100 cigarettes in his or her lifetime.		Current and former smoker: M: 5.4 F: 5.0		Never smoker: M: 0 F: 8.4
Doney, B. et al 2014 ⁹ (a) NHANES Cross-sectional, 1988 -1994	Adults 40-79 yrs N=89,151 (sample= 7,667)*	Spirometry, ATS criteria: Mild+ AO: FEV ₁ /FVC < LLN Mod+ AO: FEV ₁ /FVC < LLN + FEV ₁ < 70% pred Severe AO: FEV ₁ /FVC < LLN + FEV ₁ < 50% pred	Smoking status was classified as never, former, or current smokers (definition not provided)	NA	Mild+ AO: 31.8 (1.3) Mod+ AO: 14.9 (1.0) Severe AO: 5.8 (0.7)	Mild+ AO: 16.2 (1.0) Mod+ AO: 6.0 (0.7) Severe AO: 1.8 (0.3)	Mild+ AO: 8.0 (0.8) Mod+ AO: 1.9 (0.4) Severe AO: 0.7 (0.2)
Doney, B. et al 2014 ⁹ (b) NHANES Cross-sectional, 2007-2010	Adults aged 40-79 yrs, N=126,199 (sample= 5,476)*	Spirometry, ATS criteria: Mild+ AO: FEV ₁ /FVC < LLN Mod+ AO: FEV ₁ /FVC < LLN & FEV ₁ < 70% pred Severe AO: FEV ₁ /FVC < LLN & FEV ₁ < 50% pred (also FEV ₁ < 80% pred) GOLD (Pre-BD definition): Mild+ AO (Stage 1): FEV ₁ /FVC < 70% Mod+ AO (Stage 2): FEV ₁ /FVC < 70% & FEV ₁ < 80% pred	Smoking status was classified as never, former, or current smokers (definition not provided)	NA	By ATS/ERS: Mild+ AO: 34.3 (1.8) Mod+ AO: 14.3 (1.3) Severe AO: 3.4 (0.7) By GOLD: Mild+ AO (Stage 1): 40.4 (1.9) Mod+ AO (Stage 2): 24.0 (1.4)	By ATS/ERS: Mild+ AO: 14.5 (1.3) Mod+ AO: 4.5 (0.7) Severe AO: 1.1 (0.3) By GOLD: Mild+ AO (Stage 1): 22.5 (1.2) Mod+ AO (Stage 2): 9.4 (1.0)	By ATS/ERS: Mild+ AO: 8.2 (0.8) Mod+ AO: 1.1 (0.2) Severe AO: 0.3 (0.1) By GOLD: Mild+ AO (Stage 1): 11.8 (1.1) Mod+ AO (Stage 2): 3.9 (0.5)

Ford, E.S. et al 2013 ¹⁰ (a)	Adults aged 20-79 yrs	Spirometry, GOLD criteria: Severe Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ < 50% pred Moderate Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ 50-79% pred Mild Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ ≥ 80% pred No Obstructive Impairment: FEV ₁ /FVC ≥ 0.70 Restrictive Impairment: FEV ₁ /FVC = 0.70 & FVC < 80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	NA	23.0 (0.9) Obstructive: Mild: 9.4 (0.8) Mod: 10.8 (0.7) Severe: 3.8 (0.4) Any: 1.2 (0.2) Restrictive: 8.3 (0.7) None: 67.7 (0.9)	13.0 (0.9) Obstructive: Mild: 8.9 (0.7) Mod: 5.5 (0.5) Severe: 1.2 (0.2) Any: 15.6 (1.0) Restrictive: 6.0 (0.7) None: 78.4 (1.2)	7.6 (0.6) Obstructive: Mild: 4.8 (0.4) Mod: 2.9 (0.3) Severe: 0.6 (0.1) Any: 8.2 (0.6) Restrictive: 8.2 (0.7) None: 83.5 (0.9)
Ford, E.S. et al 2013 ¹⁰ (b)	Adults aged 20-79 yrs	Spirometry, GOLD criteria: Severe Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ < 50% pred Moderate Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ 50-79% pred Mild Obstructive Impairment: FEV ₁ /FVC < 0.70 & FEV ₁ ≥ 80% pred No Obstructive Impairment: FEV ₁ /FVC ≥ 0.70 Restrictive Impairment: FEV ₁ /FVC = 0.70 & FVC < 80% pred.	Current smoker: smoked ≥ 100 cigarettes during his or her lifetime and reported smoking currently. Former smoker: smoked ≥ 100 cigarettes during his or her lifetime but reported having stopped smoking. Never smoker: not smoked ≥ 100 cigarettes during his or her lifetime.	NA	25.6 (1.0) Obstructive: Mild: 8.8 (0.7) Mod: 5.7 (0.6) Severe: 0.7 (0.2) Any: 15.2 (1.0) Restrictive: 6.1 (0.7) None: 78.8 (1.3)	12.1 (1.1) Obstructive: Mild: 8.8 (0.7) Mod: 5.7 (0.6) Severe: 0.7 (0.2) Any: 15.6 (1.0) Restrictive: 6.1 (0.7) None: 78.8 (1.3)	7.9 (0.6) Obstructive: Mild: 5.2 (0.3) Mod: 2.5 (0.3) Any: 8.0 (0.6) Restrictive: 6.5 (0.5) None: 85.4 (0.6)
Cadham et al 2024 ¹² (a)	Adults aged 20-79 yrs	Spirometry GOLD 1-4: FEV ₁ /FVC < 0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	NA	GOLD (1-4): 22.1 (18.8-25.8) GOLD 1: 8.9 (6.8-11.6) GOLD 2: 11.8 (9.4-14.5) GOLD 3-4: 1.5 (0.6-3.5)	GOLD (1-4): 19.7 (16.2-23.6) GOLD 1: 10.2 (8.1-12.8) GOLD 2: 8.0 (5.8-10.6) GOLD 3-4: 1.4 (0.7-2.6)	GOLD (1-4): 9.3 (6.3-10.8) GOLD 1: 4.9 (3.6-6.7) GOLD 2: 3.0 (2.1-4.2) GOLD 3-4: 0.4 (0.2-0.9)

