

## **A MODEL TO PROJECT THE SUPPLY AND DEMAND OF PHYSICAL THERAPISTS 2010-2020**

In 2011, the American Physical Therapy Association developed a model to aid in determining the numbers of physical therapists required to meet the health care demands of Americans through 2020. The model used a small number of variables and inserted assumptions of changes in those variables. The logic behind use of a small number of variables stemmed from a belief that projected values of a larger number of variables lead to more error in prediction. Thus, the smaller number of variables results in 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 initial model was based on a continuing review of the literature and the expert advice of APTA's Workforce Task Force (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 tries to account for any changes in insurance coverage (demand) based on the Affordable Care Act.

Initially, two percentages were selected to represent attrition from the profession, 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 recent study conducted by the Conference Board among health care workers reported an attrition rate of 1.5% in 2009. Since each of these estimates differed, the decision was made to select a percentage that would represent 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.

The model was updated in 2012 to account for any changes in the variables or the Task Force's assumptions. For example, since the Affordable Care Act was upheld by the Supreme Court in March 2012, the increase in the US population with health care insurance in 2014 and after is included in all 2012 projections. Also, as it continued to be clear that the attrition rate accounted for a great deal of the variance, a decision 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 2012 using an attrition rate of 2.5%.

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 40,934 physical therapists by 2020 (Figure 2 shows the 2011 projection for comparison); Figure 3, with an attrition rate estimated to be 2.5% projects a shortage of 25,759 therapists. Figure 4 projects a much different scenario occurring by 2020. When an attrition rate of 1.5% was applied to the model, the model projected a shortage of 9,385 physical therapists by 2020, whereas the projection in 2011 showed a surplus of 8,460 (Figure 5). In comparison to the previous year's modeling, it appears that the predicted increase in demand as a result of the Affordable Care Act is causing the shortage of physical therapists to grow in all three scenarios.

Future work on the model will continue to strive to refine the information available to support the assumptions. Further, as 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 practice settings.

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](mailto:research-dept@apta.org). Those interested in using the model for future research should contact Marc Goldstein, EdD, Senior Director of Clinical Practice and Research at [marcgoldstein@apta.org](mailto:marcgoldstein@apta.org) for permission to use the model.

Figure 1: 2012 projection using an attrition rate of 3.5%.

