



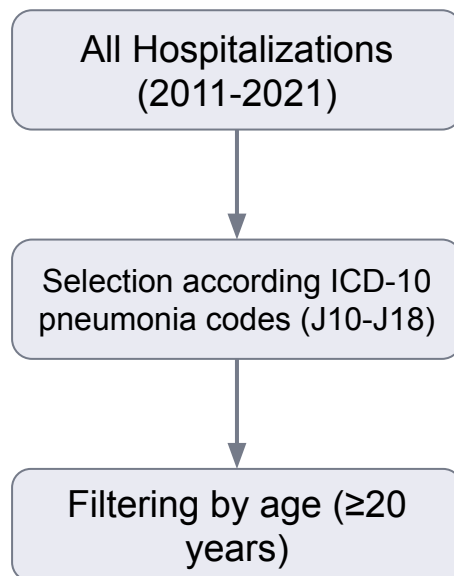
Community-acquired pneumonia in Brazil

IND2620 - Healthcare Operations Management

Authors: Matheus Meirim, Rachel Ventriglia

Community-acquired pneumonia in Brazil

Selection of community-acquired pneumonia cases



Community-acquired pneumonia in Brazil

Informations by Age group

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|-----------------------|---------|---------|--------|--------------------------|
| Admissions | 362,159 | 344,545 | 359,744 | 344,402 | 339,809 | 338,561 | 351,769 | 349,995 | 353,591 | -2.37 | -0.19 [-0.23 ; -0.15] | 259,030 | 222,710 | -37.01 | -21.12 [-21.33 ; -20.91] |
| 20-49 | 100,828 | 95,221 | 95,835 | 85,023 | 73,548 | 73,140 | 66,012 | 67,761 | 67,083 | -33.47 | -5.83 [-5.92 ; -5.75] | 56,986 | 47,359 | -29.40 | -15.92 [-16.41 ; -15.43] |
| 50-59 | 47,338 | 46,156 | 47,186 | 43,368 | 41,594 | 43,961 | 40,668 | 41,428 | 40,372 | -14.72 | -2.06 [-2.18 ; -1.95] | 32,642 | 28,037 | -30.55 | -16.82 [-17.45 ; -16.18] |
| 60-69 | 57,121 | 54,489 | 57,829 | 55,113 | 55,622 | 57,857 | 60,350 | 59,306 | 59,710 | 4.53 | 0.95 [0.84 ; 1.06] | 44,692 | 38,132 | -36.14 | -20.47 [-20.98 ; -19.96] |
| 70+ | 156,872 | 148,679 | 158,894 | 160,898 | 169,045 | 163,603 | 184,739 | 181,500 | 186,426 | 18.84 | 2.73 [2.67 ; 2.79] | 124,710 | 109,182 | -41.43 | -24.36 [-24.65 ; -24.08] |
| Age-adjusted Admissions rate ^a | 286 | 265 | 268 | 249 | 238 | 230 | 231 | 223 | 218 | -23.78 | -3.26 [-3.31 ; -3.21] | 157 | 131 | -39.91 | -23.13 [-23.4 ; -22.87] |
| 20-49 | 112 | 105 | 104 | 92 | 79 | 78 | 69 | 71 | 69 | -38.39 | -6.72 [-6.85 ; -6.6] | 58 | 48 | -30.43 | -16.67 [-17.41 ; -15.93] |
| 50-59 | 247 | 233 | 232 | 207 | 194 | 200 | 180 | 180 | 172 | -30.36 | -4.54 [-4.91 ; -4.18] | 137 | 116 | -32.56 | -18.17 [-20.13 ; -16.16] |
| 60-69 | 482 | 441 | 450 | 411 | 399 | 400 | 402 | 381 | 370 | -23.24 | -2.86 [-3.26 ; -2.47] | 268 | 221 | -40.27 | -23.15 [-25.04 ; -21.21] |
| 70+ | 1,561 | 1,426 | 1,467 | 1,428 | 1,441 | 1,343 | 1,453 | 1,371 | 1,350 | -13.52 | -1.28 [-1.55 ; -1.01] | 871 | 730 | -45.93 | -27.32 [-28.54 ; -26.07] |
| Deaths | 43,615 | 45,225 | 49,196 | 49,246 | 52,225 | 55,595 | 55,836 | 57,379 | 59,337 | 36.05 | 3.9 [3.78 ; 4.01] | 52,464 | 48,017 | -19.08 | -10.1 [-10.64 ; -9.55] |
| 20-49 | 4,614 | 4,623 | 4,847 | 4,301 | 4,217 | 4,698 | 4,004 | 4,301 | 4,217 | -8.60 | -1.44 [-1.81 ; -1.06] | 4,320 | 4,042 | -4.15 | -2.07 [-4.14 ; 0.05] |
| 50-59 | 4,126 | 4,265 | 4,547 | 4,356 | 4,343 | 4,990 | 4,282 | 4,684 | 4,683 | 13.50 | 1.35 [0.96 ; 1.73] | 4,558 | 4,395 | -6.15 | -3.12 [-5.09 ; -1.11] |
| 60-69 | 6,383 | 6,545 | 7,335 | 7,130 | 7,572 | 8,320 | 8,136 | 8,504 | 8,871 | 38.98 | 4.15 [3.85 ; 4.46] | 8,844 | 7,830 | -11.73 | -5.93 [-7.34 ; -4.51] |
| 70+ | 28,492 | 29,792 | 32,467 | 33,459 | 36,093 | 37,587 | 39,414 | 39,890 | 41,566 | 45.89 | 4.86 [4.72 ; 5.01] | 34,742 | 31,750 | -23.62 | -12.78 [-13.41 ; -12.13] |
| Age-adjusted In-hospital Mortality rate ^a | 35 | 35 | 37 | 35 | 36 | 37 | 36 | 36 | 35 | 0.00 | 0.18 [0.04 ; 0.32] | 31 | 27 | -22.86 | -12.65 [-13.35 ; -11.95] |
| 20-49 | 6 | 6 | 6 | 5 | 5 | 5 | 5 | 5 | 5 | -16.67 | -2.55 [-3.11 ; -1.99] | 5 | 5 | 0.00 | -3.18 [-6.3 ; 0.04] |
| 50-59 | 22 | 22 | 23 | 21 | 21 | 23 | 19 | 21 | 20 | -9.09 | -1.24 [-2.42 ; -0.04] | 19 | 19 | -5.00 | -4.7 [-10.74 ; 1.74] |
| 60-69 | 54 | 54 | 58 | 54 | 55 | 58 | 55 | 55 | 56 | 3.70 | 0.21 [-0.91 ; 1.34] | 53 | 46 | -17.86 | -9.14 [-14.27 ; -3.7] |
| 70+ | 277 | 279 | 293 | 289 | 299 | 300 | 301 | 293 | 293 | 5.78 | 0.7 [0.09 ; 1.32] | 238 | 208 | -29.01 | -15.89 [-18.66 ; -13.03] |

