

Methodology

What we did to measure primary care supply and demand

We measured the difference between supply and demand of visits at present and future state to examine the presence of a primary care provider shortage. We then layered on estimated increases in visit capacity resulting from provider productivity enhancement strategies to see the impact on supply relative to demand over time.

In short, we calculated this in the following ways:

- Visit demand: [Visits demanded per FTE per year for primary care providers] x [Size of primary care provider workforce]
- Visit supply: [Visit potential in weekly provider hours spent in direct clinical capacity] x [Weeks worked per year] x [Size of primary care provider workforce]
- Impact of intervention: [Sum of weekly added visits per provider] x [Weeks worked per year] x [Size of primary care provider workforce]

Key assumptions

Defining the primary care provider workforce

Our analysis focused on primary care physicians (PCPs) and advanced practice providers (APPs). PCPs include both family and internal medicine physicians and APPs includes both nurse practitioners (NPs) and physician assistants (PAs).

APPs are supplementary to PCPs

Our analysis assumed APPs in primary care can effectively supplement for PCPs and augment the size of the provider workforce in a leading care role, rather than providing complementary care. We felt comfortable making this assumption given that APPs can perform many of the same functions as physician at a high quality¹. In primary care specifically, many APPs function as autonomously as physicians and have their own panel as legal barriers come down. We expect this trend of greater APP autonomy to continue, and even shift further, with time.

Measuring supply and demand through patient visits

Our analysis relied on patient visits to analyze supply and demand levels. Visits can be measured using time, a stable unit that does not vary across provider or organization. This allowed us to extrapolate from patient visit benchmarks to a national analysis more easily. Visits also provide a clear picture of care provided by a single provider, rather than multiple. Alternative measures, like panel size, are more difficult to analyze due to variation in scope of practice laws by state and billing practices that impact patient attribution.

1. [Deploying APPs Autonomously](#)

Key assumptions

The demand for primary care providers reflects their current visits

Our analysis relied on national benchmarks of provider productivity, measured by patient visits per provider FTE per year, to gauge current demand for primary care providers. One drawback of this approach is that it doesn't take unmet patient desire for visits into consideration, meaning these benchmarks may underestimate true provider demand. We then assumed that these benchmarks would increase over time, mirroring the growth of the US adult population. However, this does not incorporate other factors that could influence demand for visits.

Exclude the impacts of Covid-19 on patient acuity

One drawback of our analysis is that visits are not risk adjusted, meaning that patient acuity is not included in this model. However, we believe that the current impacts of Covid-19 on care utilization and patient acuity prevents any accurate projections that incorporate these updated figures, as we're still unaware of the affect that this will have relative to pre-Covid patterns.

High growth in APP workforce, but fewer will choose primary care

APPs are more heavily concentrated in primary care relative to PCPs, and the projected growth of the APP workforce offers hope for mitigating provider shortages¹. According to data from the Bureau of Labor Statistics, APPs are projected to be one of the fastest growing health care roles across the next ten years². An estimated 2/3rds of all providers entering the workforce between now and 2030 are slated to be APPs³. However, the general trend in medical has been toward increased specialization, and the decline in physicians entering primary care appears to be shared by NPs and PAs⁴. To account for this in generating future estimates of the size of the provider workforce, we decreased the percentage of the APP workforce that participates in primary care.

1. [Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics](#)
2. According to U.S. Bureau of Labor and Statistics projected growth rates for 2020-2030
3. [Growing Ranks of Advanced Practice Clinicians – Implications for the Physician Workforce](#)
4. [Will general physician supply meet demands of an increasing and aging population?](#)

Key assumptions

Measuring the full impact of intervention gains

There is a wide range of adoption of the productivity enhancement strategies that we included in our analysis. Because of this, we assumed that the primary care provider workforce was at a status quo of no implementation so that we can see the full impact of each intervention.

The impact of interventions will stay the same over time

While we're confident in our estimates of the current impact of the productivity enhancement strategies, the long-term impact of these strategies remains to be seen. Because of this, we assumed that the estimates of provider time saved from each strategy will go into effect at the same point in time across the provider workforce and these gains will remain static over time.

