

Supplementary

Table S1 Temporal trends of PH-related ASMRs per million population (UCOD) with 95% CI in the US, 2003–2020

Variables	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
PH	17.81 (17.32–18.3)	16.55 (16.09–17.02)	16.98 (16.51–17.44)	17.43 (16.96–17.9)	17.14 (16.68–17.6)	17.82 (17.35–18.28)	18.72 (18.25–19.2)	19.58 (19.09–20.06)	19.34 (18.87–19.82)	19.7 (19.23–20.18)	21.07 (20.58–21.55)	21.03 (20.55–21.5)	22.35 (21.86–22.83)	22.69 (22.2–23.18)	22.64 (22.16–23.12)	23.07 (22.59–23.55)	24.01 (23.53–24.5)	23.89 (23.41–24.37)
Males	15.27 (14.56–15.98)	13.72 (13.05–14.38)	13.98 (13.32–14.64)	13.96 (13.3–14.61)	13.89 (13.24–14.54)	13.95 (13.3–14.59)	14.67 (14.02–15.33)	16.13 (15.44–16.81)	15.34 (14.68–15.99)	15.62 (14.96–16.27)	17.36 (16.68–18.04)	16.86 (16.2–17.53)	18.65 (17.97–19.34)	18.31 (17.63–18.98)	18.43 (17.76–19.1)	18.65 (17.98–19.31)	19.35 (18.69–20.02)	19.51 (18.85–20.18)
Females	19.85 (19.17–20.53)	18.73 (18.07–19.38)	19.31 (18.65–19.97)	20.07 (19.41–20.74)	19.48 (18.83–20.13)	20.77 (20.1–21.44)	21.75 (21.07–22.43)	22.18 (21.51–22.86)	22.23 (21.55–22.9)	22.72 (22.04–23.39)	23.8 (23.12–24.48)	24.08 (23.4–24.76)	25.06 (24.38–25.75)	26.02 (25.32–26.71)	25.71 (25.03–26.39)	26.36 (25.67–27.04)	27.43 (26.74–28.12)	27.19 (26.5–27.87)
PH WHO group 1	2.81 (2.62–3)	1.06 (0.94–1.18)	1.02 (0.9–1.13)	1 (0.89–1.11)	0.96 (0.85–1.07)	0.92 (0.81–1.02)	1.08 (0.96–1.19)	0.99 (0.88–1.1)	1.02 (0.91–1.13)	0.89 (0.79–0.99)	0.93 (0.82–1.03)	0.9 (0.8–1)	0.98 (0.88–1.08)	1.01 (0.91–1.11)	0.97 (0.87–1.07)	0.89 (0.79–0.99)	0.81 (0.72–0.9)	0.67 (0.59–0.75)
Gender																		
Males	2.03 (1.78–2.29)	0.55 (0.43–0.7)	0.68 (0.54–0.83)	0.61 (0.49–0.76)	0.6 (0.47–0.74)	0.5 (0.39–0.64)	0.64 (0.52–0.79)	0.58 (0.46–0.72)	0.72 (0.58–0.86)	0.59 (0.47–0.73)	0.62 (0.5–0.76)	0.57 (0.46–0.7)	0.68 (0.55–0.81)	0.74 (0.6–0.87)	0.73 (0.6–0.87)	0.58 (0.47–0.71)	0.52 (0.42–0.65)	0.42 (0.33–0.54)
Females	3.5 (3.21–3.79)	1.52 (1.32–1.71)	1.28 (1.11–1.46)	1.36 (1.18–1.54)	1.3 (1.13–1.48)	1.28 (1.11–1.45)	1.43 (1.25–1.61)	1.31 (1.14–1.47)	1.21 (1.05–1.37)	1.12 (0.97–1.28)	1.17 (1.01–1.32)	1.15 (1–1.3)	1.17 (1.02–1.32)	1.22 (1.07–1.37)	1.16 (1.02–1.31)	1.08 (0.94–1.22)	0.98 (0.84–1.11)	0.88 (0.76–1.01)
Race																		
White	2.8 (2.59–3)	0.98 (0.86–1.1)	0.99 (0.87–1.11)	0.96 (0.84–1.08)	0.94 (0.82–1.06)	0.91 (0.8–1.03)	1.06 (0.94–1.19)	1.03 (0.91–1.15)	1.02 (0.9–1.14)	0.84 (0.73–0.94)	0.97 (0.85–1.08)	0.91 (0.8–1.02)	0.98 (0.87–1.1)	1.03 (0.91–1.15)	0.98 (0.87–1.09)	0.88 (0.78–0.99)	0.79 (0.69–0.88)	0.69 (0.6–0.78)
African American	3.1 (2.48–3.82)	1.88 (1.41–2.46)	1.12 (0.77–1.57)	1.49 (1.1–1.97)	1.65 (1.22–2.18)	0.99 (0.66–1.42)	1.51 (1.11–2.01)	0.83 (0.55–1.19)	1.08 (0.75–1.49)	1.31 (0.94–1.76)	1.01 (0.69–1.43)	1.25 (0.91–1.67)	1.31 (0.95–1.75)	1.34 (0.99–1.77)	1.04 (0.74–1.42)	1.13 (0.81–1.54)	1.01 (0.72–1.38)	0.92 (0.65–1.27)
Others*	NA																	
Urbanization																		
>50K	2.57 (2.37–2.77)	1.02 (0.89–1.15)	0.94 (0.82–1.06)	0.96 (0.84–1.08)	0.97 (0.84–1.09)	0.9 (0.79–1.02)	1.06 (0.93–1.18)	0.99 (0.87–1.11)	1.02 (0.9–1.14)	0.87 (0.76–0.97)	0.96 (0.85–1.08)	0.88 (0.77–0.98)	1.01 (0.89–1.12)	1.02 (0.91–1.14)	0.99 (0.88–1.1)	0.86 (0.76–0.97)	0.77 (0.67–0.86)	0.66 (0.57–0.75)
<50K	4.14 (3.58–4.71)	1.25 (0.95–1.61)	1.25 (0.96–1.6)	1.2 (0.92–1.55)	1.07 (0.8–1.4)	1.03 (0.78–1.35)	1.19 (0.9–1.54)	1.13 (0.86–1.45)	0.96 (0.72–1.26)	1 (0.75–1.31)	0.94 (0.69–1.24)	1.18 (0.9–1.52)	0.86 (0.63–1.14)	0.94 (0.71–1.21)	0.93 (0.7–1.2)	0.93 (0.71–1.21)	0.86 (0.64–1.14)	0.83 (0.61–1.1)
