A MODEL TO PROJECT THE SUPPLY AND DEMAND OF PHYSICAL THERAPISTS
2010-2025

In 2011, the American Physical Therapy Association first developed a model to aid in determining the number of physical therapists required to meet the health care demands of the population. The model used a limited number of variables and included assumptions that would affect those variables. The logic behind use of this small number of variables stemmed from a belief that projected values based on a larger number of variables will, logically, lead to more error in prediction. Thus, the smaller number of variables creates less error and more precision. The variables incorporated in this model, which include those that affect both supply and demand, and the assumptions about changes over time are detailed in Appendix One. The model is updated annually to reflect any changes in the variables or the authors' assumptions.

The initial model was based on a continuing review of the literature and the expert advice of APTA's Workforce Task Force as constituted in 2010 (Appendix Two). Each of the figures included in this report demonstrates the responsiveness of the model to changes in assumptions about attrition from the profession, as attrition rate tended to exert the most influence on the model. The model also tried to account for any changes in insurance coverage (demand) based on the Affordable Care Act.

Since there was no known attrition rate available for the profession, two percentages were selected to estimate attrition, 3.5 and 1.5 percent. These percentages were selected based on a number of sources. More specifically, the percentages of attrition used in the projections were based on the following sources and decisions. A study of nursing, published by the Healthcare Association of New York State (HANYS) estimated that the attrition rate among nurses in New York was 4.2%; a study conducted by the Lewin Group among physician assistants indicated a national rate of 5%; and a study conducted by the Conference Board among health care workers reported an attrition rate of 1.5%. Since each of these estimates differed, the decision was made to select a percentage that would account for each of these estimates. Thus, the figure of 3.5% was used. Since there was clearly error around this estimate, we also selected a lower rate (1.5%) and included that to be used in a second projection.

Subsequent to the development of the models, it continued to be clear that the attrition rate accounted for a great deal of the variance in estimates. A decision, therefore, was made to include an additional projection that was based on the mid-point between the two projected rates. Specifically, it was decided to project a third scenario in the annual model update using an attrition rate of 2.5%.

The model was also updated to account for changes in assumptions on health care insurance coverage. Since the Affordable Care Act was upheld by the Supreme Court in March 2012, an increase in the US population with health care insurance in 2014 and after is included in the projections.

The subsequent figures present three potential scenarios for supply and demand for physical therapists. Figure 1, using an attrition rate of 3.5% projects a shortage of 26,560 physical therapists by 2025. Figure 2, using an attrition rate of 2.5% projects a shortage of 9,592. Figure 3, using an attrition rate of 1.5% projects a surplus of 8,696 physical therapists by 2025.

The model continues to project a shortage of physical therapists in scenarios with a 3.5% and 2.5% attrition rate, despite growth in graduates from physical therapy programs, largely due to an estimated increase in demand from individuals with health insurance. The scenario with a 1.5% attrition rate projects a surplus of physical therapists by 2025 due to more physical therapists staying in the workforce.

Future work on the model will continue to strive to refine the information available to support the assumptions. Further, if additional data sources are identified, the goal is for the model to become more granular so that projections can be made for smaller geographic regions or individual practice settings.

Since much, if not all, of the conception of the model was accomplished by the Work Force Task Force, all individuals who served as members of the Workforce Task Force at any time during its existence are listed at the end of this report.

APTA welcomes comments and questions about the model. Please address these to research-dept@apta.org. Those interested in using the model for future research should contact Robyn Watson Ellerbe, PhD, Vice President, Research at robynwatsonellerbe@apta.org for permission.

Figure 1: 2016 projection using an attrition rate of 3.5%.