Cadham et al 2024 ¹² (b) NHANES Cross-sectional, 2009-2010	Adults aged 20-79 yrs N = 4,783 [‡]	Spirometry GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	NA	GOLD (1-4): 21.1 (17.9-24.6) GOLD 1: 9.5 (7.2-12.5) GOLD 2: 9.9 (8.2-11.9) GOLD 3-4: 1.7 (1.1-2.5)	GOLD (1-4): 20.2 (16.8-24) GOLD 1: 11.6 (9.3-14.4) GOLD 2: 7.7 (6-9.7) GOLD 3-4: 0.9 (0.3-2.7)	GOLD (1-4): 7.3 (5.7-9.3) GOLD 1: 4.6 (3.4-6.1) GOLD 2: 2.5 (2-3.2) GOLD 3-4: 0.2 (0.1-0.6)
Cadham et al 2024 ¹² (c) NHANES Cross-sectional, 2010-2011	Adults aged 20-79 yrs N = 4,308 [‡]	Spirometry GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	Current smokers: smoked at least 100+ cigarettes in their lifetime and were currently smoking. Former smokers: smoked at least 100 + cigarettes in their lifetime and did not currently smoke at the time of the survey. Never smokers: had not smoked 100 + lifetime cigarettes.	NA	GOLD (1-4): 25.7 (21.3-30.7) GOLD 1: 9.7 (8-11.8) GOLD 2: 12.9 (10.2-16.1) GOLD 3-4: 3.1 (1.8-5.3)	GOLD (1-4): 22.3 (18.4-26.8) GOLD 1: 11 (7.9-15) GOLD 2: 9.8 (6.6-14.2) GOLD 3-4: 1.6 (0.7-3.6)	GOLD (1-4): 6.4 (5.2-7.9) GOLD 1: 3.4 (2.5-4.7) GOLD 2: 2.8 (2-3.7) GOLD 3-4: 0.3 (0.1-0.7)
Kurth, L. et al 2019 ¹³ (a) NHANES Cross-sectional, 2007-2010	Adults aged 18-79 yrs Weighted (sample= 4,172)*	Spirometry, ATS/ERS criteria, Pre-BD: Mild+ AO: FEV ₁ /FVC < LLN or < 70% Mod+ and Sev AO: FEV1/FVC < LLN and FEV1 < 70% pred.	Ever smokers: Those 18-19-year-olds who used cigarettes in the past 5 days and those aged 20-79 years who smoked at least 100 cigarettes during their entire life. Never smokers: Individuals aged 18-19 who have not used tobacco or nicotine products in the last 5 days and have not smoked cigarettes in the past 5 days, as well as individuals aged 20-79 who have smoked less than 100 cigarettes in their lifetime.	18.47 (17.29-19.55) Moderate and more severe airflow obstruction 5.45 (4.70-6.20)	NA	NA	7.15 (6.21-8.00) Moderate and more severe airflow obstruction 0.81 (0.54-1.08)
Kurth, L. et al 2019 ¹³ (b) NHANES Cross-sectional, 2007-2010	Adults aged 20-79 yrs Unweighted (sample= 15,777)*	Self-reported COPD (CB or E): COPD was self-reported, doctor or health professional diagnosis of chronic bronchitis (and still have chronic bronchitis) or self-reported emphysema	Never smokers: Individuals aged 18-19 who have not used tobacco or nicotine products in the last 5 days and have not smoked cigarettes in the past 5 days, as well as individuals aged 20-79 who have smoked less than 100 cigarettes in their lifetime. Ever smokers: Those 18-79-year-olds who used cigarettes in the past 5 days and those aged 20-79 years who smoked at least 100 cigarettes during their entire life.	5.62 (4.77-6.44)	NA	NA	1.48 (1.12-1.84)

Tilert, T. et al 2018 ¹⁵ NHANES Cross-sectional, 2007-2012	Adults aged 40-79 yrs Weighted (sample=10,219)*	Self-reported COPD: A "yes" to "Has a doctor ever told you that you have E?" or "Do you still have CB?"	Current smoker: reported smoking at least 100 cigarettes in their lifetime and at the time of the interview reported smoking every day or some days OR by a serum cotinine value greater than 10ng/mL. Former smoker: reported smoking at least 100 cigarettes during their lifetime but currently did not smoke. Never smoker: reported smoking fewer than 100 cigarettes during their lifetime.	NA	10.2 (0.9)	6.6 (0.6)	2.1 (0.2)
NHIS							
Bang, K. M. et al 2009 ¹⁸ NHIS Cross-sectional, 1997-2004	Adults aged ≥ 18 yrs, who are currently employed N=127,624‡	Self-reported COPD (CB or E): a "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Current smokers: smoked at least 100 cigarettes in a lifetime and currently continue to smoke. Former smokers: smoked at least 100 cigarettes in a lifetime but currently do not smoke. Never smokers: never smoked or those who had smoked <100 cigarettes during their entire lifetime.	NA	6.6 (6.3-6.9)	4.4 (4.1-4.6)	2.8 (2.7-2.9)
Bang, K. M. et al 2013 ¹⁹ (a) NHIS Cross-sectional, 1997-2004	Non-smokers aged > 25 years N=62,255*	Self-reported COPD (CB or E):: a "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	NA	NA	NA	2.8 (2.7-3.0)
Bang, K. M. et al 2013 ¹⁹ (b) NHIS Cross-sectional, 1997-2000	Non-smokers aged > 25 years N=59,165*	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	NA	NA	NA	2.8 (2.6-3.0)
Bang, K. M. et al 2013 ¹⁹ (c) NHIS Cross-sectional, 1997-2004	Non-smokers aged > 25 years N=62,255*	Self-reported COPD (CB or E): a "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	Non-smokers: Individuals who had either never smoked or had smoked <100 cigarettes throughout their lifetime	NA	NA	NA	4.0 (3.9-4.1)