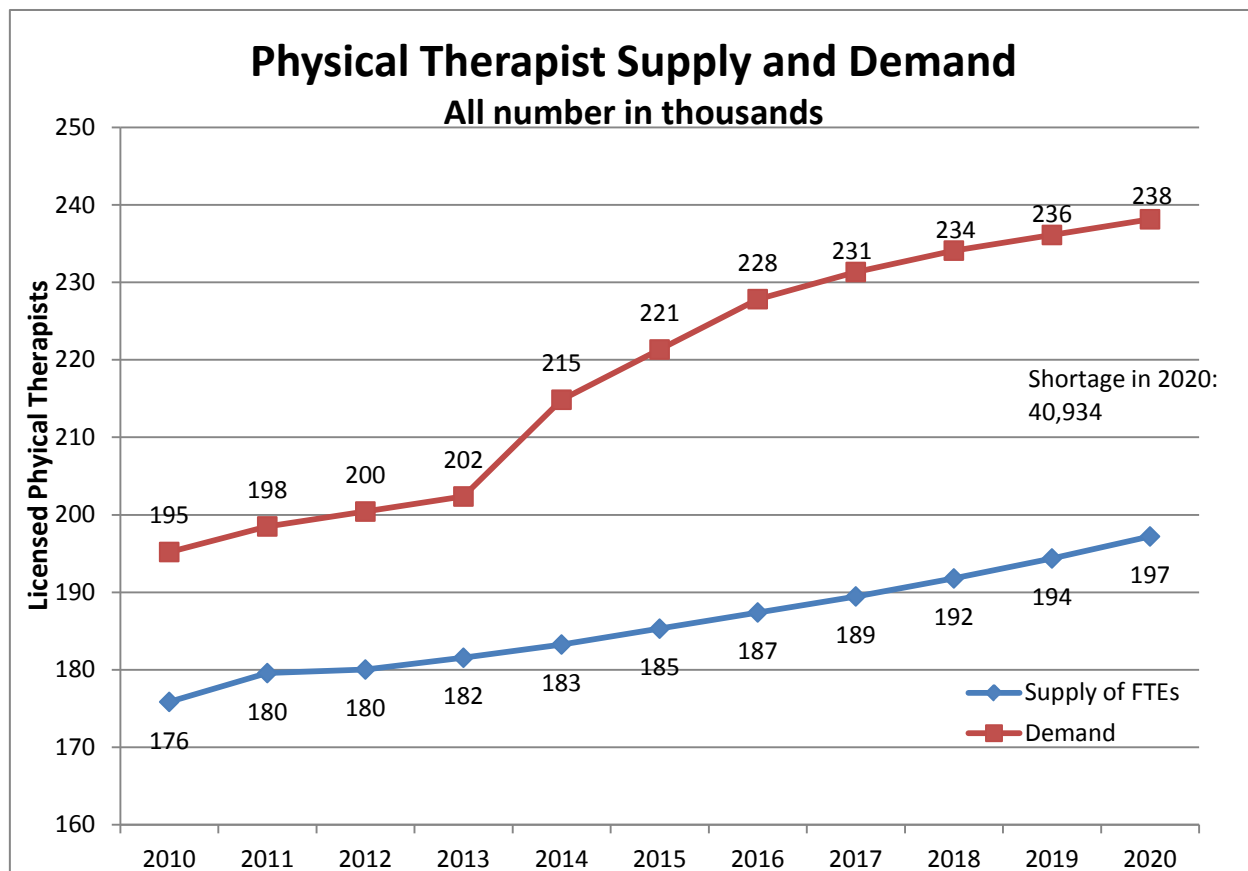


Figure 2: 2011 projection using an attrition rate of 3.5%.

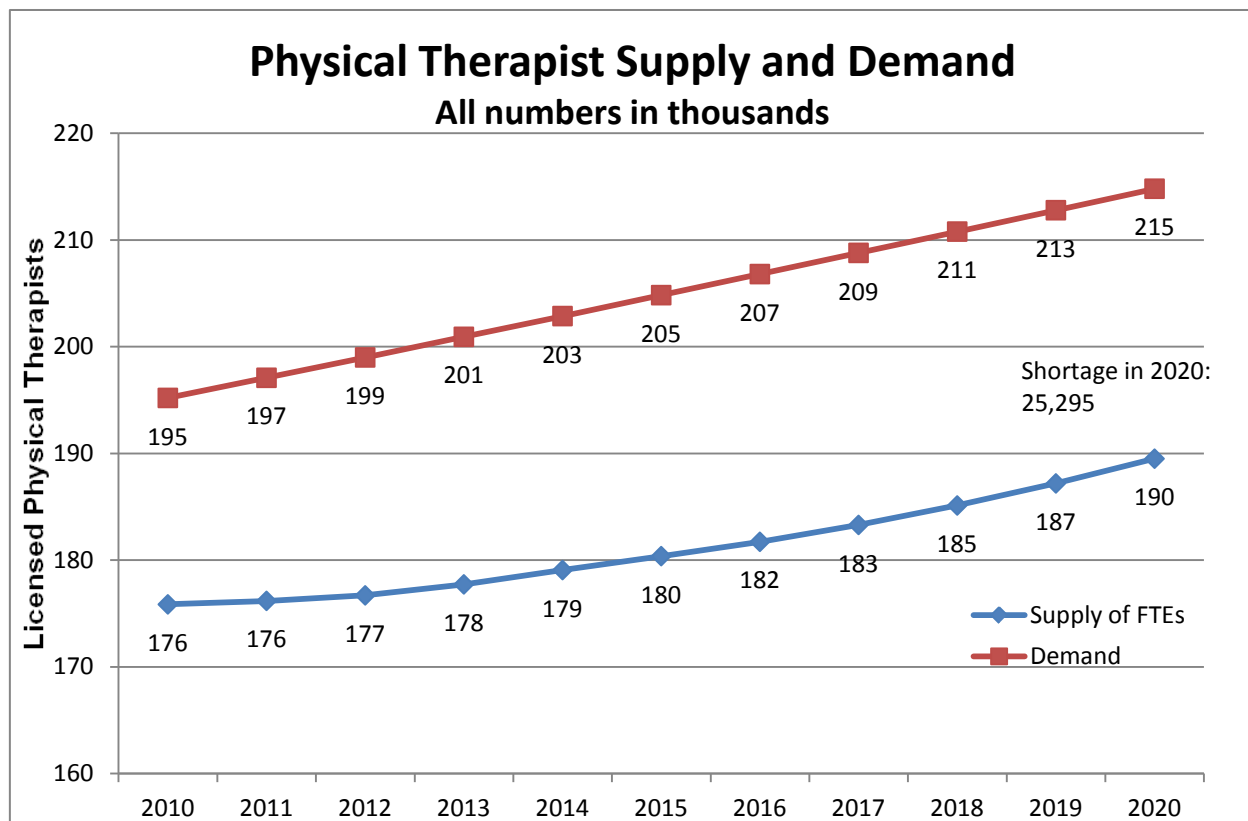


Figure 3: 2012 projection using an attrition rate of 2.5%.

