By Sanjay Basu, Russell S. Phillips, Robert Phillips, Lars E. Peterson, and Bruce E. Landon

Primary Care Practice Finances In The United States Amid The COVID-19 Pandemic

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ABSTRACT As a result of the coronavirus disease 2019 (COVID-19) pandemic, virtually all in-person outpatient visits were canceled in many parts of the country between March and May 2020. We sought to estimate the potential impact of COVID-19 on the operating expenses and revenues of primary care practices. Using a microsimulation model incorporating national data on primary care use, staffing, expenditures, and reimbursements, including telemedicine visits, we estimated that over the course of calendar year 2020, primary care practices would be expected to lose 67,774 in gross revenue per full-time-equivalent physician (the difference between 2020 gross revenue with COVID-19 and the anticipated gross revenue if COVID-19 had not occurred). We further estimated that the cost at a national level to neutralize the revenue losses caused by COVID-19 among primary care practices would be $15.1 billion. This could more than double if COVID-19 telemedicine payment policies are not sustained.

Sanjay Basu (sanjay_basu@hms.harvard.edu) is vice president of research and population health at Collective Health, in San Francisco, California, and director of research at the Center for Primary Care, Harvard Medical School, in Boston, Massachusetts.

Russell S. Phillips is director of the Center for Primary Care and the William Applebaum Professor of Medicine and professor of global health and social medicine, Harvard Medical School.

Robert Phillips is the executive director of the Center for Professionalism and Value in Health Care, American Board of Family Medicine, in Lexington, Kentucky.

Lars E. Peterson is vice president of research at the American Board of Family Medicine.

Bruce E. Landon is a professor of health care policy, Department of Health Care Policy, Harvard Medical School, and a professor of medicine and practicing internist at Beth Israel Deaconess Medical Center, in Boston.

The SARS-CoV-2 coronavirus infection leading to coronavirus disease 2019 (COVID-19) has had a significant impact on the US health care system, as virtually all elective procedures and the majority of in-person outpatient visits were cancelled in many parts of the country between March and May 2020.[1] Despite the substantial benefits of preventing sick and healthy patients from congregating at hospitals and outpatient physician offices, particularly given concerns of capacity and inadequate supplies of personal protective equipment, the financial impact of these strategies has been devastating to both hospitals and physician practices.[2] Lost in the din of hospitals and health systems seeking relief, however, has been the plight of primary care practices and, in particular, independent practices based in the community.[3,4]

The health system in general, and primary care practices specifically, has rapidly pivoted to providing virtual care, including by telephone and video visits. However, the extent to which such visits are able to replace the revenue of in-person visits and support the existing staff of primary care practices is not known.[5] Regulations and policies governing the conduct of and reimbursement for these types of remote visits are rapidly evolving, producing considerable uncertainty for practices.[5] Many primary care practices have not invested in telemedicine capabilities and may lack the knowledge or know-how to implement a telemedicine system in the near term.[6] As a consequence, many practices are using telephone visits without certainty about reimbursement, although some private insurers are now reimbursing remote visits at standard evaluation and management visit rates, and Medicare recently agreed to pay for telephone visits retroactive to March 20.[7–9] More important, many patients prefer in-person visits, and not all visits and complaints are appropriate for telemedicine. Thus, even in settings that have developed remote capabilities, the uptake of remote visits is

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likely to be only a percentage of their prior in-person visit volume. A serial survey of primary care physicians in forty-eight states, Puerto Rico, and the Virgin Islands in late March 2020 found that 87 percent of respondents reported limiting in-person visits and 60 percent were still unable to perform any video visits.[10]

Primary care is particularly vulnerable among other specialties, as almost all primary care revenue is derived from in-person evaluation and management visits.[11] Primary care provides more than half of the approximately one billion office visits occurring annually in the US, and approximately 85 percent of visits for those with chronic medical conditions such as hypertension and diabetes.[12] Although substantial numbers of primary care physicians are employed by hospitals or health systems, more than half of the roughly 220,000 US primary care physicians continue to operate within the community as full or part owners of independent small practices.[13] In contrast to hospitals or health systems, these practices lack ready access to capital or sufficient financial reserves that would be required to provide a base of support in the absence of ongoing revenue. In addition, according to data from the Medical Group Management Association (MGMA), the average primary care practice supports four support staff (including clinical and office staff) at a cost of well over $200,000 per year, in addition to other operating costs of similar magnitude per full-time-equivalent (FTE) physician, and the ability of practices to support such operations in the current environment is unclear.[11] Finally, more than 25 percent of practicing primary care physicians are age sixty or older, and disruptions such as we are seeing in current practice could lead to higher rates of retirement, which would compound existing shortages of primary care.[13] Primary care practice closures may compromise access to care.

