----- *Working Paper* -----

Keeping the Doctor Away?
Commercial Insurer Network and Pricing Effects on Physician Labor Supply and Behavior

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Abstract

Managed care is rebounding in US health care as more emphasis is placed on cost containment. These efforts are expected to financially benefit consumers; however, they implicitly risk financial challenges for providers. Yet, we have limited understanding of how aggressive supply-side managed care tactics influence provider behavior, especially when the cost-saving tools are directed at specific providers and resonate from a specific payer. We explore these provider-payer interactions using a recent quasi-natural experiment in which a major commercial insurer imposed a new contract regime on its behavioral health providers. We then assess affected physician and consumer consequences across a variety of margins, including public payer participation, clinical effort, and utilization. We find that physicians are sensitive to the tougher managed care environment, and within areas where the insurer has market power, they contract in number and refrain from opening new practices. These providers also strongly increase their willingness to see publicly insured patients. Commercially insured patients are not obviously harmed by the payer's strategic decision, but they do receive less intensive services in some settings.

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I. Introduction

As the United States (US) is adapting to its most recent health reforms, the latest cost projections for US health spending predict that 20% of GDP will flow to the sector by 2025.[1] Consumers, industry experts, and policymakers continue to debate the measures needed to restrain growing expenditures in this area; however, the right mixture has proven elusive. Despite repeated calls for more innovation as a potential solution, some old ideas for health care cost containment are receiving new attention.

Health Maintenance Organizations (HMOs), in particular, are enjoying a resurgence as the Affordable Care Act (ACA) continues to reshape the individual insurance market in the US (Jaspen 2016). HMOs, with their accompanying restrictive networks, are the predominant health plan type within the online insurance exchanges (a.k.a. "marketplaces"), and some expect more employers to push their employees toward HMO products (Jaspen 2016). The gaining HMO momentum is a manifestation of a broader shift toward stronger managed care as health insurers, employers, and consumers search for lower cost coverage options. The contemporary appeal of managed care strategies stems from a proven track record. Research has found greater HMO presence to dampen local health care spending through changes in provider behavior, capacity, and technology adoption (Baker 1997, 2001, 2003, Baker and Brown 1999, Baker and Phibbs 2002, Chernew 1995, Feldman et al. 1986, Melichar 2009, Miller and Luft 1994). The effects are also sometimes strongest among high need patients populations (Chernew, DeCicca, and Town 2008). And importantly, placing downward pressure on negotiated service prices seems to be a key spending reduction tool for managed care entities

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[1] Spending projections from the Center of Medicare & Medicaid Services. See here: https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/nationalhealthexpenddata/nhe-fact-sheet.html

(Cutler, McClellan, and Newhouse 2000, Polsky and Nicholson 2004, Wu 2009).[2]

Reflecting on the broader literature, Baker (2003) argues that managed care organizations (MCOs) have the ability to mold entire health care markets and also appear capable of accomplishing their cost-containment objectives without obviously harming patient health (Baker 2003).[3]

Despite MCOs' successes in restraining US health care expenditures during the 1980s and much of the 1990s, it eventually fell out of favor with many consumer groups and policymakers (Mays, Hurley, and Grossman 2003). The "HMO backlash" led to a decline in insurance products relying on the most restrictive terms and likely weakened managed care's influence on broader spending and utilization patterns (Dranove et al. 2008, Fang and Rizzo 2010, Shen and Melnick 2006). Insurers then shifted more of the cost burden onto consumers (via cost-sharing contractual provisions) to compensate for eviscerated supply-side tools (Mays, Hurley, and Grossman 2003).

Ironically, stronger regulatory measures to limit consumer financial risk exposure in recent years may have renewed efforts geared toward supply-side cost-sharing (e.g., selective contracting, risk contracting, and utilization management)—including for mental health care (Teichert 2016). For example, narrow networks are playing an important role in the individual market post-ACA as a source of cheaper plan offerings (Blumenthal and Collins 2014, Polsky, Cidav, and Swanson 2016, Spurlock and Shannon 2015), though not without controversy and debate (Haeder, Weimer, and Mukamel 2016, Herman 2015). Proponents believe that these and related movements in health insurance

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[2] Providers accept significant price reductions in exchange for greater patient volume due to managed care steering efforts. Admittedly, not all research finds clear links between managed care penetration and spending levels (Baker and Spetz 1999, Hill and Wolfe 1997).
[3] One study does argue that hospitals have worse short-run performance for AMI care when exposed to greater HMO penetration (Shen 2003). However, the effect is very small.

markets will help limit consumer and employer outlays for plan purchases as well as improve insurers' profit margins; however, it is unclear if and how health care providers will adapt to managed care's resurgence. After all, managed care's core business functions and competencies ultimately influence (and sometimes blunt) the prevailing financial incentives facing providers (Hellinger 1996).

In this paper, we focus on a recent quasi-natural experiment where a powerful commercial insurer invigorated its managed care tactics in the state of Florida.[4] As discussed more below, the state's largest insurer, Blue Cross Blue Shield of Florida[5] (BCBSFL), outsourced all of its insurance functions for mental health care to a specialty behavioral health management firm. The strategic move (i.e., insurance "carve-out") was counter to some current industry trends and likely a response to tougher coverage mandates and regulatory constraints for this care domain. The event, coupled with several key data sources, offers a unique empirical opportunity to investigate changes in affected provider allocations, compositional mix, labor supply, organization, and participation in other insurance programs. Our setting also departs from much of the existing literature in several aspects. First, we are able to estimate managed care effects on providers in recent times, as opposed to decades earlier (e.g., during the 1980s and 1990s). Second, we benefit from a managed care change targeted to a very specific provider type, rather than impacting all local providers—the common experience in prior studies. And finally, we have the advantage of knowing the particular managed care techniques used, instead of merely observing the level of managed care presence in the market.

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[4] Across states and over time, Blue Cross Blue Shield plans often hold some level of monopoly and monopsony power in local health care markets (Foreman, Anderson Wilson, and Scheffler 1996).
[5] The MCO is now commonly referred to as "Florida Blue" in the state; however, we maintain the full name for purposes of clarity in our exposition and empirics.

We subsequently leverage difference-in-differences and triple differences research designs to elucidate providers' response to the introduction of a stronger managed care environment. We complement these analyses with detailed utilization data to better speak to the consumer welfare consequences from this specific business maneuver by a local carrier. Crucially, our data allow us to narrow our attention on markets with disproportionately high BCBSFL market share since the sheer size of an insurer can hold sway over providers beyond just network formation (Brooks, Dor, and Wong 1997, Foreman, Anderson Wilson, and Scheffler 1996, Hirth and Chernew 1999). Greater consolidation in the health insurance industry has also been a growing and sometimes concerning feature of the contemporary US health care landscape (Gaynor, Mostashari, and Ginsburg 2017, Laszewski 2015, Pear 2015), and recent empirical work shows that such consolidation can negatively impact physician employment and earnings growth (Dafny, Duggan, and Ramanarayanan 2012). Thus, we intentionally capture the important interaction between a payer's shift to more supply-side cost-sharing and its local market power.

Managed care's influence on mental health clinicians, specifically, warrants greater attention because these providers are known for low rates of insurance participation at baseline. Only 55% of psychiatrists nationally accept Medicare patients, with barely above 40% willing to see those from Medicaid.[6] Their aversion to public as well as private insurance schemes seems to have risen over time, which they often attribute to inadequate payment rates and difficult interactions with insurers (Bishop et al. 2014, Ross Johnson 2016). Unsurprisingly, primary care providers often struggle to make

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[6] Medicare is the public insurance program predominantly for elderly Americans; meanwhile, the Medicaid program offers public insurance to lower income children, families, and individuals.

successful referrals to psychiatric care (Cunningham 2009), and some estimate that roughly half of all US counties currently lack any mental health clinicians (Ross Johnson 2016).[7] These facts rest uncomfortably against a backdrop of known and possibly escalating mental health issues across the nation (Becker and Kleinman 2013), and in turn, new market dynamics that can alter mental health provider availability and behavior may have profound consequences for consumers, who perhaps already struggle with accessing treatment.[8]

Overall, we find that physicians specializing in mental health care are sensitive to a tougher managed care environment. In areas where BCBSFL has strong market power, psychiatrists' share of the total physician supply contracts by 20%, and there is stagnant growth in new practices. However, these same providers strongly increase their willingness to see publicly insured patients after the carve-out decision (by roughly 15% across payers), which represents a positive externality accruing to Medicaid and Medicare patients. These adjustments also seem to predominantly occur on the intensive margin (i.e., public patient panel size) as opposed to the extensive margin (i.e., public program participation). Commercially insured patients suffering from mental illness are not showing up in emergency departments more frequently or in obviously worse condition following the BCBSFL strategic move, but these patients do receive less intense physician services while there. Taken together, supply-side cost-containment seems to matter, especially when the insurer holds an advantageous bargaining position, but the effects reflect a mix of gains and losses for different consumer groups.