AAPC - Annual Average Percent Change (estimated from Poisson regression model)

^a Rates per 100,000 population, adjusted to the WHO standard population

*Percentage change between 2011-2019 and 2019-2021, respectively

Community-acquired pneumonia in Brazil

ICU vs non ICU by Age group

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------|----------------------|-------------|-------------|--------|-------------------------|
| Admissions | 362,159 | 344,545 | 359,744 | 344,402 | 339,809 | 338,561 | 351,769 | 349,995 | 353,591 | -2.37 | -0.19 [-0.23; -0.15] | 259,030 | 222,710 | -37.01 | -21.12 [-21.33; -20.91] |
| ICU Admissions | 15,258 | 16,976 | 19,243 | 19,504 | 18,948 | 20,236 | 20,303 | 20,800 | 22,602 | 48.13 | 3.85 [3.66; 4.04] | 24,930 | 21,894 | -3.13 | -1.52 [-2.41; -0.62] |
| Non ICU Admissions | 346,901 | 327,569 | 340,501 | 324,898 | 320,861 | 318,325 | 331,466 | 329,195 | 330,989 | -4.59 | -0.42 [-0.46; -0.38] | 234,100 | 200,816 | -39.33 | -22.72 [-22.94; -22.51] |
| 20-49 | 100,828 | 95,221 | 95,835 | 85,023 | 73,548 | 73,140 | 66,012 | 67,761 | 67,083 | -33.47 | -5.83 [-5.92; -5.75] | 56,986 | 47,359 | -29.40 | -15.92 [-16.41; -15.43] |
| ICU Admissions | 3,160 | 3,480 | 3,726 | 3,463 | 3,272 | 3,837 | 3,329 | 3,602 | 3,960 | 25.32 | 1.49 [1.06; 1.93] | 4,757 | 4,259 | 7.55 | 3.52 [1.36; 5.72] |
| Non ICU Admissions | 97,668 | 91,741 | 92,109 | 81,560 | 70,276 | 69,303 | 62,683 | 64,159 | 63,123 | -35.37 | -6.16 [-6.25; -6.08] | 52,229 | 43,100 | -31.72 | -17.36 [-17.86; -16.86] |
| 50-59 | 47,338 | 46,156 | 47,186 | 43,368 | 41,594 | 43,961 | 40,668 | 41,428 | 40,372 | -14.72 | -2.06 [-2.18; -1.95] | 32,642 | 28,037 | -30.55 | -16.82 [-17.45; -16.18] |
| ICU Admissions | 2,053 | 2,311 | 2,653 | 2,581 | 2,330 | 2,842 | 2,515 | 2,875 | 2,895 | 41.01 | 3.34 [2.83; 3.86] | 3,487 | 3,245 | 12.09 | 5.61 [3.05; 8.23] |
| Non ICU Admissions | 45,285 | 43,845 | 44,533 | 40,787 | 39,264 | 41,119 | 38,153 | 38,553 | 37,477 | -17.24 | -2.39 [-2.51; -2.27] | 29,155 | 24,792 | -33.85 | -18.91 [-19.56; -18.26] |
| 60-69 | 57,121 | 54,489 | 57,829 | 55,113 | 55,622 | 57,857 | 60,350 | 59,306 | 59,710 | 4.53 | 0.95 [0.84; 1.06] | 44,692 | 38,132 | -36.14 | -20.47 [-20.98; -19.96] |
| ICU Admissions | 2,788 | 3,048 | 3,461 | 3,527 | 3,507 | 3,859 | 3,983 | 4,204 | 4,596 | 64.85 | 5.67 [5.23; 6.12] | 5,208 | 4,520 | -1.65 | -0.79 [-2.76; 1.22] |