In this context, we used a validated microsimulation model of primary care finances to estimate the potential impact of the COVID-19 pandemic on the operating expenses and revenues of primary care practices.[14] Our analysis provides several potential advantages over anecdotal "back of the envelope" calculations. First, we are able to estimate the range of impacts across primary care practices of different types, and second, we are able to simulate potential effects from strategies that could be used to mitigate the financial effects of the current situation.

Study Data And Methods

The modeling methods and reporting used followed the Consolidated Health Economic Evaluation Reporting Standards (see checklist in online appendix exhibit 1).[15]

INPUT DATA AND SIMULATED POPULATIONS The model simulated individual primary care practices, defined as general practice, general internal medicine, general pediatrics, geriatrics, or family medicine practices under any form of ownership (independent ownership or hospital group/organization ownership), within the United States. The model simulated practices organized into four types: federally qualified health centers (FQHCs), non-FQHC urban practices in high-poverty areas (20 percent or more of the population in the ZIP code below the federal poverty threshold),[16] non-FQHC rural practices in high-poverty areas, and practices outside of high-poverty areas. The model's input data were obtained from the MGMA DataDive (MGMA Cost and Revenue report, filtered to $N = 1,322$ primary care single-specialty practices surveyed)[11] for practice visit volume, staffing, revenue, and cost estimates for non-FQHC practices. We note that the MGMA data are a convenience sample that tends to sample disproportionately from for-profit practices; therefore, we supplemented the input data with data from the National Association of Community Health Centers ($N = 1,375$ practices)[17] for FQHCs. In addition, data from the National Ambulatory Medical Care Survey ($N = 1,293$ practices) were used to identify the distribution of patients by insurance type across each practice type (proportion of patients with each of Medicare, Medicaid, commercial, or self-pay/uninsured as principal payer at each practice type).[18] The model input parameters and data sources are further detailed in exhibit 1 and in appendix exhibit 2.[15] The practice groupings were chosen in part because they differ substantially in their key parameters around payer mix, patient and visit volume, and sources of financing that may render them differentially affected by alternative policy proposals for funding. Note that as a result of inadequate practice-specific sample sizes for costs, we sampled from the full national range of costs across all practice types to diminish the influence of outliers.

OUTCOMES The primary model outcome was net practice revenue per FTE physician over the course of calendar year 2020 in two scenarios: with and without furloughs on staff to decrease practice expenses. We also include monthly estimates during the period when in-person visit use was expected to have been at its lowest level because of COVID-19, to show the extent to which monthly cash flow is being affected. Secondary model outcomes were gross revenues and gross costs including salaries, benefits, and overhead expenditures per FTE physician in 2020. Finally, we estimated the total financial support

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EXHIBIT 1

Input parameters and data sources for examination of primary care practices in the US, by practice type

Measure	Average among practice types	Practice type: FQHC	Urban, non-FQHC, high-poverty zone	Rural, non-FQHC, high-poverty zone	Urban or rural, lower-poverty zone
Unique patients per FTE physician	1,725	2,040	1,480	1,760	1,620
Encounters per FTE physician per year	4,595	4,660	4,456	4,864	4,399
Payer distribution					
Medicare	0.20	0.11	0.27	0.20	0.22
Medicaid	0.27	0.57	0.20	0.18	0.13
Private	0.42	0.10	0.48	0.48	0.60
Uninsured	0.12	0.22	0.05	0.14	0.05
Visit frequency					
Level 1 (CPT Code 99201)	9	10	9	10	9
Level 2 (CPT Code 99202)	108	110	105	114	103
Level 3 (CPT Code 99203)	675	685	655	715	646
Level 4 (CPT Code 99204)	1,144	1,160	1,109	1,211	1,095
Level 5 (CPT Code 99205)	363	368	352	384	347
Level 1 (CPT Code 99211)	53	54	51	56	51
Level 2 (CPT Code 99212)	55	56	53	58	53
Level 3 (CPT Code 99213)	886	899	859	938	849
Level 4 (CPT Code 99214)	1,194	1,211	1,158	1,264	1,143
Level 5 (CPT Code 99215)	108	110	105	114	103
Staff FTEs					
Primary care physicians	1.00	1.00	1.00	1.00	1.00
Total nonphysician providers	0.23	0.23	0.23	0.23	0.23
Business support staff	1.12	1.12	1.12	1.12	1.12
Registered nurses	1.33	1.33	1.33	1.33	1.33
Other[a]	1.33	1.33	1.33	1.33	1.33
Base salaries per FTE, including fringe/benefits ($)					
Primary care physicians	241,728	241,728	241,728	241,728	241,728
Total nonphysician providers	109,740	109,740	109,740	109,740	109,740
Business support staff	46,644	46,644	46,644	46,644	46,644
Registered nurses	79,800	79,800	79,800	79,800	79,800
Other[a]	43,560	43,560	43,560	43,560	43,560
Salary costs incorporating staffing levels ($)					
Primary care physicians	241,728	241,728	241,728	241,728	241,728
Total nonphysician providers	25,240	25,240	25,240	25,240	25,240
Business support staff	52,241	52,241	52,241	52,241	52,241
Registered nurses	106,134	106,134	106,134	106,134	106,134
Other[a]	57,935	57,935	57,935	57,935	57,935
Nonsalary overhead and total costs ($)					
Nonsalary overhead costs	48,328	48,328	48,328	48,328	48,328
Total costs per FTE physician per year	531,606	531,606	531,606	531,606	531,606
Revenue, gross and net ($)					
Gross revenue per FTE physician per year	542,190	454,157	547,308	602,188	565,105
Net FFS revenue per FTE physician per year, before subsidies/grants or capitated payment	10,583	–77,449	15,702	70,582	33,499