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[7] A related report from the federal Substance Abuse and Mental Health Services Administration that cites this and other key behavioral health workforce statistics can be found here:
https://store.samhsa.gov/shin/content/PEP13-RTC-BHWORK/PEP13-RTC-BHWORK.pdf
[8] Even industry leading health systems report launching new initiatives to better address mental illness and help integrate it with other forms of care delivery (Modern Healthcare 2016).

II. Background on MCO and Provider Interactions

A bargaining game exists between health insurers and health care providers (e.g., hospitals and physicians), with the presence of exclusion possibilities (i.e., alternative providers) strongly shaping their relative positions and resulting price agreements (Town and Vistnes 2001). Consumers' willingness to pay for specific providers to be available at the time of illness can shape the bargaining process (e.g., fee setting) as well as the relative attractiveness of the overall network (Capps, Dranove, and Satterthwaite 2003). Moreover, consumers can positively value more expansive networks, but this will be counterbalanced by the cost-savings—and hence lower premiums—from selective contracting that excludes high-cost providers (Ho 2006, 2009). Thus, provider-payer contracting is characterized by at least some adversarial elements whereby a financially beneficial move by one party can harm the other.

Managed care is also believed to have exerted a significant and increasing influence on physicians, specifically, starting in the 1990s (Gold et al. 1995, Mitchell and Hadley 1999). While MCOs may satisfy the needs of cost-conscious health care consumers and employers, physicians expectedly report a clear distaste for MCOs and their business models (Donelan et al. 1997, Feldman, Novack, and Gracely 1998, Grumbach et al. 1998). Their practice location patterns further reflect this, with high HMO penetration areas attracting fewer new physician graduates, encouraging market exit, and demonstrating slower growth in physician supply over time (Escarce et al. 2000, Escarce et al. 1998, Polsky et al. 2000). HMO-heavy markets also seem to suppress physician labor supply on intensive margins, such as work hours and throughput, as well

as their incomes and earnings potential (Hadley and Mitchell 1997, 1999, Polsky et al. 2000, Simon and Born 1996).[9] Perhaps not surprisingly, physicians operating in these markets simultaneously express a greater degree of work dissatisfaction (Hadley and Mitchell 1997), and some earlier research demonstrates reductions in charity care when exposed to high MCO penetration (Cunningham et al. 1999).

Additional studies find providers to engage in strategic consolidation when facing a stronger managed care landscape (Baker and Brown 1999, Dranove, Simon, and White 2002, Shortell, Gillies, and Anderson 1994), and one previous study documents a negative correlation between physician self employment and HMO penetration (Mitchell and Hadley 1999). However, such integration and consolidation responses exhibited by physicians are not consistently found among hospitals; they seem to consolidate for other motives (Town et al. 2007). Other work also shows that providers change how they deliver and standardize care, even for patients outside of managed care contracts (Bundorf et al. 2004, Glied and Zivin 2002).

III. Carve-Out Firms and the Florida Context

While mental illness is thought to exert a substantial burden on society (Becker and Kleinman 2013), the US health care system has typically dealt poorly with this particular issue. But the recent passing of the federal Mental Health Parity and Addiction Equity Act (MHPAEA), along with the ACA, have been championed as turning points for

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[9] Some work argues that managed care growth can positively impact primary care providers' incomes due to the implicit incentive structures and emphases imbedded within MCO operations (Simon, Dranove, and White 1998). Related work projected that the US health care workforce would eventually shift toward primary care, leaving specialist surpluses (Weiner 1994) – though this obviously did not happen.

treatment access and financial protection among those suffering from mental illness (Barry and Huskamp 2011).

MHPAEA specifically introduced coverage mandates for services and required associated cost-sharing to be on par with that of medical and surgical care. It also restricted non-quantitative treatment limits (NQTLs) for insurers, meaning that carriers could not be more aggressive in managing enrollees' mental health care (e.g., via prior authorization or utilization review measures) compared with other care domains. MHPAEA regulations also applied to benefits available through fully insured *and* self-insured products, which is not the case for state-based parity laws (Barry, Huskamp, and Goldman 2010).

Despite these policy and coverage developments, consumers still report access barriers to mental health treatment. Persistent points of contention between insurers and patient advocates include interpreting the breadth of the law's application to plan designs as well as establishing compliance for a given carrier (Abelson 2013, Graham 2014). Importantly, insurers' past and present reticence toward mental health coverage is grounded in economic issues. Moral hazard and adverse selection concerns, in particular, loom large in the markets for these services (Frank, Koyanagi, and McGuire 1997). Yet, it has often been assumed, if not advocated, that managed care techniques can help limit any spending increases from more generous mental health coverage (Barry, Frank, and McGuire 2006). Such a perspective eventually gave rise to an entire niche industry exclusively focused on the provision of insurance for mental health treatment.

A. Managed Behavioral Health Organizations

Managed behavioral health organizations (MBHOs)—commonly referred to as behavioral health "carve-out" firms—have specialized expertise in the construction of provider networks, contract negotiations, and managing patient utilization of mental health and substance abuse treatments (Barry, Frank, and McGuire 2006). Carve-out firms, in turn, alleviate insurers moral hazard and financial worries linked to mental health care, and their popularity grew rapidly from the 1990s through the early 2000s (Barry, Frank, and McGuire 2006, Frank, Koyanagi, and McGuire 1997, Ma and McGuire 1998). By 2003, 72% of health plans relied on MBHO contracting; however, their existence and use has routinely attracted ambivalent feelings from consumers, policymakers, and advocacy groups (Frank and Garfield 2007).

These specialized firms operate independent of the accompanying general medical insurance plan—meaning they construct their own provider networks, coverage determinations, and administrative and insurance functions. And some consider the network margin to be MBHOs most powerful cost-containment tool (Barry, Frank, and McGuire 2006). They also benefit from economies of scale through their group purchasing function for multiple payers.[10] Empirical studies of carve-outs show immediate and persistent cost-savings for behavioral health care—primarily through steep price discounts per service, as opposed to benefit designs or denials of care. Reducing expenditures on behavioral health care is the hallmark of their business model and central to their reputation among prospective purchasers. Access to behavioral health providers through MBHO plans is typically better, though more tightly managed;

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[10] As Frank and Garfield (2007) remark, small to medium size health insurers would lack the needed leverage to negotiate favorable terms with providers; however, MBHOs can aggregate the total volume of patients across general health insurers to garner bargaining advantages vis-à-vis providers.

meanwhile, effects on quality appear murkier, especially for special needs populations (Frank and Garfield 2007, Ma and McGuire 1998).

Paralleling broader managed care and provider tensions, behavioral health clinicians have strongly negative views of the mental health carve-out industry, which is believed to have harmed their incomes (Frank and Garfield 2007, Frank, Goldman, and McGuire 2009). The providers' sentiment does not seem unfounded since MBHOs and associated managed care techniques held in check hospitalization and outpatient care spending for mental illness, even as spending in these domains for physical illness continued to climb (Frank, Goldman, and McGuire 2009).

B. BCBSFL Carve-Out Decision

While mental health coverage has become more prevalent, the appeal of MBHOs seems to be waning (Frank and Garfield 2007). 171 million covered lives are currently part of carve-out plans, but this is after a "decade of erosion." State agencies are moving away from them within their Medicaid programs, and three of the five largest commercial insurers have done likewise in recent years. Some industry experts project that trends and stipulations embedded within the ACA will be further deterrents for carve-out use (Dalzell 2012). Interestingly, Dalzell (2012) also notes in a trade press article, that Humana and BCBSFL "have bucked the tide" in their recent shift to mental health carve-out contracting.[11]

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[11] The author also remarks that ACA rules allow MCOs that outsource mental health on a capitated payment basis can count these payments in full when calculating their medical loss ratios (current ACA rules require 80-85% of collected premium dollars to go toward utilization or quality improvement initiatives).

BCBSFL's now unusual step of carving out their behavioral health services followed the full implementation of federal parity and invited uproar among the local mental health community. Specifically, BCBSFL partnered with "New Directions" (an MBHO headquartered in Kansas) during the fall of 2011. The new partnership led to a termination of all existing BCBSFL contracts with behavioral health providers, and all providers wishing to re-establish in-network status for BCBSFL plans had to accept new contract terms dictated by the MBHO. The new contracts would then be active as of January 1, 2012. As part of these renegotiations, the MBHO implemented rigid network participation requirements, and reimbursement cuts ranged from 30-50% for many common services (Graham 2014).[12] This particular MBHO also had a reputation for very aggressive managed care measures and slashing costs—e.g., a similar business move by BCBS Alabama was blamed for the eventual closure of one of its larger behavioral health operations, previously serving 28,000 patients (Yeager 2015). Florida providers and other advocacy groups unsurprisingly protested the move from the state's largest insurer and warned of adverse consequences for providers and patients. They also claimed the BCBSFL decision was a direct violation of MHPAEA (Graham 2014, Ragusea 2012) and went as far as appealing to elected officials and regulators, including the Florida Department of Insurance Regulation and the US Department of Health and Human Services.[13] However, the BCBSFL strategy prevailed, and all mental health specialists in Florida had to adapt to a new and intense managed care landscape courtesy of the state's largest commercial insurer.