Doney, B. et al 2014 ²⁰ NHIS Cross-sectional, 2004-2011	Adults aged between 40-70 yrs N=73,799 [§]	Self-reported COPD (CB or E): a "Yes" response to "Have you ever been told by a doctor or other health professional that you had...E?" or "During the past 12 months, have you been told by a doctor or other health professional that you had... CB?"	Smoking status was classified as never, former, or current smokers (definition not provided)	NA	7.47 (6.96-7.97)	4.92 (4.50-5.33)	2.74 (2.54-2.94)
Ward, B. W. et al 2017 ²¹ NHIS Cross-sectional, 2012-2014	Adults aged ≥ 18 yrs N = 105,779*	Self-reported COPD (COPD or CB or E): A "yes" response to “Have you ever been told by a doctor or other health professional that you had E?”, “Have you ever been told by a doctor or health professional that you had COPD?”, and “During the past 12 months, have you ever been told by a doctor or other health professional that you had CB?”	Smoking status was classified as never, former, or current smokers (definition not provided)	NA	E and/or CB: 9.1 (8.6-9.7) COPD only: 6.3 (5.9-6.8) Emphysema, chronic bronchitis, and/or COPD: 11.8 (11.1-12.4)	E and/or CB: 7.1 (6.6-7.6) COPD only: 5.9 (5.6-6.4) Emphysema, chronic bronchitis, and/or COPD: 9.7 (9.2-10.2)	E and/or CB: 2.6 (2.4-2.8) COPD only: 0.9 (0.8-1.0) Emphysema, chronic bronchitis, and/or COPD: 3.2 (3.0-3.3)
Steinberg A.W. et al 2025 ²² NHIS Cross-sectional, 2020	Adults aged ≥ 40 yrs, N=23,028	Self-reported COPD (COPD or CB or E): A "yes" response to “Have you ever been told by a doctor or other health professional that you had chronic obstructive pulmonary disease, COPD, emphysema or chronic bronchitis?”	Smoking history was categorized as never, former, or current based on respondents' self-reported cigarette use (defined as having smoked more than 100 cigarettes in their lifetime), including age of initiation, smoking frequency, and quitting status. Former and current smokers were combined as ever smokers for analysis	Ever Smoker: M: 11.5 F: 15.9	NA	NA	Never Smoker: M: 1.7 F: 3.2
BRFSS							
Kosacz, N. M. et al 2012 ²⁴ BRFSS Cross-sectional, 2011	Adults aged ≥ 18 yrs, N=489,225 [§]	Self-reported COPD (COPD or CB or E): a response of "Yes" to "Have you ever been told by a doctor or health professional that you have COPD, E, or CB?". If "Yes" the respondents were asked: "Have you ever been given a breathing test to diagnose your COPD, CB, or E?"	Smoking status was classified as never, former, or current smokers (definition not provided)	NA	13.3 (12.9-13.7)	6.8 (6.5-7.1)	2.8 (2.7-3.0)

[illegible]

Paulin, L. M. et al 2022 ²⁹	Adults aged 40 or older	Self-reported COPD (COPD or CB or E): A "Yes" response to "Has a doctor, nurse or other health professional EVER told you that you had any of the following lung or respiratory conditions? Choose all that apply: COPD, CB, E, asthma, some other lung or respiratory condition, none of the above, don't know, refused." Wave 1 questionnaire; Subsequent waves asked about respiratory disease diagnoses over the past 12 months. NOTE: For the analyses part, COPD, CB & E diagnoses were combined to create one COPD diagnosis measure.	Never users: lifetime use of < 100 cigarettes or never used other products fairly regularly. Former established user: lifetime use of more than 100 cigarettes; or ever used other products fairly regularly, and who haven't used any tobacco products in the past 30 days. Exclusive past 30-day use of products: cigarettes, e-cigarettes, cigars traditional, cigarillo, and filtered cigars, smokeless smokeless tobacco and snus, hookah, pipe. Past 30-day use of combinations: cigarettes and e-cigarettes: Polycom busted; poly combusted and non-combusted; & e-cigarettes and smokeless.	NA	Exclusive past 30-day cigarette use: 16.7 (0.7)	10.1 (0.7)	3.2 (0.3)
PATH (Wave 1-5)	Unweighted (sample = 13,752)*						
Longitudinal cohort, 2013-2014							

+Increased severity

*Age-specific and age-standardized prevalence estimates were calculated using the direct method with 2000 U.S. census projections (e.g., adults aged ≥18 or 20-79 years) and are reported as percentages (%) with standard error (SE) or 95% confidence intervals (CI).

*Weighted prevalence estimates based on survey sampling weights (e.g., NHANES), reported as percentage or per 1,000 population.

§Unweighted prevalence estimates, reported as annual averages or percentages for the sample population. No weighting or age adjustment was applied.

ABBREVIATIONS: NHANES: National Health and Nutrition Examination Survey; NHANES III: The third National Health and Nutrition Examination Survey; NHIS: National Health Interview Survey; BRFSS: Behavioral Risk Factor Surveillance System; PATH: Population Assessment of Tobacco and Health; NA: Not available; Mod: Moderate; AO: airflow obstruction; COPD: chronic obstructive pulmonary disease; CB: chronic bronchitis; E: Emphysema; FEV1: forced expiratory volume in one second; FVC: forced vital capacity; % pred: percent predicted; GOLD: Global Initiative for Chronic Obstructive Lung Disease; ATS=American Thoracic Society; ERS=European Respiratory Society; SE: Standard Error; 95% CI: 95% Confidence Interval; a, b, and c refer to the same survey but different survey periods or different COPD measures (spirometry vs. self-report), or to two separate surveys.

Supplementary Table 7. COPD Prevalence by Sex and Race/Ethnicity

Study (Author, Survey, Design, Year)	Population, Size	Definition & Diagnostic Criteria	Prevalence Estimates by Sex (SE or 95% CI)		Prevalence Estimates by Race/Ethnicity (SE or 95% CI)			
			Males	Females	NHW	NHB	Hispanic/ Mexican American	NH Other
NHANES								
Bang, K. M et al 1992 ⁸ NHANES Cross-sectional, 1971-1975	Black adult examinees who had satisfactory spirometry trials for COPD diagnosis, aged between 25 and 74 yrs Weighted, (sample = 585)*	Spirometry , COPD was defined as an FEV1 less than 65% of the predicted value.	3.7	6.7	NA	5.4	NA	NA
Doney, B. et al 2014 ⁹ (a) NHANES Cross-sectional, 1988 -1994	Adults aged 40-79 yrs N=89,151 (sample= 7,667)*	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%)	Mild+ AO: 19.0 (1.1) Mod+ AO: 6.8 (0.5) Severe AO: 2.4 (0.3)	Mild+ AO: 14.6 (0.9) Mod+ AO: 6.1 (0.6) Severe AO: 2.2 (0.3)	Mild+ AO: 17.3 (0.8) Mod+ AO: 6.7 (0.5) Severe AO: 2.5 (0.3)	Mild+ AO: 15.9 (1.0) Mod+ AO: 5.8 (0.7) Severe AO: 1.5 (0.3)	Mild+ AO: 12.7 (0.8) Mod+ AO: 3.7 (0.6) Severe AO: 0.8 (0.2)	NA