PH WHO groups 2–5	14.95 (14.51–15.4)	15.52 (15.07–15.97)	15.97 (15.52–16.42)	16.45 (15.99–16.9)	16.17 (15.72–16.62)	16.91 (16.45–17.36)	17.63 (17.17–18.09)	18.56 (18.09–19.03)	18.33 (17.87–18.79)	18.79 (18.33–19.25)	20.12 (19.65–20.6)	20.12 (19.65–20.59)	21.38 (20.9–21.85)	21.68 (21.2–22.16)	21.66 (21.19–22.14)	22.17 (21.7–22.64)	23.2 (22.72–23.67)	23.2 (22.73–23.68)
Gender																		
Males	13.22 (12.56–13.88)	13.15 (12.5–13.8)	13.32 (12.67–13.96)	13.36 (12.72–14.01)	13.29 (12.66–13.93)	13.42 (12.79–14.05)	13.99 (13.35–14.63)	15.53 (14.86–16.2)	14.63 (13.99–15.27)	15 (14.36–15.64)	16.71 (16.05–17.38)	16.27 (15.62–16.92)	17.93 (17.26–18.61)	17.54 (16.88–18.2)	17.69 (17.03–18.34)	18.04 (17.39–18.69)	18.8 (18.14–19.45)	19.09 (18.44–19.75)
Females	16.34 (15.72–16.95)	17.21 (16.58–17.83)	18.03 (17.39–18.67)	18.72 (18.07–19.36)	18.19 (17.56–18.82)	19.48 (18.84–20.13)	20.33 (19.68–20.99)	20.86 (20.2–21.51)	21 (20.35–21.65)	21.59 (20.94–22.25)	22.63 (21.97–23.3)	22.91 (22.25–23.58)	23.89 (23.22–24.56)	24.81 (24.14–25.49)	24.54 (23.88–25.21)	25.26 (24.59–25.93)	26.45 (25.77–27.13)	26.3 (25.62–26.97)
Race																		
White	14.07 (13.6–14.53)	14.66 (14.19–15.13)	15.17 (14.69–15.64)	15.55 (15.07–16.03)	15.16 (14.69–15.62)	16.17 (15.7–16.65)	16.7 (16.22–17.18)	17.53 (17.04–18.02)	17.6 (17.11–18.09)	17.82 (17.34–18.31)	19.2 (18.7–19.7)	19.28 (18.79–19.78)	20.63 (20.12–21.14)	20.8 (20.29–21.31)	20.73 (20.23–21.23)	21.09 (20.59–21.59)	22.07 (21.56–22.57)	21.94 (21.43–22.44)
African American	24.78 (22.88–26.67)	24.88 (23–26.75)	25.51 (23.63–27.39)	26.09 (24.21–27.96)	27.06 (25.14–28.98)	25.41 (23.58–27.23)	28.28 (26.38–30.18)	29.43 (27.51–31.36)	27.49 (25.65–29.33)	30.44 (28.54–32.34)	30.8 (28.91–32.69)	31.1 (29.22–32.98)	31.48 (29.63–33.33)	32.77 (30.91–34.64)	33.21 (31.37–35.05)	34.84 (32.98–36.7)	37.39 (35.49–39.29)	38.15 (36.26–40.05)
American Indians/Alaska Native	NA	10.84 (6.53–16.93)	14.39 (9.12–21.6)	13.23 (8.38–19.85)	9.33 (5.77–14.26)	8.16 (4.67–13.26)	12.12 (7.76–18.03)	12.4 (8.1–18.17)	12.44 (8.26–17.97)	9.89 (6.12–15.11)	14.29 (9.64–20.4)	14.61 (10.34–20.06)	15.7 (11.16–21.46)	13.2 (9.38–18.04)	11.23 (7.82–15.61)	10.59 (7.33–14.79)	12.32 (8.84–16.71)	16.44 (12.51–21.2)
Asian/Pacific Islanders	7.44 (5.73–9.5)	7.43 (5.73–9.47)	6.72 (5.12–8.67)	7.15 (5.54–9.08)	8.21 (6.54–10.18)	8.11 (6.49–10)	8.15 (6.49–9.81)	10.44 (8.55–12.32)	8.32 (6.69–9.94)	7.81 (6.32–9.31)	10.64 (8.95–12.33)	7.55 (6.16–8.94)	10.38 (8.82–11.94)	10.12 (8.61–11.64)	10.81 (9.3–12.32)	11.03 (9.53–12.54)	10.66 (9.22–12.09)	10.68 (9.28–12.08)
Urbanization																		
>50K	14.92 (14.43–15.41)	15.43 (14.93–15.92)	15.62 (15.12–16.11)	16.32 (15.82–16.82)	15.99 (15.5–16.48)	16.79 (16.29–17.28)	17.52 (17.01–18.02)	18.42 (17.91–18.94)	18.06 (17.56–18.57)	18.56 (18.06–19.06)	20 (19.48–20.52)	19.78 (19.27–20.29)	21.21 (20.69–21.72)	21.26 (20.74–21.78)	21.32 (20.81–21.83)	21.81 (21.3–22.32)	22.53 (22.02–23.05)	22.93 (22.41–23.44)
<50K	15.11 (14.05–16.17)	15.79 (14.71–16.86)	17.5 (16.37–18.62)	17.12 (16.01–18.23)	16.98 (15.88–18.07)	17.33 (16.23–18.43)	18.25 (17.12–19.38)	19.27 (18.12–20.41)	19.71 (18.56–20.86)	19.84 (18.69–20.99)	20.92 (19.74–22.1)	21.81 (20.61–23)	22.25 (21.06–23.45)	24 (22.75–25.25)	23.3 (22.1–24.51)	24.18 (22.95–25.41)	26.89 (25.61–28.18)	24.84 (23.6–26.08)

