Table S1. Model parameters related to neurology residents

<table>
<thead>
<tr>
<th>MS physician workforce model neurology resident parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of neurology residents in 2013</td>
<td>2257</td>
</tr>
<tr>
<td>First-year neurology residents, %</td>
<td>10.40</td>
</tr>
<tr>
<td>Second-year neurology residents, %</td>
<td>29.87</td>
</tr>
<tr>
<td>Third-year neurology residents %</td>
<td>29.87</td>
</tr>
<tr>
<td>Fourth-year neurology residents, %</td>
<td>29.87</td>
</tr>
<tr>
<td>Fourth-year residents interested in fellowship training, %</td>
<td>86.00</td>
</tr>
<tr>
<td>Fourth-year residents only interested in entering MS training, %</td>
<td>4.47</td>
</tr>
<tr>
<td>Fourth-year residents or those interested in entering MS or another subspecialty training, %</td>
<td>7.52</td>
</tr>
<tr>
<td>No. of first-year MS fellowship training slots available each year</td>
<td>28.00</td>
</tr>
<tr>
<td>Of fourth-year residents, those entering MS training (limited by the number of fellowship slots), %</td>
<td></td>
</tr>
<tr>
<td>Who enter first year of MS training</td>
<td>100.00</td>
</tr>
<tr>
<td>Who enter second year of MS training</td>
<td>50.0</td>
</tr>
<tr>
<td>Completing MS fellowships but not becoming MS subspecialists</td>
<td>4.6</td>
</tr>
<tr>
<td>Of fourth-year residents, those entering other subspecialty training, %</td>
<td></td>
</tr>
<tr>
<td>Who enter first year of other subspecialty training</td>
<td>100.00</td>
</tr>
<tr>
<td>Who enter second year of other subspecialty training</td>
<td>50.0</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
**Table S2. Distribution of MS subspecialists by practice location, practice setting, and age group, as well as number of patients with MS seen per week in each stratum**

<table>
<thead>
<tr>
<th>MS physician workforce model MS subspecialist parameters</th>
<th>2014 distribution of MS subspecialists</th>
<th>MS subspecialists in 2014, %</th>
<th>Patients with MS seen per week, No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of MS subspecialists in 2013</td>
<td>402</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remaining in practice in 2014, %</td>
<td>99.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>In practice, total</strong></td>
<td>100.00</td>
<td>25.50</td>
<td></td>
</tr>
<tr>
<td>In practice, urban/suburban location</td>
<td>92.86</td>
<td>25.80</td>
<td></td>
</tr>
<tr>
<td>Solo/group practice</td>
<td>59.34</td>
<td>25.62</td>
<td></td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>20.37</td>
<td>22.70</td>
<td></td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>31.48</td>
<td>25.53</td>
<td></td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>31.48</td>
<td>25.59</td>
<td></td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>16.67</td>
<td>29.11</td>
<td></td>
</tr>
<tr>
<td>Other practice setting</td>
<td>40.66</td>
<td>26.06</td>
<td></td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>25.00</td>
<td>31.25</td>
<td></td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>38.89</td>
<td>26.07</td>
<td></td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>25.00</td>
<td>16.25</td>
<td></td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>11.11</td>
<td>38.75</td>
<td></td>
</tr>
<tr>
<td>In practice, small city/rural location</td>
<td>7.14</td>
<td>22.86</td>
<td></td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>0.00</td>
<td>20.00</td>
<td></td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>14.29</td>
<td>20.00</td>
<td></td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>57.14</td>
<td>18.75</td>
<td></td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>28.57</td>
<td>32.50</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Table S3. Distribution of general neurologists and non-MS subspecialists by practice location, practice setting, and age group, as well as number of patients with MS seen per week in each stratum