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[12] These and other details are provided in this direct letter to the DOL, DHHS, and Treasury Secretaries, available here: http://www.apapracticecentral.org/reimbursement/rates-letter.pdf

[13] Additional details as well as a timeline of BCBSFL actions and formal provider appeals can be found here: http://www.apapracticecentral.org/update/2012/03-29/organizational-psychology.aspx

IV. Data

We use a unique combination of data resources to document the BCBSFL effect on multiple relevant provider margins. We then couple these findings with analyses devoted to patient health outcomes and utilization behavior in order to more completely characterize the consumer welfare consequences of the BCBSFL carve-out decision.

A. BCBSFL Market Penetration

The county-level insurance enrollment information for the state of Florida is proprietary data from the Decision Resources Group (DRG). The data provider tracks individual enrollment counts across payers (i.e., Medicare, Medicaid, and individual commercial insurers) as well as insurance contract types (e.g., HMO versus PPO, and self-insured versus fully insured plans). The primary source of commercial insurance information is the DRG National Medical and Pharmacy Census, which is distributed to all relevant carriers, and then supplemented with secondary sources (e.g., company-specific web resources and the National Association of Insurance Commissioners data) when necessary. We use the available county-level BCBSFL enrollment totals (fully insured and self-insured markets) in January 2012 and accompanying counts of all privately insured individuals in a given county to generate BCBSFL's market share per Florida county.

Figure 1 displays the variation in BCBSFL market shares across the state in January 2012 (when the switch to mental health carve-out contracting took effect).[14]. On

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[14] We have also explored market share measures two years prior (i.e., in 2010, more than a year before any carve-out announcement). Having a high penetration rate of BCBSFL products is a strongly persistent

the low-end, counties may have a BCBSFL percentage that is only in the single digits; however, in counties with greater BCBSFL penetration, as much as one-half to two-thirds of the privately insured population is enrolled in a BCBSFL product. The map also clearly displays variation between these two extremes and demonstrates that BCBSFL plans are relatively more popular in less urban places. For example, the Miami, Orlando, and Tampa Bay areas (not explicitly marked) have some of the lowest BCBSFL market shares in the state.

B. Provider Supply and Behavior

Our core provider data come from the Florida Physician Workforce Survey, which gathers detailed information about individual physicians licensed in Florida from 2009 to 2015. This annual survey is mandatory for physicians and completed upon initial license granting or license renewal (occurs every two years) and offers a near universe of Florida's physicians, with both cross-sectional and longitudinal information at the individual provider level.[15] Survey responses are provided in either January of the corresponding year or in the preceding few months of the prior year (e.g., respondents to the 2012 survey would have filled out the questionnaire in the fall of 2011 or by January 2012). This creates some ambiguity in terms of defining the post-period for our analyses. Considering the 2012 wave as part of the post-period may be overly conservative since many of the responses could have been made before much of the BCBSFL strategic change was fully understood or felt by providers (e.g., any revenue losses would not have

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feature of counties; thus, our inferences are not meaningfully influenced by year-to-year changes in market shares.

[15] Because of the 2-year interval for licensing renewal, the longitudinal structure of the data is best thought of as a biennial panel.

materialized by this point). Additionally, the petitioned regulatory reviews—and hence judgments—were yet to be completed by the time many, if not all, participants in the 2012 survey submitted their responses. For these reasons, we explore the sensitivity of our subsequent findings and inferences to an alternative cut-point for the post-period classification.

The survey includes basic demographic characteristics as well as the physician's medical specialty. We also have information on the practice setting (e.g., hospital versus non-hospital based employment), the county where the practice is located, and labor supply measures pertaining to the practice (e.g., time allocated to patient care and weekly patient throughput). Each respondent is also asked about participation in the public insurance programs (Medicare and Medicaid), with a separate question for each of the two payers. Prior empirical work has been interested in the dynamic implications for private and public payers since providers sell services in a mixed economy (i.e., facing multiple payers), and evolving incentives specific to one payer may create spillovers for the other market participants (Garthwaite 2012, Hellinger 1996, Maclean, Popovici, and Stern 2017, Schmitz 2013, Sloan, Mitchell, and Cromwell 1978, Yip 1998). For example, in Garthwaite's (2012) setting, public insurance expansions exert an influence (via crowd-out) on demand from private payers and thus induce greater participation in the public insurance market for affected physicians. Our context is similar except for the effect on the private demand curve originates with the behavior of a private insurer, as opposed to a public insurer. The workforce survey specifically asks about acceptance of *new* Medicaid or Medicare patients (i.e., intensive margin), rather than non-zero (i.e., extensive margin) participation in either public insurance market. We also supplement

this information with statewide Medicaid provider registration data. All Florida health

care providers must undergo formal registration in order to bill the state program for

services rendered. We consequently use the publicly available Provider Master List of

Florida Medicaid to capture the exact year a given physician in our workforce database

initially enrolled in the program. We are then able to construct a binary measure of

extensive margin participation for each respondent.

Our analyses restrict to physicians actively practicing (i.e., non-retired) in the

state.[16] Table 1 briefly summarizes our analytic data according to specialty (psychiatry

versus not) and BCBSFL market exposure. Across all years and geography, the

psychiatrists are slightly older and more likely to be female, on average. They also have

far weaker public insurance participation when compared to the average non-psychiatry

physician—typically a 20-percentage point difference or more. The data in Table 1 also

indicate that physicians have a much lower presence in high BCBSFL penetration areas,

irrespective of specialty type, which is consistent with the patterns in Figure 1 (i.e.,

smaller market shares in more densely populated areas).

C. Provider Firms and Organization

Our physician practice-level data are from SK&A, a commercial research firm that

collects detailed information on office-based physician practices across the US. SK&A

surveys physician offices at least twice per year and catalogues the specialization of the

practice, along with various attributes (e.g., number of physicians on staff and

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[16] We also define psychiatry physicians (i.e., the treated group) as those practicing adult psychiatry as well as child psychiatry specialists. The latter group is too small to analyze in isolation. We also exclude a vanishingly small minority of mental health physicians working outside of traditional patient care settings (e.g., law enforcement forensics).

membership within a larger physician group or integrated health system). The analytic

data are biennial and span 2009 to 2015, and we rely on this information to track the

prevalence of single-specialty psychiatry clinics in Florida over this period. We further

leverage the practice details contained within the data to examine changes in

organizational affiliations as well as the mix of mental health providers (i.e., psychiatrists

and psychologists) within practices after the BCBSFL carve-out move.[17]

D. Patient Health Outcomes and Utilization

Our health care utilization analyses use the universe of discharge data from the State of

Florida's Agency for Health Care Administration (AHCA). The AHCA directs and serves

the Florida Medicaid program and performs licensing functions for all health care

facilities. It also collects, maintains, and distributes extensive health care utilization data

pertaining to the state. We use the emergency department (ED) discharges to examine

episodes due to mental illness occurring in each care setting. The data span the first

quarter of 2009 through the fourth quarter of 2014 and focus on all discharge records

with a primary ICD9 diagnosis code ranging from 290.0 to 316.0.[18] We then observe the

quantities of ED care consumed and treatment intensity for each of these mental health-

related encounters.

V. Empirical Strategies and Results

For our subsequent analyses, we leverage the heterogeneity in BCBSFL market presence

in two ways: (1) stratify all counties as being above or below the median market share

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[17] Psychiatrists hold a MD degree and are physicians, whereas psychologists have PhD training.
[18] All discharge records include a principal ICD9 diagnosis code that is meant to represent the primary
health problem underlying the patient's visit (i.e., what caused the patient to seek care at the ED).

(27%) in 2012 and (2) use the continuous measure to exploit all of the geographic

variation in market shares. For visual and analytic simplicity, we rely most on the former

(binary) categorization of BCBSFL market power. We begin with some simple,

descriptive trends and regression analyses in order to characterize the provider supply in

Florida before and after the BCBSFL carve-out decision. We then move onto our labor

supply measures as well as our ED discharge record examinations.