Doney, B. et al 2014 ⁹ (b) NHANES Cross-sectional, 2007-2010	Adults aged 40-79 yrs, N=126,199 (sample= 5,476)*	Spirometry, ATS criteria: Mild+ AO: FEV1/FVC<LLN Mod+ AO: FEV1/FVC < LLN plus FEV1 < 70% pred. Sev AO: FEV1/FVC<LLN and FEV1<50%) GOLD (Pre-Bronchodilator; Pre-BD) definition of AO: Mild+ AO (Stage 1): FEV1/FVC<70% Mod+ AO (Stage 2): FEV1/FVC<70% and FEV1<80%. Severe AO (Stage 3): Pre-BD FEV1/FVC < 0.7 and FEV1 < 50% predicted.	By ATS/ERS: Mild+ AO: 15.4 (0.9) Mod+ AO: 4.5 (0.5) Severe AO: 1.1 (0.3) By GOLD: Mild+ AO (Stage 1): 24.0 (1.1) Mod+ AO (Stage 2): 9.4 (0.8)	By ATS/ERS: Mild+ AO: 13.8 (1.0) Mod+ AO: 4.2 (0.4) Severe AO: 1.0 (0.2) By GOLD: Mild+ AO (Stage 1): 16.3 (1.2) Mod+ AO (Stage 2): 8.6 (0.7)	By ATS/ERS: Mild+ AO: 15.9 (0.8) Mod+ AO: 4.7 (0.5) Severe AO: 1.0 (0.2) By GOLD: Mild+ AO (Stage 1): 21.9 (1.1) Mod+ AO (Stage 2): 9.8 (0.7)	By ATS/ERS: Mild+ AO: 13.6 (1.2) Mod+ AO: 4.7 (0.7) Severe AO: 1.8 (0.5) By GOLD: Mild+ AO (Stage 1): 16.3 (1.2) Mod+ AO (Stage 2): 8.1 (0.8)	By ATS/ERS: Mild+ AO: 8.4 (0.8) Mod+ AO: 1.7 (0.3) Severe AO: 0.6 (0.3) By GOLD Mild+ AO (Stage 1): 10.3 (0.8) Mod+ AO (Stage 2): 4.0 (0.5)	NA
Ford, E.S. et al 2013 ¹⁰ (a) NHANES III Cross-sectional, 1988-1994	Adults aged 20-79 yrs Unweighted (sample= 14,360)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	14.6 (0.7) Obstructive: Mild: 9.8 (0.5) Mod: 6.6 (0.5) Severe: 1.7 (0.2) Any: 18.1 (0.8) Restrictive: 6.5 (0.6) None: 75.4 (0.9)	12.3 (0.7) Obstructive: Mild: 5.1 (0.3) Mod: 5.0 (0.3) Severe: 1.4 (0.2) Any: 11.5 (0.6) Restrictive: 8.5 (0.6) None: 79.9 (0.6)	14.0 (0.7) Obstructive: Mild: 7.9 (0.4) Mod: 5.9 (0.3) Severe:1.6 (0.2) Any: 15.4 (0.6) Restrictive: 6.5 (0.5) None: 78.1 (0.6)	11.9 (0.7) Obstructive: Mild: 5.3 (0.5) Mod: 5.4 (0.5) Severe: 0.9 (0.2) Any: 11.6 (0.7) Restrictive:9.5 (0.6) None: 78.9 (0.8)	10.4 (0.6) Obstructive: Mild: 4.7 (0.4) Mod: 3.3 (0.4) Severe: 0.7 (0.1) Any: 8.7 (0.6) Restrictive: 6.7 (0.4) None: 84.6 (0.9)	9.4 (2.0) Obstructive: Mild: 4.5 (1.3) Mod: 5.7 (1.2) Any: 12.0 (1.6) Restrictive: 17.7 (2.3) None: 70.3 (2.3)

Ford, E.S. et al 2013¹⁰ (b) NHANES Cross-sectional, 2007-2010	Adults aged 20-79 yrs Unweighted (sample= 9,024)*	Spirometry, GOLD criteria: Severe Obstructive impairment: FEV1/FVC<0.70 and FEV1<50% pred. Moderate obstructive impairment: FEV1/FVC<0.70 and FEV1>50% to <80% pred. Mild obstructive impairment: FEV1/FVC<0.70 and FEV1≥80% pred. No obstructive impairment: FEV1/FVC≥0.70. Restrictive impairment: FEV1/FVC:70 and FVC<80% pred.	13.7 (0.9) Obstructive: Mild: 10.1 (0.5) Mod: 6.1 (0.5) Severe: 0.7 (0.2) Any: 16.8 (0.8) Restrictive: 6.9 (0.6) None: 76.2 (0.9)	11.4 (0.7) Obstructive: Mild: 5.0 (0.5) Mod: 4.7 (0.5) Severe: 0.7 (0.1) Any: 10.4 (0.7) Restrictive: 6.1 (0.5) None: 83.5 (0.6)	13.8 (0.6) Obstructive: Mild: 8.7 (0.4) Mod: 5.9 (0.4) Severe: 0.7(0.1) Any: 15.3 (0.6) Restrictive: 5.2 (0.5) None: 79.5 (0.7)	11.9 (0.9) Obstructive: Mild: 5.5 (0.5) Mod: 4.2 (0.5) Severe: 1.0 (0.3) Any: 10.7 (0.8) Restrictive: 7.3 (0.7) None: 82.0 (0.8)	8.3 (0.6) Obstructive: Mild: 4.0 (0.5) Mod: 2.1 (0.4) Any: 6.3 (0.5) Restrictive: 6.2 (0.6) None: 87.5 (0.8)	8.1 (1.2) Obstructive: Mild: 4.1 (0.9) Mod: 4.8 (0.9) Any: 9.7 (1.2) Restrictive: 15.2 (1.5) None: 75.1 (1.7)
Wang et al 2023¹¹ NHANES Retrospective cohort, 2007-2012	Young people aged 20-50 years N:9,234 (sample size:7,784)[§]	Spirometry, GOLD FEV1/FVC<0.7	2.59	0.72	NA	NA	NA	NA
Cadham et al 2024¹² (a) NHANES Cross-sectional, 2007-2008	Adults aged 20-79 yrs N=13,328 (sample=1,789)*	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre-bronchodilator spirometry values data	GOLD (1-4): 17.4 (14.7-20.5) GOLD 1: 9.9 (8.6-11.4) GOLD 2: 6.6 (4.9-8.8) GOLD 3-4: 1 (0.4-2.2)	GOLD (1-4): 11.1 (9.2-13.5) GOLD 1: 4.4 (3.4-5.8) GOLD 2: 5.9 (4.4-8.0) GOLD 3-4: 0.8 (0.5-1.2)	GOLD (1-4): 17.3 (15.5-19.2) GOLD 1: 9.3 (8.2-10.5) GOLD 2: 7.1 (5.8-8.6) GOLD 3-4: 0.9 (0.5-1.6)	GOLD (1-4): 10.2 (7.9-13) GOLD 1: 1.9 (1.3-2.7) GOLD 2: 7.2 (5.2-9.8) GOLD 3-4: 1.1 (0.5-2.3)	Mexican: GOLD (1-4): 3.8 (3-4.7) GOLD 1: 2.4 (1.7-3.3) GOLD 2: 1.3 (0.6-2.6) GOLD 3-4: 0.1 (0-0.6) Other Hispanic: GOLD (1-4): 6.7 (4.7-9.5) GOLD 1: 2.2 (1.3-3.7) GOLD 2: 4 (2.6-6)	GOLD (1-4): 6.7 (3.5-12.4) GOLD 1: 2.1 (0.8-5.7) GOLD 2: 3.5 (1.4-8.4) GOLD 3-4: 1.1 (0.2-5.7)