<table>
<thead>
<tr>
<th>MS physician workforce model general neurologist and non-MS subspecialist parameters</th>
<th>General neurologists</th>
<th>Non-MS subspecialists</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. in 2013</td>
<td>2792</td>
<td>8604</td>
</tr>
<tr>
<td>Remaining in practice in 2014, %</td>
<td>96.90</td>
<td>96.04</td>
</tr>
<tr>
<td><strong>2014 distribution</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In practice, total</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>In practice, urban/suburban</td>
<td>83.61</td>
<td>86.95</td>
</tr>
<tr>
<td>location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solo/group practice</td>
<td>72.55</td>
<td>51.65</td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>12.33</td>
<td>21.05</td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>20.55</td>
<td>31.58</td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>27.40</td>
<td>23.39</td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>39.73</td>
<td>23.98</td>
</tr>
<tr>
<td>Other practice setting</td>
<td>27.45</td>
<td>48.35</td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>28.57</td>
<td>39.22</td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>14.29</td>
<td>20.26</td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>25.00</td>
<td>21.57</td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>32.14</td>
<td>18.95</td>
</tr>
<tr>
<td>In practice, small city/rural</td>
<td>16.39</td>
<td>13.05</td>
</tr>
<tr>
<td>location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solo/group practice</td>
<td>65.00</td>
<td>70.00</td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>15.38</td>
<td>22.86</td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>15.38</td>
<td>28.57</td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>46.15</td>
<td>25.71</td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>23.08</td>
<td>22.86</td>
</tr>
<tr>
<td>Other practice setting</td>
<td>35.00</td>
<td>30.00</td>
</tr>
<tr>
<td>Age ≤44 y</td>
<td>28.57</td>
<td>20.00</td>
</tr>
<tr>
<td>Age 45-53 y</td>
<td>28.57</td>
<td>53.33</td>
</tr>
<tr>
<td>Age 54-59 y</td>
<td>14.29</td>
<td>26.67</td>
</tr>
<tr>
<td>Age ≥60 y</td>
<td>28.57</td>
<td>0.00</td>
</tr>
<tr>
<td>Patients with MS seen per week, No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-MS subspecialists in 2014, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patients with MS seen per week, No.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Table S4. Adjusted retirement rates\(^a\) for each neurologist group by age group

<table>
<thead>
<tr>
<th>MS physician workforce model adjusted retirement rates by neurologist type and age group</th>
<th>Adjusted retirement rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MS subspecialists</strong></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>≤44</td>
<td>0.9</td>
</tr>
<tr>
<td>45-53</td>
<td>0.9</td>
</tr>
<tr>
<td>54-59 y</td>
<td>8.3</td>
</tr>
<tr>
<td>≥60 y</td>
<td>13.3</td>
</tr>
<tr>
<td><strong>Non-MS subspecialists</strong></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>≤44</td>
<td>2.6</td>
</tr>
<tr>
<td>45-53</td>
<td>2.6</td>
</tr>
<tr>
<td>54-59</td>
<td>5.7</td>
</tr>
<tr>
<td>≥60</td>
<td>19.2</td>
</tr>
<tr>
<td><strong>General neurologists</strong></td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
</tr>
<tr>
<td>≤44</td>
<td>3.4</td>
</tr>
<tr>
<td>45-53</td>
<td>3.4</td>
</tr>
<tr>
<td>54-59</td>
<td>1.4</td>
</tr>
<tr>
<td>≥60</td>
<td>9.3</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.

\(^a\)Adjusted retirement rates are retirement rates plus one-half the rates of substantially reducing clinical activities.
Table S5. Clinical activity for each group of neurologists, overall and by urban vs. rural practice location

<table>
<thead>
<tr>
<th>Neurologist group</th>
<th>Clinical activity, mean, wk/y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall</td>
</tr>
<tr>
<td>MS subspecialists</td>
<td>44.8</td>
</tr>
<tr>
<td>General neurologists</td>
<td>46.64</td>
</tr>
<tr>
<td>Non-MS subspecialists</td>
<td>46.42</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Table S6. Categorization of neurologists by MS subspecialists, non-MS subspecialists, and general neurologists

<table>
<thead>
<tr>
<th>Neurologist group</th>
<th>Categorization criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS subspecialists</td>
<td>Completed an MS fellowship and reported seeing, on average, ≥1 patient with MS per week OR Did not complete an MS fellowship but reported seeing &gt;12 patients with MS per week (ie, the median number of patients with MS seen per week among neurologists who did not complete an MS fellowship but identified themselves as MS subspecialists)</td>
</tr>
<tr>
<td>Non-MS subspecialists</td>
<td>Saw ≤12 patients with MS per week and indicated completing a fellowship or participating in informal postgraduate mentoring or training in a non-MS neurology subspecialty OR Completed an MS fellowship but reported seeing on average zero patients with MS per week</td>
</tr>
<tr>
<td>General neurologists</td>
<td>Saw ≤12 patients with MS per week and did not complete a neurology fellowship or participate in informal mentoring or postgraduate training in any neurology subspecialty</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Table S7. Sensitivity analysis: change in MS patient visit capacity in overall neurologist workforce