A. Descriptive Analyses for Physician Stocks and Flows

Figure 2 captures physician practice supply trends using the SK&A office-based

physician information. Our focus is on the number of single-specialty psychiatry

practices (irrespective of size) in operation in a given year. The first panel shows that

psychiatry practices continue to expand from 2009-2015 in markets with lower BCBSFL

presence, but the aggregate supply of such practices in high BCBSFL areas is largely flat

from 2011-2015—suggesting no further growth in practice availability once BCBSFL

contracts with the MBHO. Importantly, no similar pattern is seen in the second panel of

Figure 3 that captures all non-psychiatry physician practices in each type of BCBSFL

market.[19]

Figures 3 and 4 turn to our physician workforce survey to plot psychiatrists' share

of all actively practicing physicians in the state and to calculate changes in physician

supply over time, respectively. As previously described, we have partitioned all Florida

counties into either a "high" or "low" BCBSFL market according to falling above or

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[19] We have also explored other practice characteristics in the SK&A data. Specifically, we investigated the
ownership structure of psychiatry practices over time (i.e., horizontal and vertical integration activity) as
well as the use of psychologist labor (i.e., non-prescribing, PhD-trained mental health providers, rather than
physicians). There are no clear changes along these and related margins (results available by request).

below the median market share. Four percent of the physician workforce consistently belongs to psychiatry in low BCBSFL markets over the entire study period (Figure 3). Areas with greater BCBSFL dominance have a higher share of psychiatrists (5%) among their physician population prior to the carve-out decision, but the rate falls approximately 1-percentage point during most of the post-period.[20] Given the low base, this represents a 20% decline in psychiatrists' share of total physician supply in these markets. Figure 4 shows the relative changes in individual physicians (in percentage point terms) over two-year intervals to match the licensing renewal timing. We see robust growth between the 2009 and 2011 waves across all four provider groups, which maps well to the physician practice increases seen in Figure 2 from a different data source. However, from 2010 to 2012, the number of psychiatrists in BCBSFL dominated markets shrinks while positive growth remains for the other three provider groups. The 2011-2013 period demonstrates the most marked declines in the stock of psychiatrists in the most BCBSFL exposed areas, and the contraction continues from 2012 to 2014. It is not until the most recent 2-year period that these markets again witness positive gains in their supply of psychiatrists.

To better understand these changes to the stock of psychiatrists in affected areas, we examine the flows of new providers into specific markets within the state. We use licensing information prior to 2009 in order to identify new market entrants (i.e., those receiving their first Florida license) for each survey wave (2009-2015). After restricting to this subset of physicians, we estimate a simple difference-in-differences (DD) model to assess if the flow of psychiatrists is altered by the BCBSFL decision. The estimation

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[20] Florida's slice of the physician workforce belonging to psychiatry is largely consistent with national averages, e.g., see the Association of American Medical Colleges (AAMC) specialty report for 2012: https://www.aamc.org/download/313228/data/2012physicianspecialtydatabook.pdf

strategy is straightforward since we have clearly demarcated treatment (psychiatrists) and control (all non-mental health physicians) groups. The corresponding specification is:

$$Y_{it} = \alpha + \beta(Psych)_i + \gamma(Post)_t + \delta(Psych \times Post)_{it} + \varepsilon_{it} \tag{1}$$

Y is a binary variable for entering a high BCBSFL market for new market entrant *i* in year *t*. *Psych* is a binary indicator equal to one for those in the treatment group, and *Post* is equal to one for all survey years 2012-2015. The delta parameter recovers our DD estimate of interest. We also estimate an event study style model, which takes the form:

$$Y_{it} = \alpha + \varphi Psych_i + \gamma_t \sum_{t=2011}^{2015} Year_t + \lambda_j \sum_{j=2011}^{2015} (Psych_i \times Year_t)_j + \varepsilon_{it} \tag{2}$$

This allows for a separate interaction term between each year from 2011 through 2015 and our treated physician group. The *Year* variable reflects the particular survey wave that a given respondent became a newly licensed physician in Florida. The standard errors for Equations 1 and 2 (as well as throughout our empirics) are clustered at the physician level to allow for any auto-correlation over time.[21]

Table 2 provides the corresponding results. There is no clear indication in column 1 or column 2 that the flow of new psychiatrists is disrupted by the BCBSFL change. The coefficients are imprecise and are signed in the positive direction as often as they are signed negatively. Coupled with the findings from Figures 3 and 4, the smaller stock of psychiatrists in high BCBSFL penetration areas appears to be driven by an outflow of these providers (i.e., market exit), as opposed to deterring prospective physicians from entering. It also seems most likely that the exit behavior is operating through the retirement channel. Within Appendix Table A1 we only see weak evidence that the

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[21] To ensure conservative inferences, we have also examined our results when removing clustering and when clustering at a higher level (e.g., physician specialty). There is no indication that we are understating our standard errors.

youngest physicians, who established their practices just prior to the BCBSFL carve-out decision, are perhaps less likely to remain there in the post-period. In other words, intra-state migration of psychiatrists due to the BCBSFL strategic move appears negligible at best.[22]

Table 3 further supports the retirement interpretation when we examine physicians' compositional characteristics (i.e., average age and fraction that are male) over time. Columns 1 and 4 use the DD setup from Equation 1. The other four columns rely on a triple differences (DDD) structure. As previously mentioned, the key strength in our strategy comes from the ability to assess heterogeneity in the carve-out effect according to BCBSFL exposure. The third 'D' in our DDD regression models is either the binary indicator for a physician having her primary practice in a "high" BCBSFL market share (i.e., above the median) county or is the continuous measure capturing the full gamut of county-level market shares facing providers. The DDD model is then a simple extension of Equation 1:

$$
\begin{aligned}
Y_{itc} = {}& \alpha + \varphi(Psych)_i + \psi(Post)_t + \zeta(HighBCBS)_c + \lambda_1(Psych_i \times Post_t) + \\
& \lambda_2(Psych_i \times HighBCBS_c) + \lambda_3(Post_t \times HighBCBS_c) + \\
& \delta(Psych_i \times Post_t \times HighBCBS_c) + \varepsilon_{itc}
\end{aligned}
\tag{3}
$$

We also estimate Equation 3 twice to use our two versions of the *HighBCBS* variable (i.e., discrete and continuous). The delta coefficient in the DDD model is our key estimate of interest and reveals if the BCBSFL carve-out decision is more influential in areas with greater BCBSFL market power. The implicit assumption is that the average differential in outcomes across provider types in counties with high BCBSFL penetration

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[22] Note, the analyses reported in Appendix Table A1 use the panel attributes of the data to estimate physician fixed effects (FE) models to capture within-physician changes in high BCBSFL market presence. The binary outcome variable is equal to one for those working in these markets and zero for those working in any other Florida market. Thus, all within-physician variation in the outcome is driven by migration patterns within the state of Florida.

and those in all other Florida counties is evolving in a similar fashion prior to the

BCBSFL strategic decision and would have continued to do so absent the commercial

insurer's managed care move.

Columns 2 and 3 of Table 3 suggest that the collection of psychiatrists in markets

with BCBSFL dominance is becoming differentially younger after the carve-out

change—approximately two years, on average. This pattern aligns with a view that the

psychiatrists most weakly attached to the labor force (i.e., older and late in their working

lifetimes) enter retirement in response to the sudden shift into a tougher, local managed

care environment, rather than adjust on other margins.[23] There is no change in the gender

mix among the different physician groups (columns 4-6, Table 3).

We also note that the specification using a continuous measure of BCBSFL

market share (column 3) generates a much larger DDD coefficient since it reflects a

projection of the marginal effect over a change in the market share variable from 0.0 to

1.0, which is outside the range of observed values. Therefore, the resulting estimate must

be scaled by actual market share values, as shown directly below the DDD estimate. We

perform an identical exercise for all DDD models using the continuous variable in our

subsequent regression tables.

B. Public Insurance Acceptance and Clinical Effort

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[23] It is admittedly possible that some of these exits represent movement out of the state of Florida (which we cannot observe), instead of full labor market exit via retirement. However, this would be a costly response—given that plenty of areas are available in the state that only have modest to low BCBSFL presence. And it is difficult to think that the relatively older physicians would predominantly choose this out-migration option, and thus leave the stock of psychiatrists in the most affected markets younger on average.

We next turn to our key labor supply responses from the workforce survey data source: public payer participation, clinical hours worked, and patient throughput. Our empirical approaches primarily follow the DD and DDD setups belonging to Equations 1-3 in Section 5A. The one noteworthy modification is to Equation 2, which we adapt for a DDD framework in Equation 4:

$$Y_{itc} = \alpha + \varphi(Psych)_i + \psi_t \sum_{t=2011}^{2015} Year_t + \zeta(HighBCBS)_i + \lambda_k \sum_{k=2011}^{2015} (Psych_i \times Year_t)_k +$$

$$\theta(Psych_i \times HighBCBS_c) + \kappa_l \sum_{l=2011}^{2015} (HighBCBS_i \times Year_t)_l + \qquad\qquad (4)$$

$$\delta_m \sum_{m=2011}^{2015} (Psych_i \times HighBCBS_c \times Year_t)_m + \varepsilon_{itc}$$

We also maintain parsimonious DD and DDD specifications, which directly map to corresponding trends in outcomes. These trends subsequently reveal if the requirements of the research design are satisfied and thereby produce estimates that lend themselves to causal interpretations. To enhance our inferences, we also exploit the cross-sectional and longitudinal nature of our workforce data to generate more nuanced insights. Typically, related studies would be restricted to one type of data; however, we have the benefit of both.