Data from underlying cause of death CDC WONDER data set, 2003–2020. *, data suppressed due to low number of decedents (<10 per annum) as per CDC policy to ensure confidentiality. ASMRs, age-standardized mortality rates; CI, confidence interval; NA, not available; PH, pulmonary hypertension; UCOD, underlying cause of death; US, United States; and WHO, World Health Organization.

Table S2 Temporal trends of PH-related ASMRs per million population with comorbid conditions (MCOD) with 95% CI in the US, 2003–2020

PH WHO groups 2–5	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Absolute change	Percentage change
Group 2 related comorbid conditions	13.6 (13.1–14)	14.7 (14.2–15.1)	15.3 (14.9–15.7)	15.9 (15.4–16.3)	17.1 (16.6–17.5)	18.1 (17.6–18.5)	18.3 (17.9–18.8)	19.1 (18.6–19.6)	19.9 (19.4–20.4)	19.7 (19.2–20.2)	19.9 (19.4–20.3)	20 (19.6–20.5)	20.6 (20.1–21.1)	21.7 (21.2–22.2)	22.6 (22.1–23)	22.8 (22.4–23.3)	24.4 (23.9–24.9)	27 (26.5–27.5)	13.4	99
Group 3 related comorbid conditions	22.99 (22.44–23.55)	23.44 (22.88–23.99)	23.59 (23.04–24.14)	23.05 (22.51–23.59)	23.55 (23.01–24.1)	24.38 (23.83–24.93)	24.78 (24.24–25.33)	25.33 (24.78–25.88)	25.21 (24.67–25.75)	24.27 (23.75–24.8)	24.78 (24.26–25.31)	24.43 (23.92–24.95)	25.39 (24.87–25.91)	25.95 (25.43–26.47)	26.78 (26.26–27.3)	26.84 (26.33–27.36)	27.48 (26.97–27.99)	29.17 (28.64–29.69)	6.18	27

Data from underlying cause of death CDC WONDER data set, 2003–2020. ASMRs, age-standardized mortality rates; CI, confidence interval; MCOD, multiple cause of death; PH, pulmonary hypertension; and WHO, World health Organization.