SOURCE Medical Group Management Association DataDive (note 11 in text), National Association of Community Health Centers (note 17 in text), and National Ambulatory Medical Care Survey (note 18 in text). **NOTES** Practice types include federally qualified health centers (FQHCs), non-FQHC urban practices in high-poverty areas (20 percent or more of the population in the ZIP code under the federal poverty threshold; see note 16 in text), non-FQHC rural practices in high-poverty areas, and practices outside of high-poverty areas. The model's input data were obtained from the MGMA DataDive (N = 1,322 primary care practices surveyed) for practice visit volume, staffing, revenue, and cost estimates for non-FQHC practices, and data from the National Association of Community Health Centers (N = 1,375 practices) for FQHCs. In addition, data from the National Ambulatory Medical Care Survey (N = 1,293 practices) were used to identify the distribution of patients by insurance type across each practice type (proportion of patients with each of Medicare, Medicaid, commercial, or self-pay/uninsured as principal payer at each practice type). Appendix exhibit 2 contains interquartile ranges around the mean estimates shown here (note 15 in text). FTE is full-time equivalent. CPT is *Current Procedural Terminology.* FFS is fee-for-service. [a]Licensed practical nurses, medical assistants, and nurse aides.

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to practices needed at the national level to cover the losses to practices from COVID-19, based on data on the number of active primary care practitioners.[13] The study perspective was the practice perspective, with a one-year time horizon. Undiscounted costs were expressed in 2020 US dollars.

BASELINE COVID-19 IMPACT SIMULATION The model was used to simulate the impact of COVID-19 by accounting for two phenomena: changes in visit volume and conversion of some visits to telemedicine visits, with associated implications for payments. Both changes in visit volume and the proportion of visits converted to telemedicine were obtained from a Commonwealth Fund study, based on electronic health record check-in rates and visit codes ($N = 1{,}600$ practices representing more than 50,000 providers).[6] We note that the Commonwealth Fund study was based on data from scheduling and check-in software used in all fifty states and by independent single-provider practices, multispecialty groups, FQHCs, and large health systems, yet it still represents a convenience sample, and no data to assess its representativeness have been made available. The primary data covered the period from February 1 through May 16, 2020, after which we projected the volume forward using smoothing splines. We anticipated that even after the easing of shelter-in-place policies, visit volume would rebound to a level below the January 2020 baseline as the result of an anticipated economic recession and continued social distancing; we specifically adopted a six-percentage-point reduction below baseline for total visits, as observed during the 2008 economic recession,[19] with continuation of telemedicine services into the foreseeable future (such that total visits remained 6 percent below baseline and that 25 percent of these visits are via telemedicine, given spacing of visits and lower in-person visit volume resulting from both continued social distancing requirements for waiting rooms and cleaning of clinic rooms between patients leading to fewer in-person visits).

For telemedicine visits, we used the latest available reports from Medicare, Medicaid, and commercial payers to estimate payment levels for telemedicine visits (appendix exhibit 3),[15] including the recent decision by CMS to reimburse telephone visits at evaluation and management rates retroactive to March 1, 2020.[7–9] We assumed that these payment policies would be in place through at least the end of the calendar year, although we also conducted a sensitivity analysis (discussed below) simulating early reversion to prior payment rates for telemedicine. The visit volume and telemedicine conversion rates by calendar month were applied across all visit types by *Current Procedural Terminology* (CPT) code. To estimate the annual impact, we assumed that the pandemic affected practices starting March 2020 and that restrictions on in-person visits were loosened beginning May 2020 and fully ended (with the exception of six-foot social distancing) as of August 2020.