<table>
<thead>
<tr>
<th>Sensitivity analysis</th>
<th>2015 MS patient visits, No.</th>
<th>2015 Change from base model, %</th>
<th>2025 MS patient visits, No.</th>
<th>2025 Change from base model, %</th>
<th>2035 MS patient visits, No.</th>
<th>2035 Change from base model, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base model</td>
<td>2,141,918</td>
<td></td>
<td>2,169,539</td>
<td></td>
<td>2,388,633</td>
<td></td>
</tr>
<tr>
<td>20% increase in number of MS fellowship positions</td>
<td>2,144,371</td>
<td>0.1</td>
<td>2,227,317</td>
<td>2.7</td>
<td>2,490,038</td>
<td>4.2</td>
</tr>
<tr>
<td>10% increase in number of neurology residents</td>
<td>2,150,934</td>
<td>0.4</td>
<td>2,259,366</td>
<td>4.1</td>
<td>2,535,157</td>
<td>6.1</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for MS subspecialists</td>
<td>2,146,722</td>
<td>0.2</td>
<td>2,207,018</td>
<td>1.7</td>
<td>2,437,324</td>
<td>2.0</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for general neurologists and non-MS subspecialists</td>
<td>2,163,417</td>
<td>1.0</td>
<td>2,306,249</td>
<td>6.3</td>
<td>2,570,474</td>
<td>7.6</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for all neurologists</td>
<td>2,168,221</td>
<td>1.2</td>
<td>2,343,728</td>
<td>8.0</td>
<td>2,619,165</td>
<td>9.7</td>
</tr>
<tr>
<td>20% increase in number of patients with MS seen by general neurologists</td>
<td>2,243,991</td>
<td>4.8</td>
<td>2,254,685</td>
<td>3.9</td>
<td>2,467,983</td>
<td>3.3</td>
</tr>
<tr>
<td>20% increase in number of patients with MS seen by non-MS subspecialists</td>
<td>2,374,494</td>
<td>10.9</td>
<td>2,406,842</td>
<td>10.9</td>
<td>2,656,449</td>
<td>11.2</td>
</tr>
<tr>
<td>20% more neurologists selecting practice locations in small city/rural locations (with total number of neurologists and neurology residents remaining constant)</td>
<td>2,142,400</td>
<td>0</td>
<td>2,172,987</td>
<td>0.2</td>
<td>2,394,641</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Table S8. Sensitivity analysis: change in MS patient visit capacity in the MS subspecialist workforce

<table>
<thead>
<tr>
<th>Sensitivity analysis</th>
<th>2015</th>
<th>2025</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Base model</strong></td>
<td>468,672</td>
<td>557,294</td>
<td>652,801</td>
</tr>
<tr>
<td>20% increase in number of MS fellowship positions</td>
<td>471,836</td>
<td>0.7</td>
<td>622,260</td>
</tr>
<tr>
<td>10% increase in number of neurology residents</td>
<td>468,672</td>
<td>0</td>
<td>557,294</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for MS subspecialists</td>
<td>473,475</td>
<td>1.0</td>
<td>594,773</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for general neurologists and non-MS subspecialists</td>
<td>468,672</td>
<td>0</td>
<td>557,294</td>
</tr>
<tr>
<td>20% decrease in adjusted retirement rate for all neurologists</td>
<td>473,475</td>
<td>1.0</td>
<td>594,773</td>
</tr>
<tr>
<td>20% increase in number of patients with MS seen by general neurologists</td>
<td>468,672</td>
<td>0</td>
<td>557,294</td>
</tr>
<tr>
<td>20% increase in number of patients with MS seen by non-MS subspecialists</td>
<td>468,672</td>
<td>0</td>
<td>557,294</td>
</tr>
<tr>
<td>20% more neurologists selecting practice locations in small city/rural locations (with total number of neurologists and neurology residents remaining constant)</td>
<td>468,680</td>
<td>0</td>
<td>556,499</td>
</tr>
</tbody>
</table>

Abbreviation: MS, multiple sclerosis.
Figure S1. Logic diagram for the MS Physician Workforce Model