| Non ICU Admissions | 54,333 | 51,441 | 54,368 | 51,586 | 52,115 | 53,998 | 56,367 | 55,102 | 55,114 | 1.44 | 0.64 [0.53; 0.75] | 39,484 | 33,612 | -39.01 | -22.45 [-22.98; -21.92] |
| 70+ | 156,872 | 148,679 | 158,894 | 160,898 | 169,045 | 163,603 | 184,739 | 181,500 | 186,426 | 18.84 | 2.73 [2.67; 2.79] | 124,710 | 109,182 | -41.43 | -24.36 [-24.65; -24.08] |
| ICU Admissions | 7,257 | 8,137 | 9,403 | 9,933 | 9,839 | 9,698 | 10,476 | 10,119 | 11,151 | 53.66 | 4.18 [3.91; 4.45] | 11,478 | 9,870 | -11.49 | -5.74 [-6.99; -4.48] |
| Non ICU Admissions | 149,615 | 140,542 | 149,491 | 150,965 | 159,206 | 153,905 | 174,263 | 171,381 | 175,275 | 17.15 | 2.64 [2.58; 2.71] | 113,232 | 99,312 | -43.34 | -25.78 [-26.07; -25.49] |
| Age-adjusted Admissions rate^a | 286 | 265 | 268 | 249 | 238 | 230 | 231 | 223 | 218 | -23.78 | -3.26 [-3.31; -3.21] | 157 | 131 | -39.91 | -23.13 [-23.4; -22.87] |
| ICU Admissions | 13 (4.55%) | 14 (5.28%) | 15 (5.6%) | 15 (6.02%) | 14 (5.88%) | 14 (6.09%) | 14 (6.06%) | 14 (6.28%) | 15 (6.88%) | 15.38 | 0.71 [0.48; 0.94] | 16 (10.19%) | 13 (9.92%) | -13.33 | -4.02 [-5.14; -2.89] |
| 20-49 | 112 | 105 | 104 | 92 | 79 | 78 | 69 | 71 | 69 | -38.39 | -6.72 [-6.85; -6.6] | 58 | 48 | -30.43 | -16.67 [-17.41; -15.93] |
| ICU Admissions | 4 (3.57%) | 4 (3.81%) | 5 (4.81%) | 4 (4.35%) | 4 (5.06%) | 5 (6.41%) | 4 (5.8%) | 4 (5.63%) | 5 (7.25%) | 25.00 | 0.45 [-0.2; 1.1] | 5 (8.62%) | 5 (10.42%) | 0.00 | 2.37 [-0.87; 5.72] |
| 50-59 | 247 | 233 | 232 | 207 | 194 | 200 | 180 | 180 | 172 | -30.36 | -4.54 [-4.91; -4.18] | 137 | 116 | -32.56 | -18.17 [-20.13; -16.16] |
| ICU Admissions | 11 (4.45%) | 12 (5.15%) | 14 (6.03%) | 13 (6.28%) | 11 (5.67%) | 13 (6.5%) | 12 (6.67%) | 13 (7.22%) | 13 (7.56%) | 18.18 | 0.73 [-0.86; 2.35] | 15 (10.95%) | 14 (12.07%) | 7.69 | 3.84 [-3.94; 12.24] |
| 60-69 | 482 | 441 | 450 | 411 | 399 | 400 | 402 | 381 | 370 | -23.24 | -2.86 [-3.26; -2.47] | 268 | 221 | -40.27 | -23.15 [-25.04; -21.21] |
| ICU Admissions | 24 (4.98%) | 25 (5.67%) | 27 (6%) | 27 (6.57%) | 26 (6.52%) | 27 (6.75%) | 27 (6.72%) | 27 (7.09%) | 29 (7.84%) | 20.83 | 1.66 [0.02; 3.32] | 32 (11.94%) | 27 (12.22%) | -6.90 | -4.05 [-11.21; 3.68] |
| 70+ | 1,561 | 1,426 | 1,467 | 1,428 | 1,441 | 1,343 | 1,453 | 1,371 | 1,350 | -13.52 | -1.28 [-1.55; -1.01] | 871 | 730 | -45.93 | -27.32 [-28.54; -26.07] |
| ICU Admissions | 73 (4.68%) | 79 (5.54%) | 88 (6%) | 89 (6.23%) | 85 (5.9%) | 81 (6.03%) | 84 (5.78%) | 78 (5.69%) | 83 (6.15%) | 13.70 | 0.33 [-0.82; 1.5] | 82 (9.41%) | 68 (9.32%) | -18.07 | -9.35 [-14.58; -3.81] |

