**Supporting Materials**

Supporting Table 1. Annual counts of co-occurring ICD-10 diagnosis code pairs involving respiratory conditions from 2020 to 2024 in New Hampshire CHIS data. This table highlights the temporal comorbidity between respiratory diseases—such as chronic obstructive pulmonary disease (J44.9), asthma (J45.909), and related conditions—and systemic or mental health disorders. Each ICD-10 pair is listed alongside yearly co-occurrence counts.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ICD\_Code\_Pair | Count\_2020 | Count\_2021 | Count\_2022 | Count\_2023 | Count\_2024 |
| ('E785', 'J449') | 32003 | 30921 | 2324 | 25296 | 10084 |
| ('E785', 'J45909') | 24825 | 26568 | 2519 | 26316 | 9540 |
| ('F419', 'J45909') | 16823 | 15369 | 1543 | 13981 | 4967 |
| ('E119', 'J449') | 14509 | 15458 | 1195 | 13061 | 4158 |
| ('E119', 'J45909') | 12357 | 12819 | 929 | 12163 | 4575 |
| ('E039', 'J45909') | 11972 | 11334 | 1329 | 12895 | 5044 |
| ('E1122', 'J449') | 11051 | 9272 | 533 | 8697 | 2288 |
| ('F329', 'J45909') | 10165 | 9437 | 142 | 1035 | 482 |
| ('E039', 'J449') | 9084 | 8552 | 368 | 7464 | 2590 |
| ('F419', 'J449') | 8441 | 6426 | 324 | 5481 | 2713 |
| ('F17210', 'J449') | 8177 | 7547 | 723 | 6465 | 2886 |
| ('E6601', 'J45909') | 6595 | 5537 | 598 | 4500 | 1882 |
| ('E669', 'J45909') | 6328 | 7286 | 775 | 6215 | 2230 |
| ('F329', 'J449') | 6165 | 3606 | 40 | 490 | 132 |
| ('E876', 'J45909') | 5497 | 5328 | 334 | 3907 | 2364 |
| ('D649', 'J449') | 5482 | 4246 | 334 | 4129 | 1518 |
| ('E7800', 'J45909') | 5471 | 5686 | 535 | 6134 | 1682 |
| ('E1151', 'J449') | 5457 | 3954 | 237 | 2956 | 1100 |
| ('E871', 'J449') | 5421 | 4778 | 337 | 5517 | 1868 |
| ('E876', 'J449') | 5297 | 4822 | 265 | 4252 | 1875 |