ANALYTIC APPROACH We simulated each month of calendar year 2020 by calculating the visit volume by CPT code and associated payments for each of the four types of practices. We limited the analysis to calendar year 2020, given the high uncertainty of the future trajectory of the pandemic at the current time. A microsimulation approach was used, in which each of 10,000 practices was simulated for each of the four practice types to help identify the variability in outcomes among practices. Specifically, we repeatedly sampled 10,000 times from the distribution of each input parameter in appendix exhibit 2 for each of the four practice types to estimate both the mean and distribution around the mean of each outcome metric.[15] We simulated two scenarios in the baseline simulation: that practices maintained their expenses for salary, benefits, and overhead, not changing their overall costs, or that practices furloughed nonphysician staffing positions such that salary and benefits levels for nonphysicians were reduced to those of the twenty-fifth percentile of practices (appendix exhibit 2).[15] The model was previously validated by ensuring that the estimates of practice revenue and cost were concordant with independent survey data by practice characteristics.[14]

Note that we deviated from our prior validated model in that we did not have detailed utilization changes during COVID-19 from primary care practices at the state level, and therefore we present only the aggregate national results from the model (that is, although the model does have underlying state-specific data on patient demography and utilization at baseline, we did not have COVID-19-period data on utilization and revenue change at the state level). To match this choice for calculating net revenue, we also included staffing and expenditure values across the full national sample. This simplification widens the overall confidence intervals in our outcomes, as we sampled across the variation among all states, instead of sampling from narrower, state-specific estimates.

ALTERNATIVE SCENARIOS We simulated five alternative scenarios, with the first designed to understand the impact of uncertainty in the course of the pandemic, the second and third to understand uncertainty in policy responses to primary care payments, and the final two to understand how alternative ways of conceptual-

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izing groups of primary care practices would affect our results (see appendix exhibit 4 for a tabular view of scenarios).[15] First, we estimated the effect of a second shelter-in-place order during November and December 2020[20] having half as much impact on visit volume as the prior shelter-in-place order. Second, concordant with current policy proposals,[21,22] we simulated what capitated payment level, in terms of per member per month global payment, would be required to enable practices to make up their net revenue loss resulting from COVID-19 for calendar year 2020, assuming the payment would be made retroactively for the entirety of the pandemic. Third, we estimated what would happen if telemedicine payments revert back to pre-COVID-19 levels starting October 1, 2020. Fourth, we recomputed the outcomes when we restratified practices by independent versus hospital ownership. Fifth, we recomputed the outcomes when we restratified practices by practice size, in terms of the number of FTE physicians in the practice.

LIMITATIONS Our study was subject to several limitations. As with any model-based assessment, our analysis required assumptions. We assumed that current reimbursement policies (particularly around telemedicine visits including audio-only visits being permitted for reimbursement) would remain unchanged, even after the resumption of in-person visits. We did not account for changes in the payer mix that may result during calendar year 2020 resulting from unemployment, additional costs of telehealth, practice closures, or new costs to practices including the costs of disinfection or personal protective equipment to prevent coronavirus transmission. We only focused on the portion of the practice revenue related to fee-for-service visits, leaving aside capitated payments that we assumed as constant. Our data also might underrepresent the contribution of other types of providers such as nurse practitioners or physician assistants to the provision of primary care, as practices with a higher share of such providers might be underrepresented in the MGMA data that underlie the modeling. Both the MGMA DataDive and the Commonwealth Fund study are convenience samples, so the mean outcome values might not be nationally representative; hence, our estimates of uncertainty around each outcome may help explain the variations that may be observed for each practice type around each mean estimate. Finally, we had to make assumptions about the extent and duration of the current and future shelter-in-place orders, which could under- or overrepresent the timing and duration of such orders and their impact on primary care practices.

Study Results

BASELINE COVID-19 IMPACT SIMULATION Our data show that the percentage change in visit volume in the context of COVID-19 was at its low point in late March for all types of visits (down 58 percent) and early April for in-person visits (down 69 percent), and that the rebound would be expected to have reached a steady state in mid-June (although still below normal) (exhibit 2). On the basis of this change in visit volume in the context of COVID-19, we estimate that over the course of calendar year 2020, primary care practices would be expected to lose $67,774 in gross revenue per FTE physician as a result of the effect of COVID-19 on fee-for-service payments (interquartile range [IQR]: −$80,557, −$54,990, the difference between 2020 gross revenue with COVID-19 of $474,416 and anticipated gross revenue of $542,190 if COVID-19 had not occurred) (exhibit 3 and appendix exhibits 2 and 5).[15] The loss in gross revenue would result in calendar year 2020 net revenue (gross revenue minus total practice costs) of −$57,190 (IQR: −$265,636, $119,803) per FTE physician if practices maintained their preexisting costs. The interquartile ranges cross zero, implying that some practices would incur debt (negative net revenue), whereas others may maintain some positive net revenue. In contrast, the loss in gross revenue would result in net revenue of −$28,265 per FTE physician (IQR: −$205,503, $127,034) if practices furloughed staff and reduced salary and benefit costs to the twenty-fifth percentile of staffing levels during the period the shelter-in-place order was in effect (noting that in our simulation, furloughs reduce the practices' operating loss but not revenue; exhibit 3 and appendix exhibit 5).[15] We modeled that the lowest levels of revenue would be expected in April 2020 (exhibit 4 and appendix exhibit 6),[15] during which gross revenue would be expected to be a weighted average of $26,601 lower than usual per FTE physician over the course of the month (a 58.9 percent loss; IQR: −$31,619, −$21,584) from the baseline of $45,182 (exhibit 5).