AAPC = Annual Average Percent Change (estimated from Poisson regression model)

^a Rates per 100,000 population, adjusted to the WHO standard population

*Percentage change between 2011-2019 and 2019-2021, respectively

Community-acquired pneumonia in Brazil

Lethality by Age group

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----------------------|--------|--------|-------|------------------------|
| Age-adjusted In-hospital Lethality rate | 6.59% | 7.02% | 7.31% | 7.39% | 7.98% | 8.66% | 8.19% | 8.58% | 8.66% | 31.54 | 3.48 [3.29 ; 3.68] | 10.77% | 11.64% | 34.36 | 16.12 [14.96 ; 17.3] |
| 20-49 | 4.28% | 4.49% | 4.70% | 4.66% | 5.31% | 5.83% | 5.64% | 5.83% | 5.78% | 35.05 | 4.4 [3.78 ; 5.02] | 6,95% | 7,64% | 32.27 | 15.09 [11.24 ; 19.08] |
| 50-59 | 8.67% | 9.15% | 9.56% | 9.92% | 10.33% | 11.17% | 10.39% | 11.17% | 11.48% | 32.36 | 3.38 [2.14 ; 4.63] | 13,77% | 15,49% | 34.98 | 16.19 [8.84 ; 24.04] |
| 60-69 | 11.08% | 11.87% | 12.54% | 12.82% | 13.49% | 14.26% | 13.39% | 14.21% | 14.68% | 32.45 | 3.14 [1.99 ; 4.31] | 19,64% | 20,31% | 38.35 | 17.96 [11.33 ; 24.98] |
| 70+ | 16.07% | 17.78% | 18.08% | 18.37% | 18.72% | 20.23% | 18.65% | 19.33% | 19.64% | 22.20 | 1.94 [1.31 ; 2.58] | 25,49% | 26,50% | 34.94 | 16.65 [12.86 ; 20.57] |
| Age-adjusted Non ICU Lethality rate | 5.12% | 5.33% | 5.47% | 5.42% | 5.96% | 6.43% | 6.12% | 6.39% | 6.54% | 27.74 | 3.23 [3 ; 3.46] | 7.84% | 8.61% | 31.71 | 14.94 [13.54 ; 16.36] |
| 20-49 | 3.10% | 3.18% | 3.32% | 3.19% | 3.70% | 4.01% | 3.90% | 4.04% | 4.07% | 31.03 | 3.99 [3.23 ; 4.75] | 4,55% | 5,19% | 27.67 | 12.99 [8.23 ; 17.95] |
| 50-59 | 6.88% | 6.96% | 7.00% | 7.17% | 7.71% | 8.32% | 7.88% | 8.23% | 8.70% | 26.50 | 3.12 [1.65 ; 4.61] | 10,13% | 11,34% | 30.42 | 14.14 [5.4 ; 23.62] |
| 60-69 | 8.80% | 9.34% | 9.67% | 9.74% | 10.45% | 11.02% | 10.43% | 11.13% | 11.39% | 29.48 | 3.06 [1.71 ; 4.43] | 15,20% | 15,81% | 38.82 | 18.28 [10.38 ; 26.74] |
| 70+ | 13.82% | 14.99% | 15.04% | 15.12% | 15.68% | 17.11% | 15.69% | 16.44% | 16.77% | 21.33 | 2.07 [1.35 ; 2.79] | 21,54% | 22,62% | 34.90 | 16.67 [12.41 ; 21.1] |
| Age-adjusted ICU Lethality rate | 45.36% | 44.94% | 45.46% | 45.88% | 46.62% | 45.59% | 44.22% | 44.20% | 39.87% | -12.10 | -1.12 [-1.45 ; -0.78] | 39.90% | 39.59% | -0.69 | -0.34 [-2.14 ; 1.49] |
| 20-49 | 41.16% | 39.72% | 39.57% | 39.81% | 40.62% | 39.25% | 39.05% | 38.73% | 33.42% | -18.79 | -1.57 [-2.58 ; -0.55] | 34,34% | 33,03% | -1.19 | -0.65 [-6.1 ; 5.13] |
| 50-59 | 48.27% | 50.80% | 52.44% | 53.63% | 54.78% | 52.63% | 48.80% | 50.58% | 47.52% | -1.56 | -0.57 [-2.77 ; 1.68] | 44,33% | 47,30% | -0.46 | -0.05 [-11.05 ; 12.31] |
| 60-69 | 55.47% | 54.88% | 57.82% | 57.63% | 58.48% | 59.56% | 55.13% | 54.51% | 53.97% | -2.70 | -0.46 [-2.59 ; 1.72] | 53,43% | 53,86% | -0.20 | -0.08 [-10.33 ; 11.34] |
| 70+ | 61.82% | 64.54% | 65.48% | 66.59% | 65.90% | 67.07% | 64.55% | 64.40% | 60.93% | -1.43 | -0.29 [-1.71 ; 1.15] | 60,52% | 61,37% | 0.71 | 0.29 [-7.02 ; 8.18] |