Physical Therapist Supply and Demand
All numbers in thousands

Shortage in 2025 = 26,560

Licensed Physical Therapists

Demand: 238, 241, 242, 244, 246, 248, 250, 252, 254, 255

Supply of FTEs: 193, 196, 200, 203, 207, 211, 215, 219, 224, 229

Years: 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025

Legend:
- Supply of FTEs
- Demand
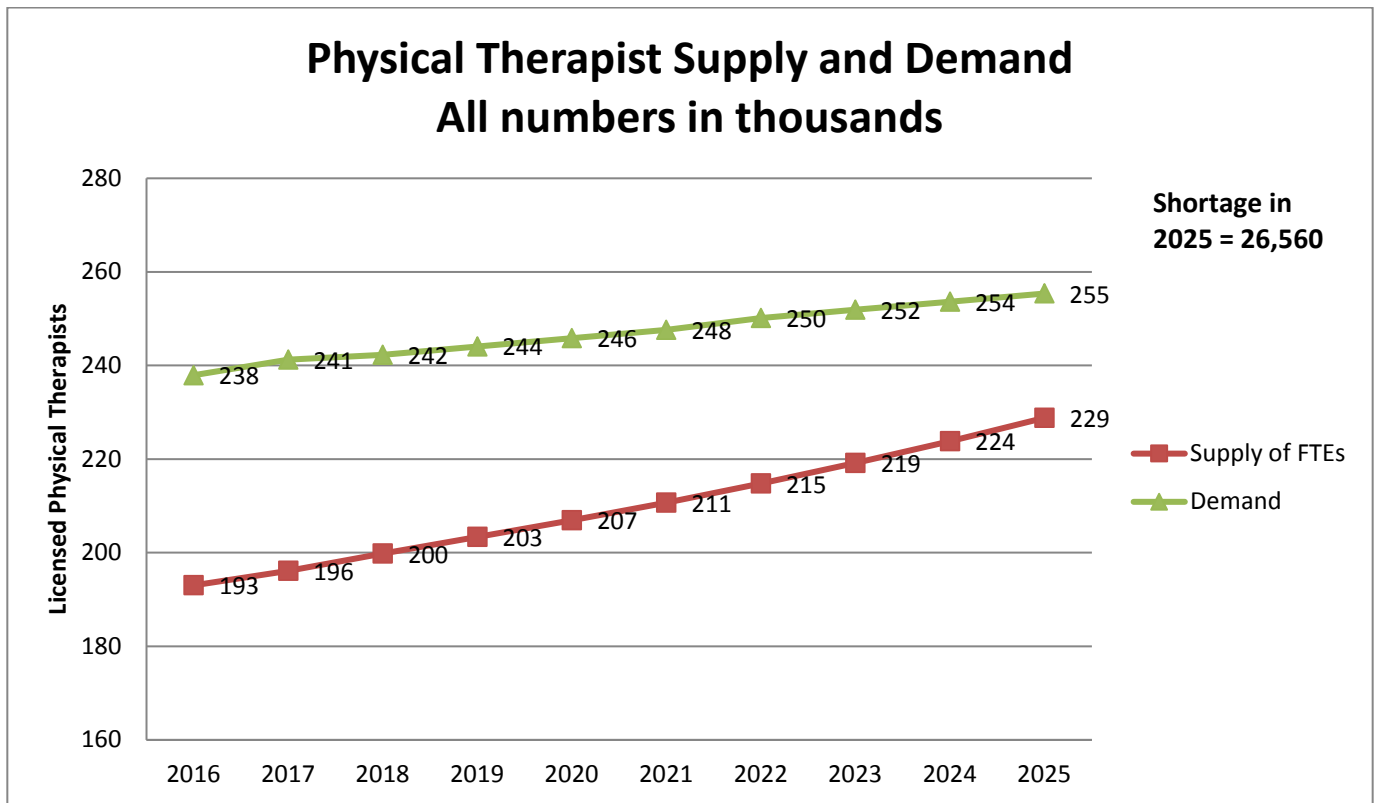
Figure 2: 2016 projection using an attrition rate of 2.5%.