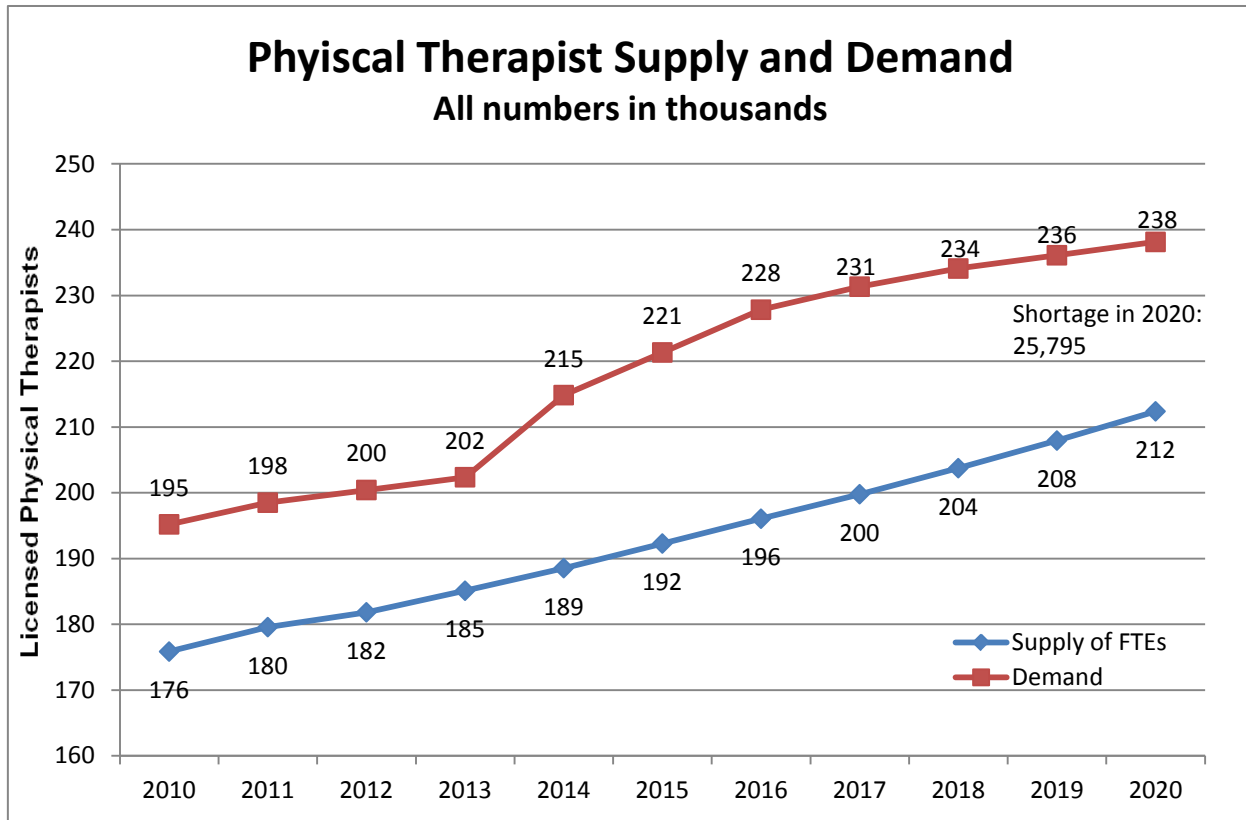


Figure 4: 2012 projection using an attrition rate of 1.5%.