							GOLD 3-4: 0.5 (0.2-1.6)	
Cadham et al 2024 ¹² (b) NHANES Cross- sectional, 2009-2010	Adults aged 20- 79 yrs N=13,328 (sample=1,789) [‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre- bronchodilator spirometry values data	GOLD (1-4): 15.8 (13.6- 18.3) GOLD 1: 9.3 (7.6-11.4) GOLD 2: 6 (4.9-7.3) GOLD 3-4: 0.5 (0.3-1.1)	GOLD (1-4): 10.5 (8.2-13.3) GOLD 1: 5.1 (3.4-7.7) GOLD 2: 4.5 (3.5-5.9) GOLD 3-4: 0.8 (0.5-1.5)	GOLD (1-4): 15.5 (13.2-18) GOLD 1: 9.2 (7.5-11.2) GOLD 2: 5.7 (4.7-6.9) GOLD 3-4: 0.6 (0.4-1.1)	GOLD (1-4): 10 (8.6-11.6) GOLD 1: 1.5 (0.9- 2.8) GOLD 2: 6.9 (5.8- 8) GOLD 3-4: 1.6 (0.9-2.9)	Mexican: GOLD (1-4): 5 (3.6-7.1) GOLD 1: 3.6 (2.2- 5.6) GOLD 2: 1.2 (0.6- 2.4) GOLD 3-4: 0.3 (0.1-1.1) Other Hispanic: GOLD (1-4): 5.4 (3.6-8.1) GOLD 1: 2.8 (1.8- 4.2) GOLD 2: 2.5 (1.2- 5.2) GOLD 3-4: 0.1 (0- 0.6)	GOLD (1-4): 11.7 (5.8-22.3) GOLD 1: 5.3 (1.8- 14.3) GOLD 2: 5.8 (2.3- 13.6) GOLD 3-4: 0.7 (0.2-3)
Cadham et al 2024 ¹² (c) NHANES Cross- sectional, 2011-2012	Adults aged 20- 79 yrs N=13,328 (sample=1,789) [‡]	Spirometry, GOLD 1-4: FEV1/FVC<0.7 based on pre- bronchodilator spirometry values data	GOLD (1-4): 17.9 (14.4- 21.9) GOLD 1: 8.6 (6.1-12.0) GOLD 2: 8.1 (6.0-11.0) GOLD 3-4: 1.2 (0.6-2.2)	GOLD (1-4): 10.4 (8.0-13.4) GOLD 1: 4.4 (3.0-6.5) GOLD 2: 4.8 (3.6-6.4) GOLD 3-4: 1.2 (0.5-2.7)	GOLD (1-4): 17.5 (15.2- 20.1) GOLD 1: 8.2 (6.5-10.2) GOLD 2: 7.9 (6.3-10) GOLD 3-4: 1.4 (1-2)	GOLD (1-4): 9.3 (7.8-11) GOLD 1: 1.7 (1.1- 2.7) GOLD 2: 6.2 (5.1- 7.4) GOLD 3-4: 1.4 (0.8-2.3)	Mexican: GOLD (1-4): 4.7 (3.4-6.3) GOLD 1: 3.7 (2.6- 5.1) GOLD 2: 1 (0.5-2) GOLD 3-4: 0 (0-0) Other Hispanic: GOLD (1-4): 5.9 (3.6-9.5) GOLD 1: 3.5 (2.2- 5.5) GOLD 2: 2.3 (1- 5.1) GOLD 3-4: 0.1 (0- 0.6)	GOLD (1-4): 8.3 (5-13.6) GOLD 1: 4.3 (2.1- 8.5) GOLD 2: 3.3 (1.7- 6.3) GOLD 3-4: 0.8 (0.3-1.9)

Kurth, L. et al 2019 ¹³ (a)	Adults aged 18-79 yrs	Spirometry, ATS/ERS criteria, Pre-BD,	13.57 (12.14-15.00)	11.25 (10.07-12.43)	13.56 (12.59 - 14.53)	11.24 (9.89-12.58)	Mexican American: 8.18 (7.17-9.20) Other Hispanic: 8.54 (6.98-10.11)	NA
NHANES	Unweighted (sample=13,044)*	Mild+ AO: FEV1/FVC<LLN Mod+ and Sev AO: FEV1/FVC < LLN and FEV1 < 70% pred.	Moderate and more severe airflow obstruction 3.34 (2.69-3.99)	Moderate and more severe airflow obstruction 2.77 (2.26-3.28)	Moderate and more severe airflow obstruction 3.49 (3.02 - 3.96)	Moderate and more severe airflow obstruction 2.95 (2.17-3.74)	Moderate and more severe airflow obstruction Mexican American: 0.75 (0.43-1.07) Other Hispanic: 1.51 (1.00-2.01)5.4 (13.8-16.7)	
Kurth, L. et al 2019 ¹³ (b)	Adults aged 20-79 yrs	Self-reported COPD (CB or E): COPD was self-reported, doctor or health professional diagnosis of chronic bronchitis (and still have chronic bronchitis) or self-reported emphysema	3.06 (2.43-3.69)	3.89 (3.15-4.62)	3.85 (3.13 - 4.57)	3.52 (2.76-4.38)	Mexican American: 1.11 (0.75-1.48) Other Hispanic: 2.04 (1.31-2.77)	NA
NHANES	Unweighted (sample=15,777)*							
Tilert, T. et al 2018 ¹⁵	Adults aged 40-79 yrs	Self-reported COPD (CB or E): A "yes" to "Has a doctor ever told you that you have E?" or "Do you still have CB?"	4.8 (0.5)	5.6 (0.5)	5.9 (0.5)	4.6 (0.6)	2.0 (0.3)	NA
NHANES	Weighted (sample=10,219)*							
NHIS								
Bang, K. M. et al 2009 ¹⁸	Adults aged ≥ 18 yrs, who are currently employed	Self-reported COPD (CB or E): A "Yes" response to "During the past 12 months, have you been told by a doctor or other health professional that you had CB?" or "Have you ever been told by a doctor or other health professional that you had E?"	2.8 (2.7-2.9)	5.4 (5.3-5.6)	4.2 (4.1-4.3)	3.4 (3.1-3.7)	NA	2.4 (2.1-2.8)
NHIS	N=127,624‡							
Cross-sectional, 1997-2004								