Physical Therapist Supply and Demand
All numbers in thousands

Shortage in
2025 = 9,592

Licensed Physical Therapists

Supply of FTEs
Demand

Supply of FTEs: 193, 198, 204, 209, 215, 220, 226, 232, 239, 246

Demand: 238, 241, 242, 244, 246, 248, 250, 252, 254, 255

Years: 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025
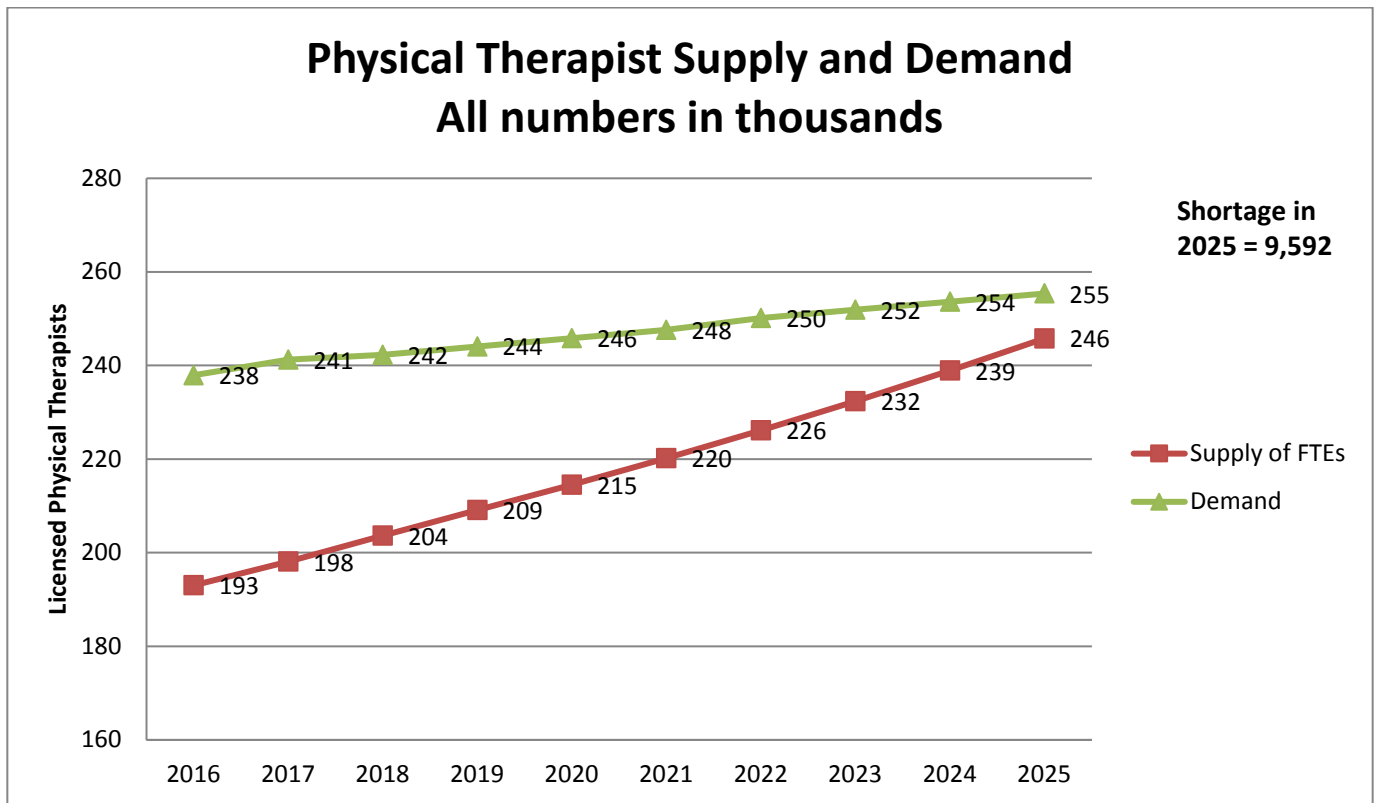
Figure 3: 2016 projection using an attrition rate of 1.5%.