AAPC - Annual Average Percent Change (estimated from Poisson regression model)

*Percentage change between 2011-2019 and 2019-2021, respectively

Community-acquired pneumonia in Brazil

ICU mean LOS by Age group

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|---------------------|------|------|------|------|------|------|------|------|------|-------|----------------------|------|------|-------|------------------------|
| Mean ICU LOS (days) | 7.76 | 7.92 | 8.07 | 8.17 | 8.07 | 8.29 | 8.15 | 8.18 | 7.97 | 2.73 | 0.4 [-8.16 ; 9.75] | 7.48 | 8.01 | 0.49 | 0.25 [-38.93 ; 64.57] |
| 20-49 | 7.67 | 7.66 | 7.87 | 7.81 | 8.23 | 8.08 | 7.83 | 8.22 | 7.89 | 2.76 | 0.57 [-8.08 ; 10.04] | 7.30 | 7.77 | -1.51 | -0.78 [-39.88 ; 63.77] |
| 50-59 | 8.24 | 8.26 | 8.45 | 8.31 | 8.52 | 8.52 | 8.52 | 8.60 | 8.02 | -2.75 | 0.09 [-8.28 ; 9.24] | 7.60 | 8.71 | 8.69 | 4.39 [-35.85 ; 69.87] |
| 60-69 | 8.06 | 8.25 | 8.43 | 8.58 | 8.13 | 8.52 | 8.44 | 8.74 | 8.32 | 3.26 | 0.49 [-7.92 ; 9.67] | 8.00 | 8.49 | 1.97 | 1 [-37.63 ; 63.53] |
| 70+ | 7.54 | 7.81 | 7.91 | 8.12 | 7.89 | 8.22 | 8.06 | 7.82 | 7.84 | 3.99 | 0.34 [-8.29 ; 9.78] | 7.28 | 7.66 | -2.28 | -1.17 [-40.24 ; 63.44] |

AAPC - Annual Average Percent Change (estimated from Poisson regression model)

*Percentage change between 2011-2019 and 2019-2021, respectively

Community-acquired pneumonia in Brazil

ICD-10 TOP 10 Ranking

| 2011 | | % | 2019 | | % | 2021 | | % |
|------|--|--------|------|--|--------|------|--|--------|
| J189 | Pneumonia, unspecified organisms | 40,68% | J189 | Pneumonia, unspecified organisms | 42,69% | J189 | Pneumonia, unspecified organisms | 42,44% |
| J180 | Bronchopneumonia, unspecified organism | 12,41% | J159 | Unspecified bacterial pneumonia | 17,51% | J159 | Unspecified bacterial pneumonia | 14,62% |
| J188 | Other pneumonia, unspecified organism | 11,15% | J180 | Bronchopneumonia, unspecified organism | 12,76% | J180 | Bronchopneumonia, unspecified organism | 11,27% |
| J158 | Pneumonia due to other specified bacteria | 8,98% | J158 | Pneumonia due to other specified bacteria | 8,29% | J158 | Pneumonia due to other specified bacteria | 6,56% |
| J159 | Unspecified bacterial pneumonia | 6,50% | J188 | Other pneumonia, unspecified organism | 6,12% | J129 | Viral pneumonia, unspecified | 4,95% |
| J128 | Other viral pneumonia | 6,26% | J128 | Other viral pneumonia | 3,01% | J188 | Other pneumonia, unspecified organism | 4,77% |
| J168 | Pneumonia due to other specified infectious organisms | 4,46% | J168 | Pneumonia due to other specified infectious organisms | 2,07% | J128 | Other viral pneumonia | 3,72% |
| J110 | Influenza due to unidentified influenza virus with pneumonia | 2,35% | J110 | Influenza due to unidentified influenza virus with pneumonia | 2,00% | J110 | Influenza due to unidentified influenza virus with pneumonia | 3,65% |
| J181 | Lobar pneumonia, unspecified organism | 1,85% | J129 | Viral pneumonia, unspecified | 1,62% | J168 | Pneumonia due to other specified infectious organisms | 1,52% |
| J100 | Influenza due to other identified influenza virus with pneumonia | 1,58% | J181 | Lobar pneumonia, unspecified organism | 0,74% | J100 | Influenza due to other identified influenza virus with pneumonia | 0,92% |

Diagram illustrating the ICD-10 TOP 10 Ranking for Community-acquired pneumonia in Brazil across three years (2011, 2019, 2021). The tables show the top 10 ICD-10 codes and their corresponding percentages. Lines connect the codes across the years, indicating changes in ranking and percentage. Circled numbers (11, 12) indicate specific rankings or percentages for certain codes in 2019 and 2021.