We first treat the data as repeated cross-sections (i.e., unique survey years) to characterize what is best conceptualized as market-wide changes in behavior over time (e.g., the prevailing acceptance rate of new Medicaid patients by physician group and year). We then leverage our ability to track the same physicians over time (via the 2-year licensure renewal requirement in the state) to implement longitudinal analyses at the individual physician level. Doing so can help us disentangle aggregate changes in outcomes due to provider compositional shifts (i.e., from the types of psychiatrists exiting

the market) as opposed to behavior change among incumbent providers. All that is analytically required is the addition of a physician fixed effect (η) into our DDD model (Equation 3 from Section 5A).

$$Y_{itc} = \alpha + \varphi(Psych)_i + \psi(Post)_t + \zeta(HighBCBS)_c + \lambda_1(Psych \times Post)_{it} + \\ \lambda_2(Psych \times HighBCBS)_{ic} + \lambda_3(Post \times HighBCBS)_{tc} + \\ \delta(Psych \times Post \times HighBCBS)_{itc} + \eta_i + \varepsilon_{itc}$$

(5)

Throughout Section 5B we also partition the data by age since late-career physicians would have more limited returns from costly behavior change—and therefore weaker motivation to substantively respond to the BCBSFL carve-out decision. We also explore the sensitivity of our inferences to an alternative choice of post-period window (i.e., using the 2013 wave as the start of the post-period) due to the potential misalignment of survey administration (as discussed in Section 4B) and the rollout of the BCBSFL managed care change.

Table 4 offers our first set of results using Equation 1 and Equation 3 and focuses on public insurer participation among Florida physicians. Both binary outcomes are equal to one when a respondent reports currently accepting *new* patients from the specific payer. Column 1 (the DD model) shows no change in psychiatrists' willingness to increase their Medicaid exposure overall, but this masks important heterogeneity by market environment. Both columns 2 and 3 (Table 4) demonstrate greater receptivity toward the traditionally low-paying insurer after the BCBSFL mental health carve-out – but only for psychiatrists practicing in areas with higher reliance on BCBSFL insurance products. An identical pattern emerges for accepting new Medicare patients (columns 4-6, Table 4), and the DDD results are statistically significant across both public insurance outcomes. Unsurprisingly, the scaled effect estimate (columns 3 and 6) at the median

market share value (0.27) is quite similar to the mean effect captured in the DDD models with the simple binary indicator (columns 2 and 5). Table 5 examines two other labor supply measures capturing clinical effort and throughput. The indicator variables are for spending more than 30 hours per week in direct patient care and running a relatively low-volume practice (i.e., 25 patients or less per week), respectively. Consistent with what was observed in Table 4, psychiatrists in markets more dominated by BCBSFL seem to devote more time to revenue-generating activities (i.e., spending time with patients); however, the DDD estimates are less precise for these outcomes and there are strongly divergent patterns between psychiatrists in low versus high BCBSFL areas (i.e., the DD and DDD estimates are opposite in sign in columns 2 and 5).

Table 6 reexamines the findings from Tables 4 and 5 when we partition the analytic samples by age. Unsurprisingly, the observed changes in labor supply outcomes are predominantly driven by physicians under the age of 60 (Panel A of Table 6). Table 7 presents the event study style estimates for each of the four outcomes as well as with and without age heterogeneity. Increases in market-wide public payer acceptance seem to materialize with a lag following the BCBSFL contract switch, especially for accepting new Medicaid patients—though some of this may reflect the timing of survey administration. These patterns are further confirmed in Figures 5 and 6. These figures display the accompanying trends for the intensive margin Medicaid and Medicare outcomes, respectively, and stratified by BCBSFL market type. The trends closely parallel what is seen in Tables 4 and 7: virtually no differential changes in markets with weaker BCBSFL presence but strong level shifts among psychiatrists practicing in areas with high BCBSFL exposure after the 2012 survey wave. Compared to the pre-carve-out

new patient acceptance levels in Figures 5 and 6, the prevailing acceptance rates achieved

by the end of our study period (2015) suggest approximately 50% and 20% increases,

respectively, among the affected psychiatrists. Taken together, the results belonging to

Tables 4-7 and Figures 5-6 are consistent with the BCBSFL decision leading to better

access for publicly insured patients (i.e., a positive externality), who are typically

attached to substantively lower reimbursement rates for physician services.[24]

Table 7 offers a less clear picture for the other two labor supply measures focused

on clinical effort. The estimates are less precise overall and the direction and magnitude

of the 2011 coefficient for each outcome is similar to other years—suggesting some

divergent behavior even before the BCBSFL strategic move. Relatedly, the trends for

these two outcomes (Appendix Figures A1 and A2) show much less pronounced market-

wide changes in high BCBSFL areas, particularly when compared to the sharper and

larger level shifts for public insurance participation, which further limits our inferences

for these specific labor supply measures.[25]

Appendix Table A2 re-estimates our DDD specification (Equation 3) with our

alternative post-period definition (i.e., beginning in the 2013 survey wave, which

captures responses from the final months of 2012 and January 2013). As expected, the

DDD results for public insurance acceptance are both larger and more precise for each

payer type (columns 1 and 2). Our inferences around these margins are further supported

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[24] We do note that an additional Medicaid policy was implemented during our analytic window, courtesy of the ACA. Although Florida did not expand Medicaid in 2014, it was affected by the federal "fee bump" for all Medicaid primary care services. However, if we remove primary care physicians from our composite control group of physicians, our Medicaid participation inferences are unaffected. Medicare also gradually rolled out its own mental health parity initiative from 2010-2014; however, this was aimed at reducing enrollees out-of-pocket burden. It did not improve Medicare prices for mental health providers and would also be considered a common shock to all markets.

[25] Appendix Figure A3 plots the distribution of treatment effects from the DDD models across all BCBSFL market share values for all four of our main labor supply outcomes.

in Table 8, which relies on our DDD version with physician fixed effects (Equation 5).

Positive changes in the willingness to see new Medicaid patients as well as new Medicare

patients following the BCBSFL decision are evident within a given physician. These

findings indicate that psychiatrists in the markets with the greatest BCBSFL penetration

prior to the carve-out change are willing to reallocate more clinical services to publicly

insured patients after witnessing a tougher commercial managed care landscape. As

before, the effects are often concentrated among relatively younger physicians and

stronger when using the alternative post-period definition. The latter is particularly

important for these specifications since the panels are relatively short due to the two-year

spacing between surveys for a given physician. The estimates in Table 8 also reveal that

the cross-sectional (or market-wide) changes observed in Table 4 are primarily driven by

physician behavior change, as opposed to compositional changes.[26]

Table 9 extends our Medicaid analyses to providers' extensive margin (i.e., initial

program enrollment to be granted reimbursement eligibility). While the DDD estimate in

columns 1 and 2 is substantive and precisely estimated, the event study results and trends

in outcomes (Appendix Figure A4) do not show a strongly persistent differential increase

for psychiatrists in BCBSFL dominant markets. Similarly, the findings are weaker when

using physician fixed effects (columns 4 and 6). The t-statistics are only around 1.5 to

1.6, though the coefficient directions and magnitudes in columns 4 and 5 are at least

suggestive of a carve-out effect. But overall, it seems that compositional changes (i.e.,

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[26] Appendix Table A3 shows the physician fixed effects results for the clinical effort outcomes, which do not demonstrate compelling within-physician behavior change. Thus, the labor supply adjustments seem to localize to public payer participation. Appendix Table A4 re-estimates Equation 3 when restricting to new market entrants. The DDD coefficients are similar in sign and magnitude as the overall effects seen in Tables 4 and 5; however, it is clear that this small minority of the physician workforce is not driving any of the results.

from market exit) are more influential for the prevailing level of extensive margin Medicaid participation, as opposed to a clear uptick in the number of psychiatrists newly entering the program.

Appendix Table A5 offers some additional labor supply outcomes available in our workforce survey. Longer-term retirement and migration plans (i.e., looking ahead 5 years) as well as being clinically based within a hospital or health system are each binary outcomes. The fourth outcome is a continuous measure of the number of counties a given respondent holds a clinical practice (the vast majority are in just one). None of the four outcomes reveals any sensitivity to the BCBSFL carve-out strategy.