**Physical Therapist Supply and Demand
All numbers in thousands**

Surplus in
2025 = 8,696

Legend:
- Supply of FTEs
- Demand
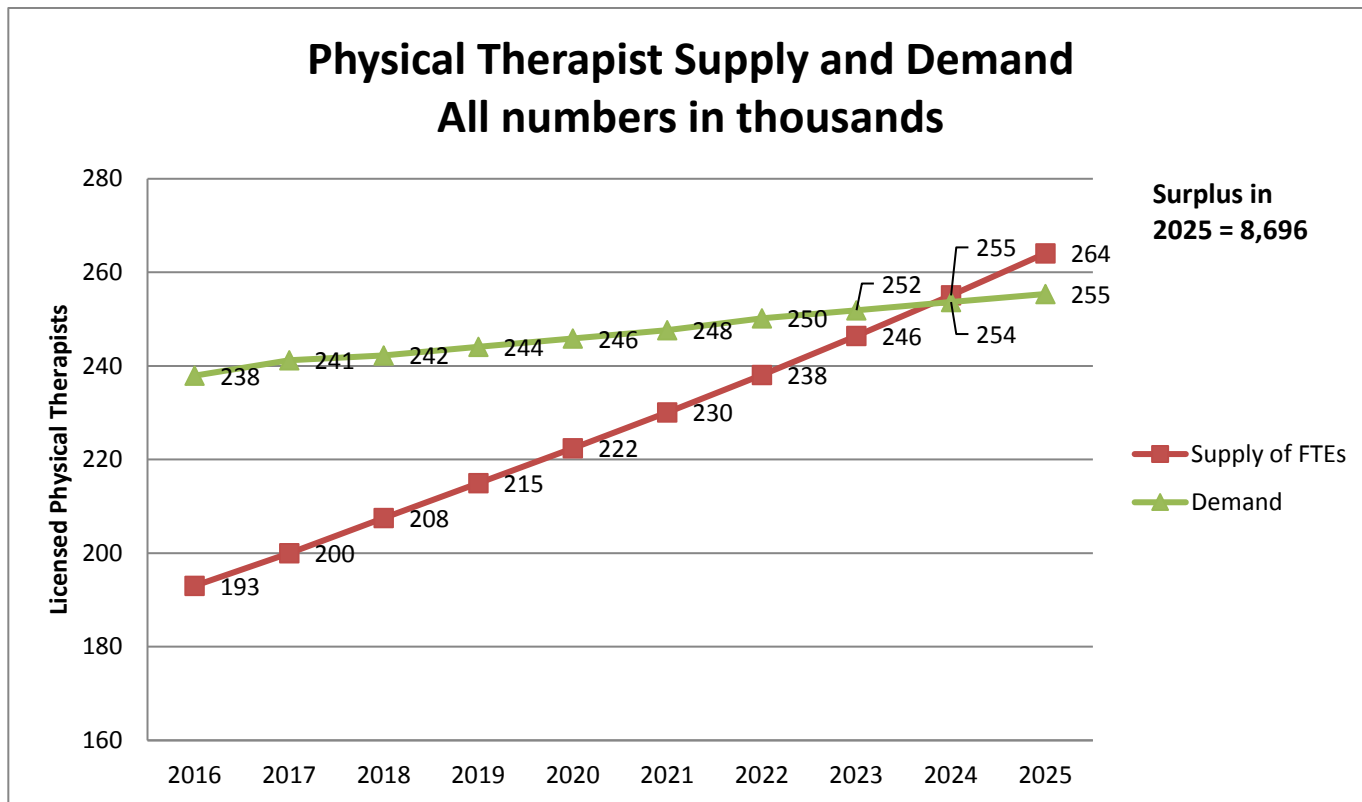
Appendix One:
The following variables were used to develop the model. The assumptions about change are also detailed.

Supply:

- **Base year number of licensed physical therapists** = the number of licensed physical therapists in 2010 as reported by the Federation of State Boards of Physical Therapy.