Exhibit 3 details the gross and net revenue estimates by practice type, depending on practice expenditures, whereas exhibit 5 provides the overall net revenue estimates by calendar month. The practices facing the greatest losses in gross revenue because of COVID-19 in the simulation were rural non-FQHCs, which would be expected to lose $75,274 (IQR: −$76,367, −$74,180) in gross revenue per FTE physician over the calendar year on average, from a baseline of $602,188, resulting in net revenues of −$4,691 per FTE physician (IQR: −$115,998, $104,332) if practices maintained their preexisting costs, or $24,234

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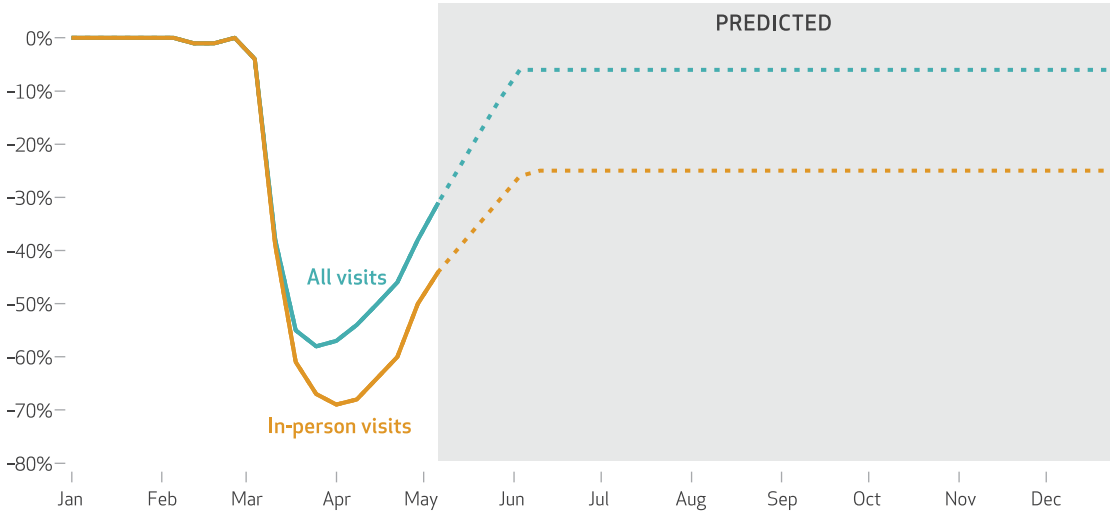
EXHIBIT 2

Percent change in primary care visit volume in the US, 2020



SOURCE Mehrotra A, Chernew M, Linetsky D, Hatch H, Cutler D. The impact of the COVID-19 pandemic on outpatient visits: a rebound emerges (see note 6 in text); and authors' own work. **NOTES** Observed data (solid lines) are from a Commonwealth Fund analysis (N = 1,600 practices) (see note 6 in text) covering the period from February 1 through May 16, 2020, after which we projected the volume forward using smoothing splines (dashed lines) (see Maechler M. R: fit a smoothing spline [Internet]. Zurich: R-manual; [cited 2020 Jul 15]. Available from: https://stat.ethz.ch/R-manual/R-patched/library/stats/html/smooth.spline.html). The difference between all visits and in-person visits is telemedicine visits, which we projected would remain a large portion of visits because of continued physical distancing rules in place through the end of 2020. We anticipated that even after the completion of shelter-in-place policies, visit volume would remain 6 percentage points below the January 2020 baseline overall as a result of anticipated economic recession, as observed during the 2008 economic recession (see Mortensen K, Chen J. The great recession and racial and ethnic disparities in health services use, note 19 in text).

per FTE physician (IQR: –$55,866, $104,332) if practices furloughed staff and reduced salary and benefit costs to the twenty-fifth percentile of staffing levels (appendix exhibit 5).

Given the number of active primary care physicians (N = 223,125), we estimated that at a national level, the cost would be $15.1 billion (IQR: $12.3 billion, $18.0 billion) to neutralize the gross revenue losses caused by COVID-19 among primary care practices without subjecting staff to furloughs.