C. Visits Supplied to Mentally Ill Medicare Beneficiaries in Florida

Before moving into our ED utilization empirics, we quickly augment our analyses and findings from Section 5B with Medicare fee-for-service claims data from the state of Florida. The data are drawn from a 5% national sample of beneficiaries and span 2008-2014. The data follow beneficiaries longitudinally and capture all associated claims activity. They are therefore well-suited to study flows of specific services to individual patients. We are specifically interested in the supply of outpatient psychiatric care to *existing* Medicare patients. Less favorable terms in the privately insured market may alter care delivery in the Medicare market beyond accepting new Medicare patients. Established patients from this payer could witness more frequent services either through relaxed capacity constraints or demand inducement. Consequently, we look for such changes by comparing beneficiaries residing in high BCBSFL market share areas against

their counterparts elsewhere in Florida. The regression is a simple DD model with beneficiary fixed effects (λ).

$$Y_{it} = \alpha + \xi(HighBCBS)_i + \psi(Post)_t + \delta(HighBCBS \times Post)_{it} + \lambda_i + \varepsilon_{it} \qquad (6)$$

Y is either the number of office-based, established patient psychiatric visits for a given beneficiary (i) in a given year (t) or a binary indicator for having at least 8 visits in a given year—the top quartile of the distribution in the baseline year.[27] The analytic sample is restricted to beneficiaries with at least one visit in each year from 2008-2011 to identify those with regular and ongoing mental health care needs, who perhaps have the highest risk of having their intensity of services adjusted in response to the BCBSFL carve-out change.[28]

Table 10 provides the DD results. Visit intensity to these Florida patients is actually declining over time, with no clear indication that it is doing less so among patients in areas with high BCBSFL market shares. Both of the DD estimates in columns 1 and 2 are small and noisy. However, we also have limited power in these analyses. The nature of these data (i.e., repeated observations of the same beneficiaries) and focusing on patients with chronic mental health care needs leaves us with only 1,719 observations across the entire state, of which only 14% fall into the BCBSFL dominant markets. Therefore, we can only cautiously say that we find no evidence of more frequent psychiatric encounters for Medicare beneficiaries with previously established care sources but cannot confidently rule out this type of provider response.

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[27] Eligible visits could be to either a psychiatrist (physician) or a psychologist and are generated from the Current Procedural Terminology (CPT) codes linked to established patient evaluation and management (E&M) visits (used by all physicians) or established patient psychotherapy sessions (used by mental health providers).

[28] We exclude beneficiaries who die or move during the analytic period, which is a very small portion of the patient population overall.

D. Emergency Department Utilization and Intensity of Care

We conclude our empirics by analyzing relevant patient health and utilization outcomes among those suffering from mental illness in Florida. First, we examine the share of all ED encounters due to a mental health diagnosis linked to a specific payer over time. Plausibly, if psychiatrists adjust their labor supply—and hence revenue streams—in response to the BCBSFL decision (as seen in Tables 4-8), then the carve-out move might simultaneously influence how much time they spend with and clinically approach different patients. For example, privately insured patients now managed by the MBHO could be at a disadvantage (as warned by providers protesting the BCBSFL decision), while publicly insured patients may benefit from improved access and care quality (as suggested by the results in Section 5B). Downstream effects from altered care delivery and/or access may manifest as greater or lesser reliance on ED-based care for acute exacerbations or decompensation from chronic mental health conditions. In fact, EDs are sometimes referred to as "dumping ground" for patients with mental illness that are unable to access needed care in other clinical settings (Castellucci 2016). We subsequently use a DD model to compare the respective payer mixes at EDs located in markets with high BCBSFL enrollment versus other Florida markets. For sensitivity analyses, we also re-estimate the DD model with county fixed effects and then facility (firm level) fixed effects. The standard errors are clustered at the firm level (i.e., specific ED) throughout.

Table 11 presents the DD results from nearly 1 million ED encounters where the primary health problem is due to mental illness. While the DD estimates are signed in the

negative direction, they are small in magnitude and lack precision. But we can at least

rule out large positive changes in ED care consumption among the privately insured. In

other words, we have no empirical indication that the commercially insured population is

forced to seek treatment within an ED setting more often or is experiencing more acute,

emergent problems due to poor outpatient care management. Although, we do make the

caveat that we are observing relatively short-run consumption patterns and cannot speak

to any accumulation of negative health effects that may accrue over longer time horizons.

To further explore adverse (or beneficial) patient consequences, we use a DDD

estimation approach that parallels our prior setup to see if potentially affected mentally ill

patients are more or less likely to present with suicidal ideation (ICD-9 flag V62.84).[29]

We view such ED encounters as being of high severity, and even in the absence of ED

quantity changes, a reduction or spike in illness severity (as signaled through the suicidal

ideation modifier) would be important for patient welfare. To implement these analyses,

we first use the self-pay (i.e., uninsured but non-indigent) group as a control and consider

the privately insured group to be the intent-to-treat group.[30] We are then looking for

differential effects among privately insured patients receiving care in high BCBSFL

penetration areas after the carve-out decision. The implicit assumption is that the

privately insured enrollees seeking care in counties with greater BCBSFL market share

are more likely to be on BCBSFL plans and thus linked to MBHO's aggressive

management tactics. To look for spillover effects on the publicly insured patients, we

then separately consider patients from the Medicaid and Medicare payers, respectively, as

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[29] Admittedly, we are limited to reduced form, intent-to-treat (ITT) estimates since the discharge data have
information on payer type (e.g., private insurance versus other sources) but do not reveal specific plan
information.
[30] Note, self-pay does not include charity care or bad debt cases (separate designation in the data); thus,
these are patients expected to ultimately pay for the services received.

the treatment group—again compared to self-pay patients. We also re-estimate the DDD models with county fixed effects and then facility (firm level) fixed effects, just as before.

Table 12 shows the results from these analytic exercises. We do not detect anything for the privately insured group (columns 1-3), and the DDD estimates are only marginally significant for Medicaid patients (columns 4-6). The coefficients of interest are slightly larger and more precise for the Medicare group (columns 7-9), suggesting a lower likelihood of presenting with suicidal ideation; however, the trends for this outcome are volatile (Appendix Figure A7) and hint at some divergent behavior prior to the BCBSFL carve-out, which challenges any strong inferences.[31]

Overall, the findings from Tables 11 and 12 do not suggest that commercially insured patients with mental illness are made obviously worse off by the BCBSFL strategic move. In the lead up to the BCBSFL managed care change, mental health providers and advocacy groups warned that patient health would suffer if the insurer's action was not blocked. Yet, the discharge data do not offer any confirmatory evidence in favor of this view—at least not to a degree strong enough to reveal population-wide adverse health outcomes in the short-run.

Our final DDD analyses capture the behavior of ED physicians taking care of patients presenting with acute mental health issues. Specifically, we investigate the intensity of services the patients receive in addition to the standard physician evaluation by again comparing the privately insured group against self-pay patients. A stronger managed care environment has the potential to mitigate the quantity of services delivered (increasing total revenue from the encounter) for ED-based care, and the estimates in

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[31] Appendix Figures A5 and A6 show corresponding trend comparisons for the other two payer groups. Both are consistent with a null effect interpretation.

Table 13 are consistent with ED physicians being sensitive to the carve-out change when it comes to determining how much care to provide to affected patients. The outcome in columns 1-3 is a continuous measure for the number of ancillary services, and the outcome for the remaining columns is an indicator variable for receiving at least eight additional services/procedures while in the ED (the top quartile of the analytic sample's distribution). The coefficients reveal that these patients receive nearly a half less service per encounter (11% decline), on average, and are 4-5-percentage points less likely to have a relatively high intensity episode of ED care (18% decline).[32] Crucially, these effects are only found in areas with strong BCBSFL market power—just as before when studying psychiatrists' labor supply and behavior. As previously mentioned, these are ITT effects, meaning they could be substantively larger among those actually treated if the overall changes are driven by the subset of privately insured patients belonging to BCBSFL plans. Yet, the previously cited literature remarks on managed care's ability to influence care quantities and treatment decisions across different insurance groups (i.e., not just those directly involved with a managed care plan), so these effects could also reflect broader market shifts toward the commercially insured following BCBSFL's strategic move.[33]

Figures 7 and 8 plot the corresponding outcomes over time, which affirm the research strategy (the pre-treatment trends almost perfectly track each other) and bolster the inferences from the regression results. Interestingly, the divergence between the

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[32] The calculated declines are relative to the pooled mean for the analytic sample in the period prior to the BCBSFL mental health carve-out change (i.e., 2009-2011).

[33] We have estimated identical models comparing Medicaid and Medicare patients to the intensity of services received by self-pay mentally ill patients. No robust effects are found for the Medicaid group. The DDD estimates for Medicare patients are substantive and statistically significant, but the pre-treatment trends strongly diverge from the self-pay group—failing the parallel trends assumption.

treatment and control groups seems to begin in late 2012 for both outcomes, which is again consistent with some lagged market adjustments to the new managed care climate. The results also demonstrate that the mean-level effect (columns 1-3, Table 8) is likely driven by bringing in the "right tail" of treatment/diagnostic quantities per encounter (i.e., restraining providers from delivering a relatively high volume of ancillary ED services for a given patient). It also seems reasonable that this is where the MBHO would exert some of its strongest managed care influence.

As a falsification test, we construct identical trends in these outcomes for all *non-mental* illness related ED episodes in our discharge data. Appendix Figure A8 shows these results, which reinforce our prior interpretations. We see no compelling evidence that the ancillary service intensity differentially changed among the privately insured when examining cases not linked to mental health problems. The privately insured trend is relatively flat over most of the analytic period, and any narrowing between the two payer types occurs in later years—but is not sustained and is due to movement in the control group, rather than the treatment group. Thus, the previously identified care delivery effects seem to be found only among mentally ill patients presenting to an ED in a high BCBSFL penetration market.[34]

Appendix Tables A7 and A8 perform analogous empirical exercises focused on inpatient hospital care for patients admitted because of a mental health problem. There is no evidence of a change to payer mix or treatment approach within this clinical setting. The estimates are uniformly small and noisy within each set of results.