Estimating current state

Visit demand: [Visits demanded per FTE per year for primary care providers] x
[Size of primary care provider workforce]

Equations components	Assumption	Values	Sources
Visits demanded per FTE per year for primary care provider	<ul style="list-style-type: none"> Primary care provider demand reflects the current number of visits that these providers see annually. 	<ul style="list-style-type: none"> PCP average visits per FTE annually: 3,233 APP average visits per FTE annually: 2,371 	<ul style="list-style-type: none"> Advisory Board's Integrated Medical Group Benchmark Generator (IMGBG)
Size of primary care provider workforce	<ul style="list-style-type: none"> We included PCPs (family and internal medicine physicians) and APPs (NPs and PAs). 	<ul style="list-style-type: none"> Current size of PCP workforce: 228,700 Current size of APP workforce: 136,500 	<ul style="list-style-type: none"> AAMC The Complexities of Physician Supply and Demand Bureau of Labor Statistics Occupational Outlook Handbook: Nurse Practitioners Bureau of Labor Statistics Occupational Outlook Handbook: Physician Assistants Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics

1. This approach aligned with external literature, namely [AAMC's The Complexities of Physician Supply and Demand](#), indicating an excess demand for visits.

Estimating current state

Visit supply: [Visit potential in weekly provider hours spent in direct clinical capacity] x [Weeks worked per year] x [Size of primary care provider workforce]

Equations components	Assumption	Values	Sources
Visit potential in weekly provider hours spent in direct clinical capacity	<ul style="list-style-type: none"> Direct clinical time best reflects provider's true capacity for patient visits, rather than total time worked. However, it is possible that providers spend more than their clinical time working on tasks in preparation for or in aftermath of the visit. 	<ul style="list-style-type: none"> PCPs works roughly 50.6 hours per week, but only spend 16.75 hours directly seeing patients. The average patient visit takes 20 minutes. 	<ul style="list-style-type: none"> The Physicians Foundation 2018 Physician Survey Allocation of Physician Time in Ambulatory Practice: A Time and Motion Study in 4 Specialties
Weeks worked per year	<ul style="list-style-type: none"> We can accurately extrapolate average weeks worked to the entire PCP and APP workforce 	<ul style="list-style-type: none"> Providers work 47 weeks per year. 	<ul style="list-style-type: none"> The State of American Jobs
Size of primary care provider workforce	<ul style="list-style-type: none"> We included PCPs (family and internal medicine physicians) and APPs (NPs and PAs). 	<ul style="list-style-type: none"> Current size of PCP workforce: 228,700 Current size of APP workforce: 136,500 	<ul style="list-style-type: none"> AAMC The Complexities of Physician Supply and Demand Bureau of Labor Statistics Occupational Outlook Handbook: Nurse Practitioners Bureau of Labor Statistics Occupational Outlook Handbook: Physician Assistants Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics

Estimating current state

Impact of interventions¹: [Sum of weekly added visits per provider] x [Weeks worked per year] x [Size of primary care provider workforce]

Equations components	Assumption	Values	Sources
Sum of weekly added visits per provider	<ul style="list-style-type: none"> We relied on a representative, but not all inclusive, group of productivity improvement strategies with strong evidence in support of their impact. We grouped these into four broad categories: <ul style="list-style-type: none"> Holistic care team re-design; Workflow optimization; Enabling technology; and Telemedicine. 	<ul style="list-style-type: none"> 50% reduction from the impact we saw at the organization that implemented the intervention. 	<ul style="list-style-type: none"> Time savings estimates associated with each tactic are based on data and insights from Advisory Board research and interviews.
Weeks worked per year	<ul style="list-style-type: none"> We can accurately extrapolate average weeks worked to the entire PCP and APP workforce. 	<ul style="list-style-type: none"> Providers work 47 weeks per year. 	<ul style="list-style-type: none"> The State of American Jobs
Size of primary care provider workforce	<ul style="list-style-type: none"> We included PCPs (family and internal medicine physicians) and APPs (NPs and PAs). 	<ul style="list-style-type: none"> Current size of PCP workforce: 228,700 Current size of APP workforce: 136,500 	<ul style="list-style-type: none"> AAMC The Complexities of Physician Supply and Demand Bureau of Labor Statistics Occupational Outlook Handbook: Nurse Practitioners Bureau of Labor Statistics Occupational Outlook Handbook: Physician Assistants Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics

1. We took a conservative approach to incorporating the impact of each intervention into our analysis. We generated impact estimates by subtracting 50% from the visits added that we saw at the organizations that implemented the practice. We then added this output to the baseline visit supply and compared this adjusted visit supply to the baseline visit demand to assess any shortage.