Community-acquired pneumonia in Brazil

Pneumonia Admissions vs General Admissions

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------|-----------------------|-------------|-------------|--------|--------------------------|
| Admissions | 5,285,633 | 5,213,074 | 5,246,687 | 5,304,161 | 5,265,162 | 5,218,627 | 5,286,445 | 5,445,551 | 5,622,312 | 6.37 | 0.64 [0.63 ; 0.65] | 4,858,330 | 5,353,034 | -4.79 | -2.52 [-2.58 ; -2.46] |
| Pneumonia Admissions | 362,159 | 344,545 | 359,744 | 344,402 | 339,809 | 338,561 | 351,769 | 349,995 | 353,591 | -2.37 | -0.19 [-0.23 ; -0.15] | 259,030 | 222,710 | -37.01 | -21.12 [-21.33 ; -20.91] |
| 20-49 | 2,257,441 | 2,208,659 | 2,168,720 | 2,177,013 | 2,107,769 | 2,063,703 | 2,038,668 | 2,097,178 | 2,137,618 | -5.31 | -0.92 [-0.94 ; -0.9] | 1,797,093 | 1,973,898 | -7.66 | -4.07 [-4.17 ; -3.98] |
| Pneumonia Admissions | 100,828 | 95,221 | 95,835 | 85,023 | 73,548 | 73,140 | 66,012 | 67,761 | 67,083 | -33.47 | -5.83 [-5.92 ; -5.75] | 56,986 | 47,359 | -29.40 | -15.92 [-16.41 ; -15.43] |
| 50-59 | 901,122 | 896,375 | 909,225 | 922,278 | 915,649 | 912,529 | 918,994 | 951,959 | 981,032 | 8.87 | 0.9 [0.87 ; 0.93] | 850,860 | 972,436 | -0.88 | -0.46 [-0.6 ; -0.32] |
| Pneumonia Admissions | 47,338 | 46,156 | 47,186 | 43,368 | 41,594 | 43,961 | 40,668 | 41,428 | 40,372 | -14.72 | -2.06 [-2.18 ; -1.95] | 32,642 | 28,037 | -30.55 | -16.82 [-17.45 ; -16.18] |
| 60-69 | 862,065 | 865,227 | 887,855 | 906,238 | 919,991 | 932,749 | 961,355 | 1,000,323 | 1,047,103 | 21.46 | 2.39 [2.36 ; 2.42] | 922,748 | 1,022,158 | -2.38 | -1.24 [-1.38 ; -1.11] |
| Pneumonia Admissions | 57,121 | 54,489 | 57,829 | 55,113 | 55,622 | 57,857 | 60,350 | 59,306 | 59,710 | 4.53 | 0.95 [0.84 ; 1.06] | 44,692 | 38,132 | -36.14 | -20.47 [-20.98 ; -19.96] |
| 70+ | 1,265,005 | 1,242,813 | 1,280,887 | 1,298,632 | 1,321,753 | 1,309,646 | 1,367,428 | 1,396,091 | 1,456,559 | 15.14 | 1.79 [1.77 ; 1.81] | 1,287,629 | 1,384,542 | -4.94 | -2.58 [-2.7 ; -2.47] |
| Pneumonia Admissions | 156,872 | 148,679 | 158,894 | 160,898 | 169,045 | 163,603 | 184,739 | 181,500 | 186,426 | 18.84 | 2.73 [2.67 ; 2.79] | 124,710 | 109,182 | -41.43 | -24.36 [-24.65 ; -24.08] |
| Age-adjusted Admissions rate ^a | 4,146 | 3,990 | 3,921 | 3,868 | 3,747 | 3,626 | 3,584 | 3,607 | 3,637 | -12.28 | -1.77 [-1.78 ; -1.76] | 3,071 | 3,311 | -8.96 | -4.73 [-4.8 ; -4.65] |
| Pneumonia Admissions rate | 286 (6.9%) | 265 (6.64%) | 268 (6.83%) | 249 (6.44%) | 238 (6.35%) | 230 (6.34%) | 231 (6.45%) | 223 (6.18%) | 218 (5.99%) | -23.78 | -3.26 [-3.31 ; -3.21] | 157 (5.11%) | 131 (3.96%) | -39.91 | -23.13 [-23.4 ; -22.87] |
| 20-49 | 2,497 | 2,417 | 2,350 | 2,336 | 2,240 | 2,173 | 2,127 | 2,168 | 2,191 | -12.25 | -1.86 [-1.89 ; -1.84] | 1,828 | 1,989 | -9.22 | -4.89 [-5.04 ; -4.75] |
| Pneumonia Admissions | 112 (4.49%) | 105 (4.34%) | 104 (4.43%) | 92 (3.94%) | 79 (3.53%) | 78 (3.59%) | 69 (3.27%) | 71 (3.27%) | 69 (3.15%) | -38.39 | -6.72 [-6.85 ; -6.6] | 58 (3.17%) | 48 (2.41%) | -30.43 | -16.67 [-17.41 ; -15.93] |
| 50-59 | 4,688 | 4,523 | 4,455 | 4,395 | 4,251 | 4,134 | 4,069 | 4,126 | 4,171 | -11.03 | -1.61 [-1.7 ; -1.53] | 3,555 | 4,000 | -4.10 | -2.09 [-2.53 ; -1.64] |
| Pneumonia Admissions | 247 (5.27%) | 233 (5.15%) | 232 (5.21%) | 207 (4.71%) | 194 (4.56%) | 200 (4.84%) | 180 (4.42%) | 180 (4.36%) | 172 (4.12%) | -30.36 | -4.54 [-4.91 ; -4.18] | 137 (3.85%) | 116 (2.9%) | -32.56 | -18.17 [-20.13 ; -16.16] |
| 60-69 | 7,240 | 6,982 | 6,880 | 6,745 | 6,587 | 6,429 | 6,388 | 6,413 | 6,482 | -10.47 | -1.45 [-1.55 ; -1.35] | 5,520 | 5,913 | -8.78 | -4.53 [-5.05 ; -4.02] |
| Pneumonia Admissions | 482 (6.66%) | 441 (6.32%) | 450 (6.54%) | 411 (6.09%) | 399 (6.06%) | 400 (6.22%) | 402 (6.29%) | 381 (5.94%) | 370 (5.71%) | -23.24 | -2.86 [-3.26 ; -2.47] | 268 (4.86%) | 221 (3.74%) | -40.27 | -23.15 [-25.04 ; -21.21] |
| 70+ | 12,881 | 12,242 | 12,194 | 11,940 | 11,701 | 11,168 | 11,202 | 11,004 | 11,023 | -14.42 | -1.93 [-2.03 ; -1.84] | 9,360 | 9,669 | -12.28 | -6.42 [-6.9 ; -5.93] |
| Pneumonia Admissions | 1561 (12.12%) | 1426 (11.65%) | 1467 (12.03%) | 1428 (11.96%) | 1441 (12.32%) | 1343 (12.03%) | 1453 (12.97%) | 1371 (12.46%) | 1350 (12.25%) | -13.52 | -1.28 [-1.55 ; -1.01] | 871 (9.31%) | 730 (7.55%) | -45.93 | -27.32 [-28.54 ; -26.07] |