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[34] We also examined the propensity to code the ED encounter as the highest evaluation and management level, which often garners the highest reimbursement level and has been flagged as a source of improper (abusive) ED billing practices by commercial and public insurers. Appendix Table A6 shows no change in this behavior.

VI. Discussion

The sudden shift to mental health carve-out contracting by BCBSFL offers a unique and valuable opportunity to understand how providers respond to greater managed care exposure—namely restrictive networks and heavy price discounts. We also benefit from a variety of detailed administrative data sources to explore the effects across multiple margins and strategic channels.

Our empirics imply a degree of restrained supply in areas where the commercial insurer has greater dominance. The share of psychiatrists falls after the BCBSFL change, and the number of psychiatry practices stagnates in these same areas. However, market exit seems to drive the reduced stock of psychiatrists (e.g., via retirement), rather than decreased flows of new providers. In this way, our provider supply results do not perfectly conform to the findings from earlier studies. Our DDD estimates also do not reveal any clear labor supply adjustments on the clinical delivery margins previously focused on in the literature (e.g., hours worked and patient volumes), but they do demonstrate that impacted providers strongly increase their willingness to participate in the public insurance markets (i.e., the Medicaid and Medicare programs). The effect also seems to localize to the intensive margin whereby providers extend their existing patient panels for these payers. Greater labor supply devoted to the publicly insured represents an important, positive externality for these patients, courtesy of a private insurer's cost-containment efforts. Prior theoretical work (Hirth and Chernew 1999) predicts that the physician labor market effects of managed care will be slow to materialize, but the authors' analysis ignores the mixed economy belonging to the market for physician

services. Allocating more services to other payers is a feasible short-run strategy for most physicians and is consistent with rational economic behavior (McGuire and Pauly 1991). And while the consequences of commercial insurer business practices on the publicly insured has not been a focal point in the literature, some other recent work shows a similar spillover phenomenon using a very different data source and analytic context (Bond et al. 2017).

Beyond mental health providers, we see compelling evidence that ED physicians are sensitive to the managed care change and reduce their service intensity to mentally ill patients in areas with high BCBSFL penetration. At the same time, we have no empirical indication that patients are made demonstrably worse off (i.e., nothing stands out that would suggest a sharp deterioration of mental health and/or care management for the privately insured after the BCBSFL decision). Though subtle effects (e.g., increased appointment delays or provider switching) cannot be detected in our data. The fact that all of our observed effects are concentrated among providers working within BCBSFL dominated markets also aligns well with other research showing that insurer market power strongly shapes the consequences from a strategic move (Dafny and Ramanarayanan 2012) and lends credibility to our inferences.

Bishop and colleagues (2014) remark that psychiatrists' low affinity for entering into formal agreements with insurance providers is a threat to patient access even in the presence of parity legislation. Our findings reveal that the nature of the contracts will further shape the access landscape, but with different knock-on effects for different patient populations. Even within the same patient population (e.g., the publicly insured), aggressive contracting terms can generate a mix of benefits and costs (e.g., more local

providers accepting more publicly insured patients but perhaps fewer providers in the market overall).

The growing influence of managed care and related commercial insurance network and contract provisions is also not likely to dissipate in the near future. Physician spending over the next 10 years is predicted to be especially sensitive to contemporary trends in insurance products (Keehan et al. 2016). Plans relying on narrow networks, including many of the "Blues", have fared better financially than many competitors in the individual market since the ACA expansions took hold. BCBSFL, specifically, has been referred to as "thriving" across its various plan offerings in the individual market, including a 17% underwriting margin on the its PPO business line (Herman 2016). Some states are also contemplating taking the management of Medicaid patients with behavioral health needs out of public provider hands and placing them under the remit of private MCOs (Greene 2017). Our study suggests that policymakers should consider the relative market positions of potential contract awardees as well as local providers' participation constraints. These latter elements may influence the ultimate access picture for Medicaid enrollees.

Recent evidence also suggests that consumers, even with high socioeconomic status, struggle to make optimal consumption decisions when faced with less generous and more complex health insurance plans (Brot-Goldberg et al. 2015). If policies and preferences further limit insurers' ability to shift more of the cost burden onto consumers, then the appeal for greater supply-side cost-sharing should only grow. Others comment that such a movement might be preferable in terms of consumer and social welfare (Brot-Goldberg et al. 2015); however, due consideration should be given to how the supply-

side is likely to respond and how that may affect different consumer groups. A balanced view of our findings suggests that providers are likely to strategically adjust, which can affect provider availability and behavior, but their most pronounced changes will be in areas where the relevant insurer has greater market power. Thus, ensuring robust competition in local commercial insurance markets can attenuate any risk of providers being overly sensitive to the contracting decisions of any one payer. As others have argued (Gaynor, Mostashari, and Ginsburg 2017), health care consumers are likely to be better off when both payers and providers are exposed to market discipline, as opposed to engaging in further consolidation.

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MAIN RESULTS

TABLE 1
Summary Statistics for Florida Physician Workforce Data, 2009-2015

	Psych High BCBS	Non-Psych High BCBS	Psych Low BCBS	Non-Psych Low BCBS
Age	55.5 (12.5)	51.9 (11.1)	55.8 (11.9)	51.6 (11.4)
Male	68.2%	76.1%	64.8%	74.9%
New Medicare	56.7%	84.3%	56.7%	80.8%
New Medicaid	40.8%	62.4%	39.8%	58.5%
Hospital Based	27.6%	28.4%	21.3%	25.5%
Observations	797	15,446	5,297	122,819

Standard deviations in parentheses for Age variable. "New Medicare" and "New Medicaid" are binary variables for currently accepting new patients from these insurers. "Hospital Based" is equal to one for respondents that have their primary practice setting within a hospital or health system. Note, the number of observations in Table 1 reflects the largest number for the summary variables listed. Some variables are missing for a small number of respondents and therefore have a slightly lower denominator than what is represented in the last row of Table 1. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively

TABLE 2
Effect of BCBSFL Network and Pricing Shock on the
Flow of New Psychiatrists

	Enter a High BCBS Market	
	(1)	(2)
DD Estimate		
Psych x Post	0.025	--
	(0.032)	
Year Interactions		
Psych x 2011	--	0.040
		(0.052)
Psych x 2012	--	0.127**
		(0.058)
Psych x 2013	--	0.073
		(0.059)
Psych x 2014	--	-0.011
		(0.043)
Psych x 2015	--	-0.031
		(0.045)
Observations	12,925	12,925

* P value at 0.10 ** P value at 0.05 *** P value at 0.01,
Huber-White robust standard errors
Post includes all survey years between 2012 and 2015.
Treated group is composed of general psychiatry
physicians. Comparison (control) group is composed of
all non-psychiatry specialists. Analytic sample restricts
to those entering the Florida physician market for the
first time in a given year. Only key coefficients reported
from the difference-in-differences (DD) and event study
style models.

TABLE 3
Effect of BCBSFL Network and Pricing Shock on Psychiatrists' Compositional Characteristics

	Age of Physician			Male Physician		
	(1)	(2)	(3)	(4)	(5)	(6)
DD Estimate						
Psych x Post	-0.156	-0.025	0.953**	0.007	0.008	0.006
	(0.173)	(0.223)	(0.419)	(0.006)	(0.008)	(0.014)
DDD Estimate						
Psych x Post x BCBS Market Share	--	-1.908**	-7.538***	--	-0.003	0.004
		(0.762)	(2.384)		(0.026)	(0.076)
Effect Size at BCBS Mrkt Share Median (27%)			-2.035			0.001
BCBS Market Share	Discrete	Discrete	Continuous	Discrete	Discrete	Continuous
Observations	187,393	143,431	143,431	187,367	143,414	143,414

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level
Post includes all survey years between 2012 and 2015
Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share in column (2, 5) is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. In column (3, 6) the BCBS market share is a continuous variable.
Only key coefficients reported from Triple Differences (DDD) specifications

TABLE 4
Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Labor Supply

	Accept New Medicaid Patients			Accept New Medicare Patients		
	Diff-in-Diff	Triple Diff		Diff-in-Diff	Triple Diff	
	(1)	(2)	(3)	(4)	(5)	(6)
Psych	-0.195***	-0.183***	-0.152***	-0.257***	-0.242***	-0.192***
	(0.012)	(0.013)	(0.020)	(0.012)	(0.013)	(0.020)
Post	0.057***	0.058***	0.060***	0.027***	0.029***	0.030***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)
DD Estimate						
Psych x Post	0.004	-0.007	-0.035	0.015	0.002	-0.044**
	(0.011)	(0.012)	(0.019)	(0.011)	(0.012)	(0.019)
DDD Estimate						
Psych x Post x (High)	--	0.068**	0.226**	--	0.078**	0.342***
BCBS Mrkt Share	--	(0.033)	(0.096)	--	(0.035)	(0.099)
Effect Size at BCBS Mrkt Share Median (27%)		0.061				0.092
BCBS Market Share	Discrete	Discrete	Continuous	Discrete	Discrete	Continuous
Observations	142,255	138,786	138,786	142,768	139,270	139,270