ALTERNATIVE SCENARIOS In our first scenario we estimated a second shelter-in-place order during November and December 2020 having half as much impact on visit volume as the prior shelter-in-place order. Under this scenario, over the course of calendar year 2020, primary care practices would be expected to lose $85,666 in gross revenue (IQR: –$101,824, –$69,507), resulting in net revenues of –$75,082 (IQR: –$280,153, $98,536) if practices maintained their preexisting costs or –$46,157 (IQR: –$220,020, $105,767) if practices furloughed staff and reduced salary and benefit costs to the twenty-fifth percentile of nonphysician staffing levels (appendix exhibit 7).[15] Given the number of active primary care physicians (N = 223,125), we estimated that the cost would be $19.1 billion (IQR: $15.5 billion, $22.7 billion) at a national level to neutralize the gross revenue losses caused by COVID-19 among primary care practices without subjecting staff to furloughs.

Second, we simulated what capitated payment level would be required to enable practices to have no net revenue loss for calendar year 2020 at the projected levels of visit volume and telemedicine uptake. We estimated that beyond fee-for-service payments, practices would require an incremental global capitated payment of $3.27 per member per month (IQR: $2.57, $3.89; exhibit 3 gross revenue losses divided by exhibit 1 unique patient counts, divided by 12 to convert to a per month basis) to neutralize their gross revenue losses resulting from COVID-19 during calendar year 2020, or to fully replace usual fee-for-service gross revenue regardless of COVID-19 with a capitated payment, they would require a payment of $26.19 per member per month (IQR: $21.25, $31.13; exhibit 1 total gross revenue per year divided by exhibit 1 unique patient counts, divided by 12). Because of differences in patient populations and payer mixes, this varied from $18.55 per member per month for FQHCs (IQR: $15.95, $21.16) to $30.82 per member per month for non-FQHC urban practices in high-poverty zones (IQR: $21.28, $40.35).

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EXHIBIT 3

Modeled gross and net revenue estimates by primary care practice type in calendar year 2020, with and without furloughs

Revenue/cost measures	Average among practice types	Practice type			
		FQHC	Urban, non-FQHC, high-poverty zone	Rural, non-FQHC, high-poverty zone	Urban or rural, lower-poverty zone
FURLOUGH SCENARIO					
Gross revenue per FTE physician per year	$474,416	$397,387	$478,895	$526,915	$494,467
Change in gross revenue per FTE physician per year from non-COVID-19 year	−67,774	−56,770	−68,414	−75,274	−70,638
Total costs per FTE physician per year	531,606	531,606	531,606	531,606	531,606
Change in total costs per FTE physician per year from non-COVID-19 year	0	0	0	0	0
Net FFS revenue per FTE physician per year, before subsidies/grants or capitated payment	−57,190	−134,219	−52,712	−4,691	−37,139
Change in net FFS revenue per FTE physician per year from non-COVID-19 year	−67,774	−56,770	−68,414	−75,274	−70,638
NO FURLOUGH SCENARIO					
Gross revenue per FTE physician per year	$474,416	$397,387	$478,895	$526,915	$494,467
Change in gross revenue per FTE physician per year from non-COVID-19 year	−67,774	−56,770	−68,414	−75,274	−70,638
Total costs per FTE physician per year	502,680	502,680	502,680	502,680	502,680
Change in total costs per FTE physician per year from non-COVID-19 year	−28,926	−28,926	−28,926	−28,926	−28,926
Net FFS revenue per FTE physician per year, before subsidies/grants or capitated payment	−28,265	−105,293	−23,786	24,234	−8,214
Change in net FFS revenue per FTE physician per year from non-COVID-19 year	−38,848	−27,844	−39,488	−46,348	−41,712

SOURCE Authors' own work. **NOTES** Furloughed scenario assumes reduced salary and benefit costs to the twenty-fifth percentile of nonphysician staffing levels by practice type. See appendix exhibit 2 for the twenty-fifth percentile of nonphysician staffing levels by practice type (see note 15 in text). Practice types are defined in the exhibit 1 notes. See appendix exhibit 5 for interquartile ranges around the mean estimates shown here. FTE is full-time equivalent. FFS is fee-for-service.

Third, we estimated what would happen if telemedicine payments reverted to pre-COVID-19 levels starting October 1, 2020. Under this scenario, primary care practices over the course of calendar year 2020 would be expected to lose −$173,453 in gross revenue (IQR: −$207,511, −$139,395), resulting in net revenues of −$162,870 (IQR: −$350,041, −$7,151) if practices maintained their preexisting costs or $133,944 (IQR: $289,908, $80) if practices furloughed staff and reduced salary and benefit costs to the twenty-fifth percentile of nonphysician staffing levels during the period of the shelter-in-place order (appendix exhibit 8).[15] Given the number of active primary care physicians ($N = 223,125$), we estimated that the cost would be $38.7 billion (IQR: $31.1 billion, $46.3 billion) at a national level to neutralize the gross revenue losses caused by COVID-19 among primary care practices without subjecting staff to furloughs.