Doney, B. et al 2014 ²⁰ NHIS Cross-sectional, 2004-2011	Adults aged between 40-70 yrs N=73,799§	Self-reported COPD (CB or E): A "Yes" response to "Have you ever been told by a doctor or other health professional that you had...E?" or "During the past 12 months, have you been told by a doctor or other health professional that you had... CB?"	3.07 (2.85-3.28)	5.40 (5.12-5.67)	4.40 (4.22-4.59)	3.41 (2.98-3.83)	NA	2.15 (1.65-2.66)
Ward, B. W. et al 2017 ²¹ NHIS Cross-sectional, 2012-2014	Adults aged ≥ 18 yrs N = 105,779*	Self-reported COPD (COPD or CB or E): A "yes" response to “Have you ever been told by a doctor or other health professional that you had E?”, “Have you ever been told by a doctor or health professional that you had COPD?”, and “During the past 12 months, have you ever been told by a doctor or other health professional that you had CB?”	E and/or CB: 3.9 (3.7-4.2) COPD only: 2.9 (2.7-3.1) Emphysema, chronic bronchitis, and/or COPD: 5.3 (5.0-5.6)	E and/or CB: 5.5 (5.3-5.8) COPD only: 3.0 (2.9-3.2) Emphysema, chronic bronchitis, and/or COPD: 6.9 (6.6-7.2)	E and/or CB: 5.4 (5.2-5.7) COPD only: 3.8 (3.6-4.0) Emphysema, chronic bronchitis, and/or COPD: 7.1 (6.8-7.4)	E and/or CB: 4.8 (4.4-5.3) COPD only: 2.1 (1.8-2.4) Emphysema, chronic bronchitis, and/or COPD: 5.9 (5.5-6.4)	E and/or CB: 2.5 (2.2-2.8) COPD only: 0.9 (0.8-1.1) Emphysema, chronic bronchitis, and/or COPD: 3.1 (2.8-3.4)	E and/or CB: NH Other: 6.6 (5.5-7.8) NH Asian: 1.7 (1.3-2.1) COPD only: NH Other: 3.3 (2.6-4.4) NH Asian: 0.7 (0.5-1.0) Emphysema, chronic bronchitis, and/or COPD: NH Other: 7.9 (6.7-9.3) NH Asian: 2.0 (1.7-2.5)
Steinberg et al 2025 ²² NHIS Cross-sectional, 2020	Adults aged ≥ 40 yrs, N=23,028§	Self-reported COPD (COPD or CB or E): A "yes" response to “Have you ever been told by a doctor or other health professional that you had chronic obstructive pulmonary disease, COPD, emphysema or chronic bronchitis?”	7.8	6.5	NA	NA	NA	NA

Ford E.S. et al 2013 ²³ (a)	Adults aged ≥ 25 yrs,	Self-reported COPD (CB or E): “Have you ever been told by a doctor or other health professional that you had emphysema?” and “During the past 12 months, have you been told by a doctor or other health professional that you had chronic bronchitis?”	1999: 4.6 2000: 4.8 2001: 5.6 2002: 4.8 2003: 4.3 2004: 4.5 2005: 4.6 2006: 4.9 2007: 4.1 2008: 4.3 2009: 4.9 2010: 4.7 2011: 4.3	1999: 6.7 2000: 7.3 2001: 8.1 2002: 6.9 2003: 6.3 2004: 6.8 2005: 6.6 2006: 6.7 2007: 5.6 2008: 6.9 2009: 7.1 2010: 6.5 2011: 7.0	1999: 6.1 2000: 6.6 2001: 7.5 2002: 6.2 2003: 5.7 2004: 6.3 2005: 6.1 2006: 6.3 2007: 5.4 2008: 6.4 2009: 6.7 2010: 6.1 2011: 6.0	1999: 4.3 2000: 5.4 2001: 6.3 2002: 6.0 2003: 5.0 2004: 4.8 2005: 5.2 2006: 5.4 2007: 4.2 2008: 4.6 2009: 5.3 2010: 5.5 2011: 6.2	1999: 3.6 2000: 3.9 2001: 4.3 2002: 3.7 2003: 3.6 2004: 3.9 2005: 3.3 2006: 3.5 2007: 3.3 2008: 3.1 2009: 4.1 2010: 3.9 2011: 4.3	1999: 4.0 2000: 2.8 2001: 3.9 2002: 3.2 2003: 3.3 2004: 3.6 2005: 2.9 2006: 4.1 2007: 2.9 2008: 3.1 2009: 3.4 2010: 3.1 2011: 3.9
NHIS	1999: 30,801 2000: 32,374 2001: 33,326 2002: 31,044 2003: 30,852 2004: 31,326 2005: 31,428 2006: 24,275 2007: 23,393 2008: 21,781 2009: 27,731 2010: 27,157 2011: 33,014							
Cross-sectional 1999-2011	Unweighted Sample: ≥18 yrs respondents; analytic sample ≥25 yrs*							
BRFSS								
Ford E.S. et al 2013 ²³ (b)	Adults aged ≥ 25 yrs,	Self-reported COPD (COPD or CB or E): “Have you ever been told by a doctor or other health professional that you have chronic obstructive pulmonary disease (COPD), emphysema, or bronchitis?”	Age-adjusted 5.7 Unadjusted 5.8	Age-adjusted 7.3 Unadjusted 7.8	Age-adjusted 6.9 Unadjusted 7.6	Age-adjusted 6.5 Unadjusted 6.4	Age-adjusted 4.1 Unadjusted 3.6	Age-adjusted Asian/Pacific Islander: 2.5 AI/AN: 11.0 NH Other: 11.2 Unadjusted Asian/Pacific Islander: 2.2 AI/AN: 11.5 NH Other: 11.3
BRFSS	Unweighted Sample: ≥18 yrs: 405,856 respondents; analytic sample ≥25 yrs*							
Cross-sectional 2011								