- **Licensed Physical Therapists** = the number of licensed physical therapists in the previous year, plus the number of new graduates from US physical therapy programs, minus the number of US graduates who never pass (subsequent to 3 attempts) the National Physical Therapy Exam (NPTE), plus the number of international PTs (535) who pass the NPTE, minus the attrition. For this model, the number of international physical therapists who passed the NPTE will be held constant through 2025.

  $$\text{Licensed PTs}_2 = \text{Licensed PTs}_1 + \text{new grads} - \text{number of grads never passing exam} + \text{international PTs} - \text{attrition}$$

  The 2016 update of the model uses the actual number of licensed physical therapists for years 2010 to 2016 as reported by the Federation of State Boards of Physical Therapy.

- **PT Graduates** = the number of graduates from US physical therapist professional programs as projected through 2019 by the Commission on Accreditation in Physical Therapy Education (http://www.capteonline.org/AggregateProgramData/, accessed March 20, 2017). The estimated growth rate for graduates from 2020 to 2025 was calculated at 4%.

- **Number of Graduates Not Passing the Exam** = number of US graduates who never pass the NPTE (1% in 2014-2016), as reported in 2016 by the Federation of State Boards of Physical Therapy (https://www.fsbpt.org/FreeResources/NPTEPassRateReports/NPTEGraduationYearReports.aspx, accessed March 20, 2017). For the 2010 base year, the failure rate was 3%, as reported in 2011. For the 2012 and 2013 projections, 2% was used as reported in 2012 and 2013.

- **International Physical Therapists** = number of international physical therapists who passed the National Physical Therapist Exam in 2010 (n=535) as reported by the Federation of State Boards of Physical Therapy. It is assumed this number will remain constant.

- **Attrition/Retirement** = the number of licensed physical therapists permanently leaving the profession. Attrition rates of 3.5%, 2.5% and 1.5% were estimated based on three different sources: Conference Board, the Healthcare Association of New York State, and the Lewin Group (http://www.healthleadersmedia.com/page-1/TEC-266573/Healthcare-Workers-Delaying-Retirement; http://www.hanys.org/workforce/data/docs/2011-06-10-workforce_survey_results_2011.pdf; http://www.ncbi.nlm.nih.gov/pubmed/21886331; accessed March 20, 2017).

- **Supply of FTE Physical Therapists** = (Licensed PTs *.85) + (Licensed PTs *.15 *.69). According to the 2010 Practice Profile , the workforce for physical therapists is not comprised solely of full-time PTs, but of part-time PTs as well, therefore, full-time personnel was calculated at 85% and part-time personnel was calculated at 15% x 69%, with part-time personnel working a mean of 24 hours a week out of a 35 hour work week. (http://www.apta.org/WorkforceData/, accessed March 20, 2017).

Demand:

- **U S Population** = US Census Bureau annual population estimates & projections (http://www.census.gov/topics/population.html, accessed March 20, 2017).

- **US Population with Insurance** = the annual population multiplied by the percentage of the US population who has health insurance (83.7% in 2010; 84.3% in 2011, 84.6% in 2012; 86.6% in 2013; 89.6% in 2014, 90.9% 2015-2025) as reported in the US Census Bureau's Income, Poverty, and Health Insurance Coverage in the United States report (https://www.census.gov/library/publications/2016/demo/p60-257.html, accessed March 20, 2017). In order to factor in the increase in the population with insurance after the Affordable Care Act was implemented in 2014, the Congressional Budget Office's estimates of the millions of Americans expected to gain insurance coverage were added in 2014-2025 (https://www.cbo.gov/sites/default/files/recurringdata/51298-2016-03-healthinsurance.pdf, accessed April 5, 2017).

- **Demand Ratio =** the demand ratio is a constant that is calculated based on the 2010 supply of FTE physical therapists, plus the 2010 vacancy rate reported in three settings in which physical therapists practice, calculated at 1.11, divided by the US population insured in 2010 (.00075173). The 1.11% reflects the vacancy rate reported in vacancy rate studies conducted by the APTA in 2010. (http://www.apta.org/WorkforceData/, accessed March 20, 2017).

- **Demand** = the US population with health insurance multiplied by the demand ratio.

- **Shortage** = demand minus supply of full time equivalent physical therapists.

Appendix Two
Members of the Workforce Task Force (2011-2012)

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