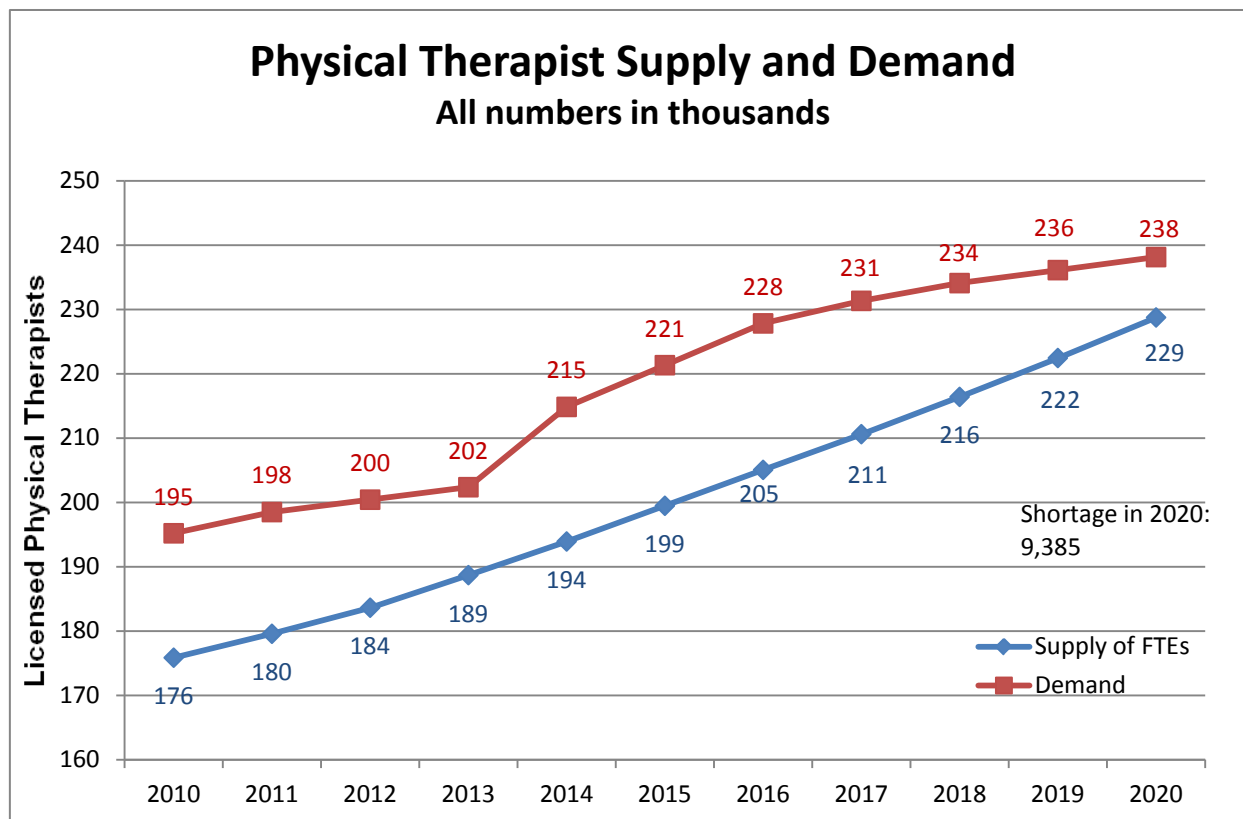
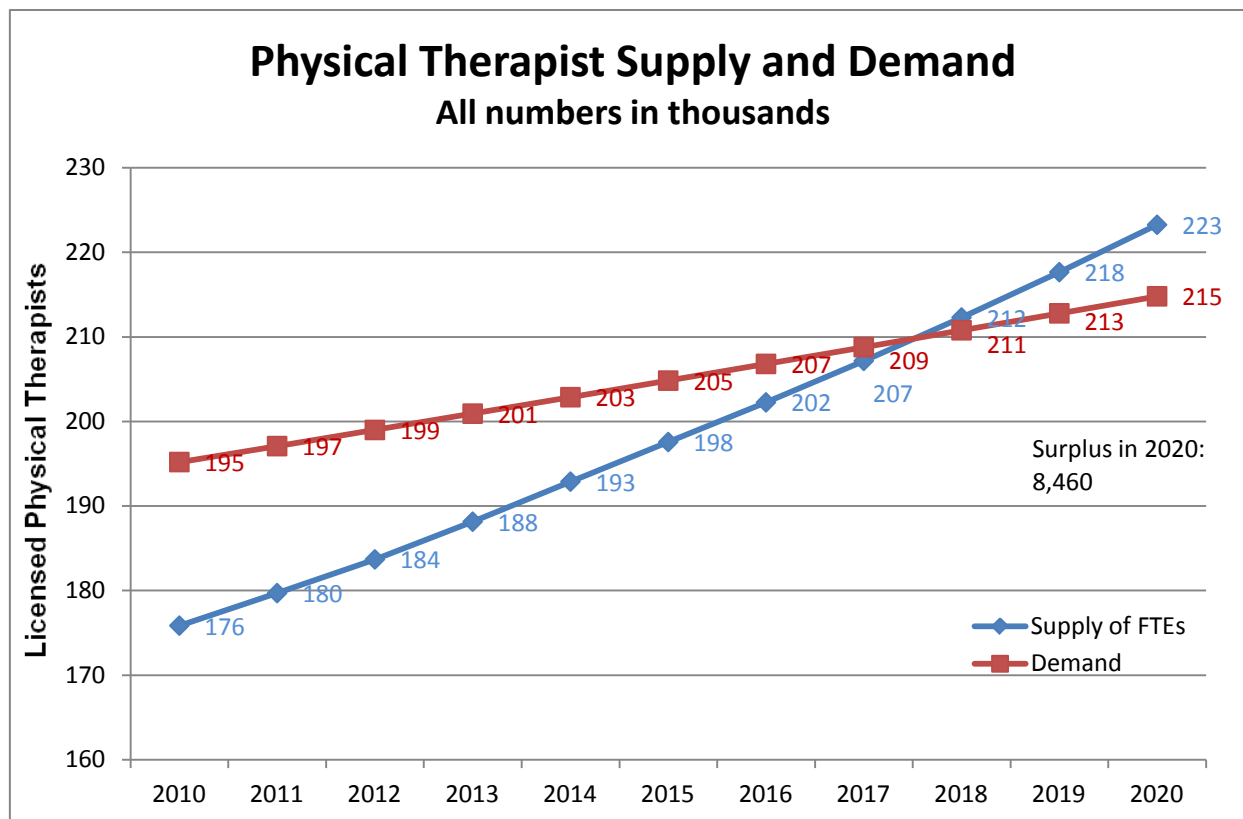