Kosacz, N. M. et al 2012 ²⁴ BRFSS Cross-sectional, 2011	Adults aged ≥ 18 yrs, N=489,225 [§]	Self-reported COPD (COPD or CB or E): A response of "Yes" to "Have you ever been told by a doctor or health professional that you have COPD, E, or CB?". If "Yes" the respondents were asked: "Have you ever been given a breathing test to diagnose your COPD, CB, or E?"	5.2 (5.1-5.4)	6.7 (6.5-6.9)	6.3 (6.2-6.5)	6.1 (5.7-6.6)	4.0 (3.6-4.3)	5.8 (5.3-6.3)
Liu et al 2023 ²⁶ (a) BRFSS Cross-sectional, 2011	Noninstitutionalized US adults ≥ 18 N=478,788*	Self-reported COPD (COPD or CB or E): A “yes” response to the question, “Has a doctor, nurse, or other health professional ever told you that you had chronic obstructive pulmonary disease or COPD, emphysema, or chronic bronchitis?”	5.4 (5.2-5.5)	6.9 (6.7-7.0)	6.4 (6.3-6.6)	6.2 (5.8-6.7)	4.1 (3.7-4.5)	American Indian or Alaska Native, non-Hispanic: 10.4 (9.0-11.9) Asian, Native Hawaiian, or Pacific Islander, non-Hispanic: 2.3 (1.7-2.9) Other, non-Hispanic: 10.7 (9.4-12.0)
Liu et al 2023 ²⁶ (b) BRFSS Cross-sectional, 2021	Noninstitutionalized US adults ≥ 18 N=386,439*	Self-reported COPD (COPD or CB or E): A “yes” response to the question, “Has a doctor, nurse, or other health professional ever told you that you had chronic obstructive pulmonary disease or COPD, emphysema, or chronic bronchitis?”	5.5 (5.3-5.7)	6.5 (6.3-6.7)	6.5 (6.3-6.7)	6.2 (5.7-6.7)	3.9 (3.5-4.4)	American Indian or Alaska Native, non-Hispanic: 10.2 (8.8-11.8) Asian, Native Hawaiian, or Pacific Islander, non-Hispanic: 1.9 (1.2-2.8) Other, non-Hispanic: 8.0 (7.1-9.1)

Wheaton, A.G. et al 2019 ²⁸	Adults aged ≥ 18 yrs	Self-reported COPD (COPD or CB or E): A "Yes" to "Has a doctor, nurse, or other health professional ever told that you have (COPD), E, or CB?"	5.5 (5.4-5.7)	6.8 (6.6-7.0)	6.7 (6.5-6.8)	6.6 (6.1-7.1)	3.6 (3.2-3.9)	9.3 (8.3-10.5)
BRFSS	N = 418,378*							AI/AN: 11.9 (10.3-13.7)
Cross-sectional, 2017								Asian: 1.7 (1.2-2.5)
								NH Native HI/PI:3.3 (1.8-6.0)
PATH								
Paulin, L. M. et al 2022 ²⁹	Adults aged 40 or older	Self-reported COPD (COPD or CB or E): A "Yes" response to "Has a doctor, nurse or other health professional EVER told you that you had any of the following lung or respiratory conditions? Choose all that apply: COPD, CB, E, asthma, some other lung or respiratory condition, none of the above, don't know, refused." Wave 1 questionnaire; Subsequent waves asked about respiratory disease diagnoses over the past 12 months. NOTE: For the analyses part, COPD, CB & E diagnoses were combined to create one COPD diagnosis measure.	6.6 (0.4)	8.5 (0.4)	8.5 (0.4)	6.9 (0.6)	4.5 (0.5)	4.4 (0.6)
PATH (Wave 1-5)	Unweighted (sample = 13,752)*							
Longitudinal cohort, 2013-2014								

+Increased severity

*Age-specific and age-standardized prevalence estimates were calculated using the direct method with 2000 U.S. census projections (e.g., adults aged ≥18 or 20-79 years) and are reported as percentages (%) with standard error (SE) or 95% confidence intervals (CI).

‡Weighted prevalence estimates based on survey sampling weights (e.g., NHANES), reported as percentage or per 1,000 population.

§Unweighted prevalence estimates, reported as annual averages or percentages for the sample population. No weighting or age adjustment was applied.

ABBREVIATIONS: NHANES: National Health and Nutrition Examination Survey; NHANES III: The third National Health and Nutrition Examination Survey; NHIS: National Health Interview Survey; BRFSS: Behavioral Risk Factor Surveillance System; PATH: Population Assessment of Tobacco and Health; NA: Not available; Mod: Moderate; M: Males; F: Females; AI/AN: American Indian/Alaska Native; HI/PI: Hawaiian/Pacific Islander; AO: airflow obstruction; COPD: chronic obstructive pulmonary disease; CB: chronic bronchitis; E: Emphysema; MEC: Mobile Examination Centers; Center FEV1: forced expiratory volume in one second; FVC: forced vital capacity; % pred: percent predicted; GOLD: Global Initiative for Chronic Obstructive Lung Disease; ATS=American Thoracic Society; ERS=European Respiratory Society; SE: Standard Error; 95% CI: 95% Confidence Interval; a, b, and c refer to the same survey but different survey periods or different COPD measures (spirometry vs. self-report), or to two separate surveys.

References

1. Zipf G, Chiappa M, Porter KS, Ostchega Y, Lewis BG, Dostal J. National Health and Nutrition Examination Survey: Plan and operations, 1999-2010. *Vital Health Stat.* 2023;(56).
2. National Center for Health Statistics (U.S.). *Plan and Operation of the Third National Health and Nutrition Examination Survey, 1988-94*. U.S. Dept. of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Center for Health Statistics; For sale by the U.S. G.P.O., Supt. of Docs.; 1994.
[//catalog.hathitrust.org/Record/007056641](https://catalog.hathitrust.org/Record/007056641)
3. National Center for Health Statistics (U.S.), ed. National Health Interview Survey; research for the 1995-2004 redesign. Published online July 1999. <https://stacks.cdc.gov/view/cdc/11305>
4. Centers for Disease Control and Prevention. Methodologic changes in the Behavioral Risk Factor Surveillance System in 2011 and potential effects on prevalence estimates. *MMWR Morb Mortal Wkly Rep.* 2012;61(22):410-413.
5. Hyland A, Ambrose BK, Conway KP, et al. Design and methods of the Population Assessment of Tobacco and Health (PATH) Study. *Tob Control.* 2017;26(4):371-378.
doi:10.1136/tobaccocontrol-2016-052934
6. Tourangeau R, Yan T, Sun H, Hyland A, Stanton CA. Population Assessment of Tobacco and Health (PATH) reliability and validity study: selected reliability and validity estimates. *Tob Control.* 2019;28(6):663-668. doi:10.1136/tobaccocontrol-2018-054561