AAPC - Annual Average Percent Change (estimated from Poisson regression model)

^a Rates per 100,000 population, adjusted to the WHO standard population

*Percentage change between 2011-2019 and 2019-2021, respectively

Community-acquired pneumonia in Brazil

ICU Pneumonia Admissions vs ICU General Admissions

| Data Information | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | %Δ* | AAPC [95% CI] | 2020 | 2021 | %Δ* | AAPC [95% CI] |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------|----------------------|------------|------------|--------|------------------------|
| ICU Admissions | 327,734 | 339,743 | 350,228 | 367,284 | 372,322 | 378,607 | 395,949 | 413,039 | 443,166 | 35.22 | 3.54 [3.5 ; 3.58] | 529,750 | 693,891 | 56.58 | 25.56 [25.32 ; 25.79] |
| Pneumonia Admissions (ICU) | 15,258 | 16,976 | 19,243 | 19,504 | 18,948 | 20,236 | 20,303 | 20,800 | 22,602 | 48.13 | 3.85 [3.66 ; 4.04] | 24,930 | 21,894 | -3.13 | -1.52 [-2.41 ; -0.62] |
| 20-49 | 83,687 | 84,820 | 83,926 | 85,694 | 84,740 | 85,256 | 86,869 | 88,797 | 95,226 | 13.79 | 1.23 [1.14 ; 1.32] | 109,852 | 168,900 | 77.37 | 34.97 [34.43 ; 35.52] |
| Pneumonia Admissions (ICU) | 3,160 | 3,480 | 3,726 | 3,463 | 3,272 | 3,837 | 3,329 | 3,602 | 3,960 | 25.32 | 1.49 [1.06 ; 1.93] | 4,757 | 4,259 | 7.55 | 3.52 [1.36 ; 5.72] |
| 50-59 | 64,490 | 66,382 | 67,188 | 69,538 | 70,134 | 71,008 | 72,907 | 75,707 | 79,418 | 23.15 | 2.4 [2.3 ; 2.5] | 94,225 | 136,836 | 72.30 | 32.45 [31.87 ; 33.03] |
| Pneumonia Admissions (ICU) | 2,053 | 2,311 | 2,653 | 2,581 | 2,330 | 2,842 | 2,515 | 2,875 | 2,895 | 41.01 | 3.34 [2.83 ; 3.86] | 3,487 | 3,245 | 12.09 | 5.61 [3.05 ; 8.23] |
| 60-69 | 74,863 | 78,292 | 81,414 | 86,112 | 88,426 | 91,304 | 96,428 | 101,911 | 109,731 | 46.58 | 4.67 [4.59 ; 4.76] | 131,327 | 164,842 | 50.22 | 22.76 [22.3 ; 23.23] |
| Pneumonia Admissions (ICU) | 2,788 | 3,048 | 3,461 | 3,527 | 3,507 | 3,859 | 3,983 | 4,204 | 4,596 | 64.85 | 5.67 [5.23 ; 6.12] | 5,208 | 4,520 | -1.65 | -0.79 [-2.76 ; 1.22] |
| 70+ | 104,694 | 110,249 | 117,700 | 125,940 | 129,022 | 131,039 | 139,745 | 146,624 | 158,791 | 51.67 | 4.96 [4.89 ; 5.04] | 194,346 | 223,313 | 40.63 | 18.38 [18 ; 18.75] |