Figure 5: 2011 projection using an attrition rate of 1.5%.



## 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 (<http://www.apta.org/WorkforceData/LicensedPTsbyState/2011/>, accessed 10/10/2012).
- **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) (3% in 2010; 2% in 2011-2020), 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 2020.

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

- **PT Graduates** = the number of graduates from US physical therapist professional programs as projected through 2016 by the American Physical Therapy Association (APTA) Department of Accreditation. The estimated growth rate for graduates from 2017 through 2020 was calculated at 4%.  
[http://www.capteonline.org/uploadedFiles/CAPTEorg/About\\_CAPTE/Resources/Aggregate\\_Program\\_Data/AggregateProgramData\\_PTPrograms.pdf](http://www.capteonline.org/uploadedFiles/CAPTEorg/About_CAPTE/Resources/Aggregate_Program_Data/AggregateProgramData_PTPrograms.pdf), accessed 10/10/2012).
- **Number of Graduates Not Passing the Exam** = number of US graduates who never pass the NPTE (2%) as reported in 2012 by the Federation of State Boards of Physical Therapy <https://www.fsbpt.org/ForCandidatesAndLicensees/NPTE/PassRates/index.asp#ExamYear>, accessed 10/10/2012). For the 2010 base year, the failure rate was 3%, as reported in 2011.
- **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.hanys.org/workforce/data/docs/2011-06-10-workforce_survey_results_2011.pdf); <http://www.ncbi.nlm.nih.gov/pubmed/21886331>; <http://www.apta.org/WorkforceData/>, accessed 10/16/2012).
- **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 10/10/2012).



## Demand:

- **U S Population** = US Census Bureau annual population estimates  
<http://www.census.gov/population/www/projections/summarytables.html>, accessed 10/10/2012).
  - **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 2011-2020) as reported in the US Census Bureau's Income, Poverty, and Health Insurance Coverage in the United States: 2011 report, (<http://www.census.gov/hhes/www/hlthins/>, accessed 10/10/2012). In order to factor in the increase in the population with insurance after the Affordable Care Act is implemented in 2014, the Congressional Budget Office's estimates of the millions of Americans expected to gain insurance coverage were added in 2014-2020 (<http://www.cbo.gov/publication/43472>, accessed 11/26/2012).
  - **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 10/10/2012).
  - **Demand** = the US population with health insurance multiplied by the demand ratio.
  - **Shortage** = demand minus supply of full time equivalent physical therapists.
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## **Appendix Two**

### **Members of the Workforce Task Force**

#### **Members:**

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