Estimating future state

To generate 5- and 10-year estimates of primary care provider supply, demand, and impact of intervention, we layered on estimates of future provider supply to the existing current state equations to account for changes over time. The tables below reflect the additional assumptions and adjustments we made to the equations.

Visit demand: [Visits demanded per FTE per year for primary care providers x US adult population growth rate] x [Size of provider workforce x declining percentage of APPs working in primary care]

Equations components	Assumption	Values	Sources
Visits demanded per FTE per year for primary care provider	<ul style="list-style-type: none"> Patient demand for visits will increase over time, mirroring the growth of the US adult population over the timeframe in question. 	<ul style="list-style-type: none"> PCP average visits per FTE annually: [3,233] x [5- and 10-year US adult population growth rates] <ul style="list-style-type: none"> – 2025: 3,379 – 2030: 3,508 APP average visits per FTE annually: [2,371] x [5- and 10-year US adult population growth rates] <ul style="list-style-type: none"> – 2025: 2,478 – 2030: 2,572 	<ul style="list-style-type: none"> Advisory Board's Integrated Medical Group Benchmark Generator (IMGBG) CDC Wonder Census Population Projections
Size of primary care provider workforce	<ul style="list-style-type: none"> Increased total size of the provider workforce, but the proportion of APPs in primary care will decrease over time 	<ul style="list-style-type: none"> Current size of PCP workforce: [5- and 10-year employment projections] x [% of workforce in primary care] <ul style="list-style-type: none"> – 2025: 232,600 – 2030: 236,500 Current size of APP workforce: [5- and 10-year employment projections] x [% of workforce in primary care] <ul style="list-style-type: none"> – 2025: 108,325 NPs and 46,000 PAs – 2030: 120,670 NPs and 49,155 PAs 	<ul style="list-style-type: none"> AAMC The Complexities of Physician Supply and Demand Bureau of Labor Statistics Occupational Outlook Handbook: Nurse Practitioners Bureau of Labor Statistics Occupational Outlook Handbook: Physician Assistants Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics

Estimating future state

Visit supply: [Visit potential in weekly provider hours spent in direct clinical capacity] x [Weeks worked per year] x [Size of provider workforce x declining percentage of APPs working in primary care]

Equations components	Assumption	Values	Sources
Visit potential in weekly provider hours spent in direct clinical capacity	<ul style="list-style-type: none"> No change in the provider time spent in clinical capacity or length of visit. 	<ul style="list-style-type: none"> PCPs works roughly 50.6 hours per week, but only spend 16.75 hours directly seeing patients. The average patient visit takes 20 minutes. 	<ul style="list-style-type: none"> The Physicians Foundation 2018 Physician Survey Allocation of Physician Time in Ambulatory Practice: A Time and Motion Study in 4 Specialties
Weeks worked per year	<ul style="list-style-type: none"> No change in the amount worked per year. 	<ul style="list-style-type: none"> Providers work 47 weeks per year. 	<ul style="list-style-type: none"> The State of American Jobs
Size of primary care provider workforce	<ul style="list-style-type: none"> Increased total size of provider workforce, but the proportion of APPs in primary care will decrease over time. 	<ul style="list-style-type: none"> Current size of PCP workforce: [5- and 10-year employment projections] x [% of workforce in primary care] <ul style="list-style-type: none"> – 2025: 232,600 – 2030: 236,500 Current size of APP workforce: [5- and 10-year employment projections] x [% of workforce in primary care] <ul style="list-style-type: none"> – 2025: 108,325 NPs and 46,000 PAs – 2030: 120,670 NPs and 49,155 PAs 	<ul style="list-style-type: none"> AAMC The Complexities of Physician Supply and Demand Bureau of Labor Statistics Occupational Outlook Handbook: Nurse Practitioners Bureau of Labor Statistics Occupational Outlook Handbook: Physician Assistants Robert Graham Center Primary care in the US: A Chartbook of Facts and Statistics

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