Fourth, we recomputed the outcomes with the subset of practices for which the data provided would permit restratification by independent ownership versus hospital/delivery-system ownership. We observed higher gross revenue losses among independently owned than among hospital-owned practices as a result of a higher proportion of commercially and Medicaid-insured patients to Medicare-insured patients and delays and variability among commercial and Medicaid payers in paying for telemedicine at in-person rates (resulting in 17 percent higher losses among the independently owned practices, at −$73,153 lost gross revenue versus −$62,395 among hospital-owned practices, on average; appendix exhibit 9).[15]

Fifth, we recomputed the outcomes with practices restratified by practice size in terms of the number of FTE physicians in the practice. We observed higher gross revenue losses among smaller practices with three or fewer FTE physicians than among larger practices as a result of a higher proportion of commercially and Medicaid-insured patients to Medicare-insured patients and the delays and variability among commercial and Medicaid payers in paying for telemedicine at in-person rates ($78,053 lost gross revenue with three or fewer FTE physicians versus $64,481 lost among those practices with four to six FTE physicians and $60,788 lost for those practices with seven or more FTE physicians, on average; appendix exhibit 10).[15]

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EXHIBIT 4

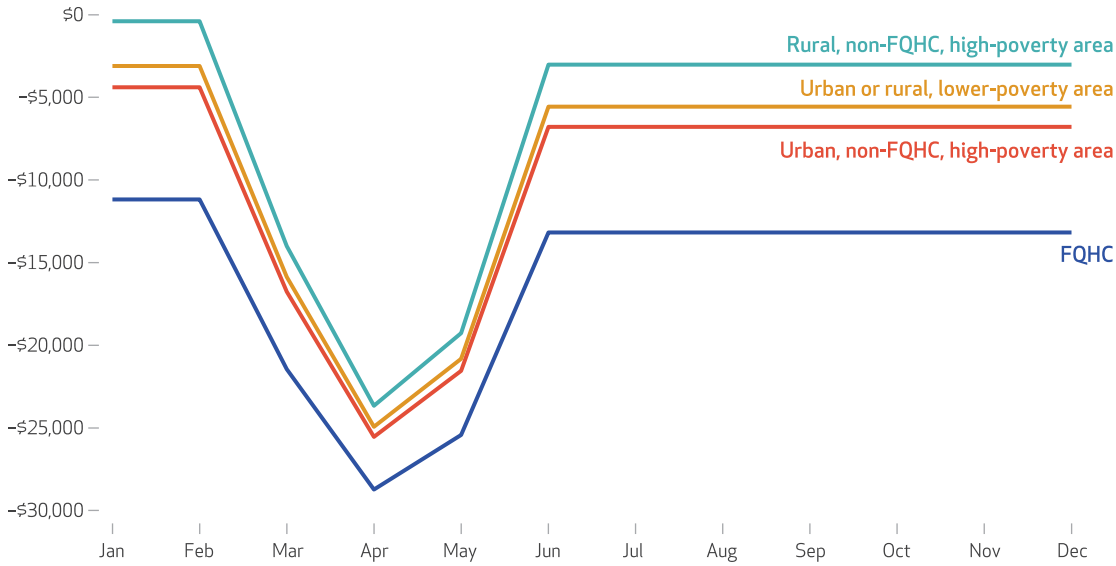
April (lowest level) modeled gross and net revenue estimates by primary care practice type in calendar year 2020, with and without furloughs

Revenue/cost measures	Average among practice types	Practice type			
		FQHC	Urban non-FQHC, high-poverty zone	Rural non-FQHC, high-poverty zone	Urban or rural, lower-poverty zone
FURLOUGH SCENARIO					
Gross revenue per FTE physician in April	$18,581	$15,564	$18,757	$20,637	$19,367
Change in gross revenue per FTE physician in April from non-COVID-19 times	−26,601	−22,282	−26,852	−29,545	−27,725
Total costs per FTE physician in April	44,301	44,301	44,301	44,301	44,301
Change in total costs per FTE physician in April from non-COVID-19 times	0	0	0	0	0
Net FFS revenue per FTE physician in April, before subsidies/grants or capitated payment	−25,719	−28,736	−25,544	−23,663	−24,934
Change in net FFS revenue per FTE physician in April from non-COVID-19 times	−26,601	−22,282	−26,852	−29,545	−27,725
NO FURLOUGH SCENARIO					
Gross revenue per FTE physician in April	$18,581	$15,564	$18,757	$20,637	$19,367
Change in gross revenue per FTE physician in April from non-COVID-19 times	−26,601	−22,282	−26,852	−29,545	−27,725
Total costs per FTE physician in April	41,890	41,890	41,890	41,890	41,890
Change in total costs per FTE physician in April from non-COVID-19 times	−2,410	−2,410	−2,410	−2,410	−2,410
Net FFS revenue per FTE physician in April, before subsidies/grants or capitated payment	−23,309	−26,326	−23,133	−21,253	−22,523
Change in net FFS revenue per FTE physician in April from non-COVID-19 times	−24,191	−19,872	−24,442	−27,134	−25,315