| Pneumonia Admissions (ICU) | 7,257 | 8,137 | 9,403 | 9,933 | 9,839 | 9,698 | 10,476 | 10,119 | 11,151 | 53.66 | 4.18 [3.91 ; 4.45] | 11,478 | 9,870 | -11.49 | -5.74 [-6.99 ; -4.48] |
| Age-adjusted ICU Admissions Rate * | 264 | 266 | 266 | 271 | 267 | 264 | 268 | 271 | 283 | 7.20 | 0.57 [0.52 ; 0.63] | 328 | 421 | 48.76 | 22.48 [22.18 ; 22.77] |
| Pneumonia Admissions (ICU) | 13 (4.92%) | 14 (5.26%) | 15 (5.64%) | 15 (5.54%) | 14 (5.24%) | 14 (5.3%) | 14 (5.22%) | 14 (5.17%) | 15 (5.3%) | 15.38 | 0.71 [0.48 ; 0.94] | 16 (4.88%) | 13 (3.09%) | -13.33 | -4.02 [-5.14 ; -2.89] |
| 20-49 | 94 | 94 | 92 | 93 | 91 | 90 | 91 | 92 | 98 | 4.26 | 0.16 [0.03 ; 0.29] | 111 | 169 | 72.45 | 33.21 [32.4 ; 34.03] |
| Pneumonia Admissions (ICU) | 4 (4.26%) | 4 (4.26%) | 5 (5.43%) | 4 (4.3%) | 4 (4.4%) | 5 (5.56%) | 4 (4.4%) | 4 (4.35%) | 5 (5.1%) | 25.00 | 0.45 [-0.2 ; 1.1] | 5 (4.5%) | 5 (2.96%) | 0.00 | 2.37 [-0.87 ; 5.72] |
| 50-59 | 336 | 336 | 330 | 332 | 326 | 322 | 323 | 328 | 337 | 0.30 | -0.19 [-0.49 ; 0.11] | 393 | 562 | 66.77 | 30.29 [28.48 ; 32.12] |
| Pneumonia Admissions (ICU) | 11 (3.27%) | 12 (3.57%) | 14 (4.24%) | 13 (3.92%) | 11 (3.37%) | 13 (4.04%) | 12 (3.72%) | 13 (3.96%) | 13 (3.86%) | 18.18 | 0.73 [-0.86 ; 2.35] | 15 (3.82%) | 14 (2.49%) | 7.69 | 3.84 [-3.94 ; 12.24] |
| 60-69 | 630 | 633 | 632 | 642 | 634 | 630 | 641 | 654 | 680 | 7.94 | 0.75 [0.42 ; 1.08] | 786 | 954 | 40.29 | 18.66 [16.93 ; 20.42] |
| Pneumonia Admissions (ICU) | 24 (3.81%) | 25 (3.95%) | 27 (4.21%) | 27 (4.21%) | 26 (4.1%) | 27 (4.29%) | 27 (4.21%) | 27 (4.13%) | 29 (4.26%) | 20.83 | 1.66 [0.02 ; 3.32] | 32 (4.07%) | 27 (2.83%) | -6.90 | -4.05 [-11.21 ; 3.68] |
| 70+ | 1,073 | 1,093 | 1,127 | 1,164 | 1,150 | 1,125 | 1,154 | 1,165 | 1,212 | 12.95 | 1.15 [0.84 ; 1.47] | 1,422 | 1,572 | 29.70 | 13.71 [12.13 ; 15.31] |
| Pneumonia Admissions (ICU) | 73 (6.8%) | 79 (7.23%) | 88 (7.81%) | 89 (7.65%) | 85 (7.39%) | 81 (7.2%) | 84 (7.28%) | 78 (6.7%) | 83 (6.85%) | 13.70 | 0.33 [-0.82 ; 1.5] | 82 (5.77%) | 68 (4.33%) | -18.07 | -9.35 [-14.58 ; -3.81] |

AAPC - Annual Average Percent Change (estimated from Poisson regression model)

* Rates per 100,000 population, adjusted to the WHO standard population

* Percentage change between 2011-2019 and 2019-2021, respectively

Obrigado!

Dúvidas?