7. National Institute on Drug Abuse. (n.d.). Population Assessment of Tobacco and Health (PATH) study: About the PATH study. National Institutes of Health. <https://nida.nih.gov/research/nida-research-programs-activities/population-assessment-tobacco-health-path-study/about-path-study>

8. Bang KM. Prevalence of Chronic Obstructive Pulmonary Disease in Blacks. *J Natl Med Assoc.* 1993;85(1):51-55.

9. Doney B, Hnizdo E, Dillon CF, et al. Prevalence of Airflow Obstruction in U.S. Adults Aged 40-79 Years: NHANES Data 1988-1994 and 2007-2010. *COPD.* 2015;12(4):355-365. doi:10.3109/15412555.2014.948998

10. Ford ES, Mannino DM, Wheaton AG, Giles WH, Presley-Cantrell L, Croft JB. Trends in the prevalence of obstructive and restrictive lung function among adults in the United States: findings from the National Health and Nutrition Examination surveys from 1988-1994 to 2007-2010. *Chest.* 2013 May;143(5):1395-1406. doi: 10.1378/chest.12-1135. PMID: 23715520; PMCID: PMC4563801.

11. Wang Z, Li Y, Lin J, et al. Prevalence, risk factors, and mortality of COPD in young people in the USA: results from a population-based retrospective cohort. *BMJ Open Respir Res.* 2023;10(1). doi:10.1136/bmjresp-2022-001550

12. Cadham CJ, Oh H, Han MK, et al. The prevalence and mortality risks of PRISm and COPD in the United States from NHANES 2007-2012. *Respir Res.* 2024;25(1):208. doi:10.1186/s12931-024-02841-y

13. Kurth L, Doney B, Halldin C, Hale J, Frenk SM. Airflow obstruction among ever-employed U.S. adults aged 18-79 years by industry and occupation: NHANES 2007-2008 to 2011-2012. *Am J Ind Med*. 2019;62(1):30-42. doi:10.1002/ajim.22930

14. Diaz-Guzman E, Khosravi M, Mannino DM. Asthma, Chronic Obstructive Pulmonary Disease, and Mortality in the U.S. Population. *COPD J Chronic Obstr Pulm Dis*. 2011;8(6):400-407. doi:10.3109/15412555.2011.611200

15. Tilert T, Paulose-Ram R, Howard D, Butler J, Lee S, Wang MQ. Prevalence and factors associated with self-reported chronic obstructive pulmonary disease among adults aged 40-79: the National Health and Nutrition Examination Survey (NHANES) 2007-2012. *EC Pulmonol Respir Med*. 2018;7(9):650-662.

16. Dirisanala S, Laller S, Ganti N, et al. E-cigarette use and prevalence of lung diseases among the U.S. population: a NHANES survey. Published April 13, 2023. Accessed July 7, 2023. <https://journals.sagepub.com/doi/10.1177/10815589231167357>

17. Schiller JS, Ni H. Cigarette smoking and smoking cessation among persons with chronic obstructive pulmonary disease. *Am J Health Promot AJHP*. 2006;20(5):319-323. doi:10.4278/0890-1171-20.5.319

18. Bang KM, Syamlal G, Mazurek JM. Prevalence of Chronic Obstructive Pulmonary Disease in the U.S. Working Population: An Analysis of Data from the 1997-2004 National Health Interview Survey. *COPD J Chronic Obstr Pulm Dis*. 2009;6(5):380-387. doi:10.1080/15412550903140899

19. Bang KM, Syamlal G, Mazurek JM, Wassell JT. Chronic Obstructive Pulmonary Disease Prevalence Among Nonsmokers by Occupation in the United States. *J Occup Environ Med.* 2013;55(9):1021. doi:10.1097/JOM.0b013e31829baa97

20. Doney B, Hnizdo E, Syamlal G, et al. Prevalence of chronic obstructive pulmonary disease among US working adults aged 40 to 70 years. National Health Interview Survey data 2004 to 2011. *J Occup Environ Med.* 2014;56(10):1088-1093. doi:10.1097/JOM.0000000000000232

21. Ward BW, Nugent CN, Blumberg SJ, Vahratian A. Measuring the Prevalence of Diagnosed Chronic Obstructive Pulmonary Disease in the United States Using Data From the 2012-2014 National Health Interview Survey. *Public Health Rep.* 2017;132(2):149-156. doi:10.1177/0033354916688197

22. Steinberg AW, Ozga JE, Tang Z, Stanton CA, Sargent JD, Paulin LM. Gender, tobacco and chronic obstructive pulmonary disease: analysis of the 2020 National Health Interview Survey. *BMJ Open Respir Res.* 2025 May 8;12(1):e002462. doi: 10.1136/bmjresp-2024-002462. PMID: 40340913; PMCID: PMC12067816.

23. Ford ES, Croft JB, Mannino DM, Wheaton AG, Zhang X, Giles WH. COPD surveillance--United States, 1999-2011. *Chest.* 2013;144(1):284-305. doi:10.1378/chest.13-0809

24. Kosacz NM, Punturieri A, Croxton TL, et al. Chronic Obstructive Pulmonary Disease Among Adults — United States, 2011. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6146a2.htm?s_cid=mm6146a2_w

25. Cunningham TJ, Ford ES, Rolle IV, Wheaton AG, Croft JB. Associations of Self-Reported Cigarette Smoking with Chronic Obstructive Pulmonary Disease and Co-Morbid Chronic Conditions in the United States. *COPD*. 2015;12(3):276-286. doi:10.3109/15412555.2014.949001
26. Liu Y, Carlson SA, Watson KB, Xu F, Greenlund KJ. Trends in the Prevalence of Chronic Obstructive Pulmonary Disease Among Adults Aged ≥ 18 Years - United States, 2011-2021. *MMWR Morb Mortal Wkly Rep*. 2023;72(46):1250-1256. doi:10.15585/mmwr.mm7246a1
27. Liu Y. Chronic Obstructive Pulmonary Disease and Arthritis Among US Adults, 2016. *Prev Chronic Dis*. 2019;16. doi:10.5888/pcd16.190035
28. Wheaton AG, Liu Y, Croft JB, et al. Chronic Obstructive Pulmonary Disease and Smoking Status - United States, 2017. *MMWR Morb Mortal Wkly Rep*. 2019;68(24):533-538. doi:10.15585/mmwr.mm6824a1
29. Paulin LM, Halenar MJ, Edwards KC, et al. Association of tobacco product use with chronic obstructive pulmonary disease (COPD) prevalence and incidence in Waves 1 through 5 (2013-2019) of the Population Assessment of Tobacco and Health (PATH) Study. *Respir Res*. 2022;23(1):273. doi:10.1186/s12931-022-02197-1