SOURCE Authors' own work. **NOTES** Furloughed scenario assumes reduced salary and benefit costs to the twenty-fifth percentile of nonphysician staffing levels by practice type. See appendix exhibit 2 for the twenty-fifth percentile of nonphysician staffing levels by practice type (see note 15 in text). Practice types are defined in the exhibit 1 notes. See appendix exhibit 6 for interquartile ranges around the mean estimates shown here. FTE is full-time equivalent. FFS is fee-for-service.

EXHIBIT 5

Monthly net revenue projections if primary care staff furloughs are not implemented, by primary care practice type, 2020



SOURCE Authors' own work. **NOTES** Revenue is presented in dollars per full-time-equivalent (FTE) physician. Practice types are defined in the exhibit 1 notes.

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Discussion

Although it is difficult to envision at this time, at some point in the future the disruption resulting from the COVID-19 pandemic will ebb. Looking forward to that time, it will be crucial for the US to have a functioning primary care system to meet the pent-up needs of the population and to resume attention to controlling the major chronic medical conditions that collectively will determine the health of Americans for many years to come. Thus, as the COVID-19 pandemic continues to ravage the economy, it is important to understand its potential impacts on primary care and to consider potential mitigation strategies that will maintain and even strengthen the primary care system in the ensuing years. Under a variety of scenarios, we estimate that primary care practices will lose more than $65,000 per FTE physician (or $325,000 per typical five-person practice) from fee-for-service payments without any attempts at mitigation, even assuming that practices quickly pivot to providing telemedicine services to at least in part make up for the loss in in-person visits (although it is likely that some practices were not able to make this pivot as quickly). Across the diverse primary care system, this equates to a net loss to primary care of nearly $15 billion in current dollars under relatively optimistic assumptions, even if there is not an extensive repeat of shelter-in-place restrictions in coming months. We also note that this loss would balloon substantially if telemedicine payment rates revert to pre-COVID-19 levels toward the end of the year. Independent and smaller practices were found to be particularly hard hit in our sensitivity analyses, and it is notable that hospital systems, and therefore hospital-owned practices, experienced greater relief after recent legislation.[2] Our results imply that federal subsidies (under the Coronavirus Aid, Relief, and Economic Security Act of 2020 and subsequent legislation) are unlikely to be sufficient to ensure the financial viability of primary care practices.

Why should we care about primary care in particular when so many areas of the economy are being similarly affected? For instance, current estimates are that the hospital industry is facing even larger financial challenges,[1] and certainly the same argument can be made about many other sectors of the economy outside of medicine.

We think that primary care is different for several reasons. First, after COVID-19 recedes, the US will continue facing the challenge of caring for the hundred million or more adults with diabetes or prediabetes[23] and hundreds of millions with obesity,[24] just to name a few conditions, particularly given the fact that more than 60 percent of visits nationally for such chronic conditions are delivered in the primary care setting.[12] Second, a well-functioning primary care system is needed to serve as the "first contact" entry point to the health care system and to determine whether and when patients require specialist or emergency care. Absent such a system, patients will be forced to rely even more heavily on emergency departments and, in some cases, direct access to specialists, both of which could result in unnecessary care and expenses potentially far in excess of the above estimates, which might otherwise have been averted. Third, accumulating evidence suggests that primary care is good for Americans' health and quality of care. Areas of the country with increasing levels of primary care capacity have seen improvements in life expectancy,[25] and patients who use primary care have been shown to receive substantially higher-quality care,[26] including increased provision of recommended preventive and chronic disease services. A health care system without the necessary primary care infrastructure therefore is likely to be increasingly fragmented, more costly, and less effective, and these costs will be borne by all Americans. Independent practices in high-poverty areas may be particularly vulnerable to closure and be an important target for financial interventions. There is potential for practice closures to exacerbate existing disparities in care, given the types of practices that are most at risk and where they are located. Our results ultimately highlight the vulnerability of primary care practices to financial demise as a result of fee-for-service and visit-based payment policies, indicating that capitation-based payment reforms may be key to ensuring the robustness of primary care into the future. Relatively small capitated payments from payers, employers, or government could be used to mitigate losses and keep practices from closing.

Conclusion

We anticipate large, meaningful reductions in revenue for primary care practices as a result of COVID-19, which may result in financial adversity sufficient to threaten practice viability, should practices be unable to secure adequate funding through either fee-for-service or capitated payment mechanisms. ■

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