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level
Post includes all survey years between 2012 and 2015
Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists
High BCBS Mrkt Share in column (2, 5) is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. In column (3, 6) the BCBS market share is a continuous variable.
Only key coefficients reported from Triple Differences (DDD) specifications

TABLE 5
Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Labor Supply

	More Than 30 Hours of Patient Care Per Week			See 25 Patients or Less Per Week		
	Diff-in-Diff	Triple Diff		Diff-in-Diff	Triple Diff	
	(1)	(2)	(3)	(4)	(5)	(6)
Psych	-0.107***	-0.107***	-0.098***	0.052***	0.047***	0.046***
	(0.011)	(0.012)	(0.018)	(0.009)	(0.010)	(0.017)
Post	-0.036***	-0.036***	-0.036***	0.031***	0.032***	0.035***
	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)
DD Estimate						
Psych x Post	-0.015	-0.023**	-0.050***	0.019**	0.033***	0.057***
	(0.011)	(0.011)	(0.019)	(0.009)	(0.010)	(0.017)
DDD Estimate						
Psych x Post x (High)	--	0.054*	0.207**	--	-0.062**	-0.195**
BCBS Mrkt Share	--	(0.033)	(0.097)	--	(0.028)	(0.085)
Effect Size at BCBS Mrkt Share Median (27%)			0.056			-0.053
BCBS Market Share	Discrete	Discrete	Continuous	Discrete	Discrete	Continuous
Observations	145,351	142,064	142,064	143,282	140,133	140,133

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level

Post includes all survey years between 2012 and 2015

Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists

High BCBS Mrkt Share in column (2, 5) is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. In column (3, 6) the BCBS market share is a continuous variable.

Only key coefficients reported from Triple Differences (DDD) specifications

TABLE 6

Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Labor Supply—with Physician Age Heterogeneity

	Accept New Medicaid Pts.		Accept New Medicare Pts.		>30 Pt. Care Hours / Week		25 Pts. Or Less / Week	
PANEL A								
Under Age 60								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DDD Estimate								
Psych x Post x High	0.102**	0.298**	0.094**	0.359***	0.086**	0.286**	-0.045	-0.177*
BCBS Mrkt Share	(0.043)	(0.001)	(0.044)	(0.123)	(0.043)	(0.125)	(0.034)	(0.107)
BCBS Mrkt Share	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous
Observations	101,310	101,310	101,612	101,612	104,225	104,225	102,749	102,749
PANEL B								
Age 60 and Over								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DDD Estimate								
Psych x Post x High	-0.0005	0.090	0.042	0.275	-0.029	-0.042	-0.050	-0.109
BCBS Mrkt Share	(0.053)	(0.160)	(0.057)	(0.179)	(0.054)	(0.161)	(0.047)	(0.145)
BCBS Mrkt Share	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous
Observations	37,476	37,476	37,658	37,658	37,839	37,839	37,384	37,384

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level

Post includes all survey years between 2012 and 2015. Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties in the "Discrete" variable models. Only the key coefficient is reported from the triple differences (DDD) models

TABLE 7
Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Labor Supply—with Individual Year Interactions

	Accept New Medicaid Pts.		Accept New Medicare Pts.		>30 Pt. Care Hours / Week		25 Pts. Or Less / Week	
	All	Under Age 60	All	Under Age 60	All	Under Age 60	All	Under Age 60
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Psych x High BCBS	-0.032	-0.107*	0.062	0.012	0.053	0.068	-0.024	-0.030
Mrkt Share x **2011**	(0.049)	(0.067)	(0.052)	(0.070)	(0.051)	(0.066)	(0.037)	(0.042)
Psych x High BCBS	-0.035	-0.049	0.015	0.044	0.071	0.076	-0.070*	-0.051
Mrkt Share x **2012**	(0.051)	(0.067)	(0.054)	(0.070)	(0.050)	(0.062)	(0.041)	(0.052)
Psych x High BCBS	0.011	0.012	0.102*	0.105	0.061	0.148**	-0.055	-0.026
Mrkt Share x **2013**	(0.057)	(0.075)	(0.056)	(0.071)	(0.056)	(0.071)	(0.048)	(0.060)
Psych x High BCBS	0.110*	0.130*	0.107**	0.106	0.075	0.098	-0.081*	-0.082
Mrkt Share x **2014**	(0.058)	(0.076)	(0.054)	(0.071)	(0.054)	(0.071)	(0.045)	(0.054)
Psych x High BCBS	0.138**	0.162**	0.174***	0.128*	0.077	0.116*	-0.075	-0.067
Mrkt Share x **2015**	(0.057)	(0.075)	(0.056)	(0.074)	(0.055)	(0.071)	(0.047)	(0.055)
BCBS Mrkt Share	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete
Observations	138,786	101,310	139,270	101,612	142,064	104,225	140,133	102,749

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level
Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties in the "Discrete" variable models. Only the key coefficients are reported from the triple differences (DDD) models. The 2009 and 2010 survey waves are the omitted year (base) group

TABLE 8

Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Public Insurance Participation—with Physician Fixed Effects

	All				Under Age 60 at Baseline			
	Accept New Medicaid Pts.		Accept New Medicare Pts.		Accept New Medicaid Pts.		Accept New Medicare Pts.	
	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DDD Estimate	0.050*	0.081**	0.053	0.081**	0.073*	0.094**	0.056	0.069*
	(0.031)	(0.034)	(0.034)	(0.035)	(0.040)	(0.042)	(0.042)	(0.042)
BCBS Mrkt Share	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete
Physician(FE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139,215	139,215	139,707	139,707	110,104	110,104	110,448	110,448
Unique Physicians	52,532	52,532	52,628	52,628	40,943	40,943	41,020	41,020

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level

Post includes all survey years between 2012 and 2015 in odd numbered columns, and covers 2013-2015 survey years in the even numbered columns. Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. Only key coefficients reported from the triple differences (DDD) models, and all specifications include individual physician fixed effects (FE). Age restriction imposed on the first year of an individual physician's panel.

TABLE 9
Effects of BCBSFL Network and Pricing Shock on Extensive Margin Medicaid Participation

	All	All	All	All	Under Age 60 at Baseline	Age 60 or Over at Baseline
DDD Estimate	(1)	(2)	(3)	(4)	(5)	(6)
Psych x Post x (High) BCBS Mrkt Share	0.085***	0.213***	--	0.034	0.044	0.012
	(0.030)	(0.086)		(0.022)	(0.028)	(0.037)
Psych x High BCBS Mrkt Share x **2011**	--	--	-0.036	--	--	--
			(0.044)			
Psych x High BCBS Mrkt Share x **2012**	--	--	0.096**	--	--	--
			(0.046)			
Psych x High BCBS Mrkt Share x **2013**	--	--	0.036	--	--	--
			(0.053)			
Psych x High BCBS Mrkt Share x **2014**	--	--	0.122***	--	--	--
			(0.049)			
Psych x High BCBS Mrkt Share x **2015**	--	--	0.029	--	--	--
			(0.053)			
BCBS Mrkt Share	Discrete	Continuous	Discrete	Discrete	Discrete	Discrete
Physician(FE)	No	No	No	Yes	Yes	Yes
Observations	146,174	146,174	146,174	146,174	115,660	30,514
Unique Physicians				53,583	41,597	11,986

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level. Post includes all survey years between 2012 and 2015. Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share in all columns except column 2 is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. In column 2 the BCBS market share is a continuous variable. Only key coefficients reported from Triple Differences (DDD) specifications as well as the model with individual year interactions (column 3). Columns 4-6 also include individual physician fixed effects

TABLE 10
Office-Based Psych Care Consumption Among Florida Medicare
Fee-for-Service Beneficiaries

	Number of Psych Visits per Year	High Psych Visit Consumption (8 or more in a Year)
	(1)	(2)
Post	-2.104***	-0.081***
	(0.139)	(0.008)
Post x High BCBS Mrkt Share	0.245	0.009
	(0.308)	(0.022)
BCBS Mrkt Share	Discrete	Discrete
Medicare Beneficiary FE	Yes	Yes
Observations	10,314	10,314
Unique Beneficiaries	1,719	1,719

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the individual Medicare beneficiary level. Post includes all survey years between 2012 and 2014. Data source is a 5% sample of Medicare FFS claims data from 2009-2014 Analytic sample restricted to beneficiaries living in Florida, with at least one established patient psych visit per year in 2009-2011. 14% of these beneficiaries also reside in "High BCBS Mrk Share" areas.

TABLE 11
BCBS Carve-Out Effects on the Pr(Payer Type) for Mentally Ill Patient Presenting to Emergency Department

	Privately Insured Patient Pre-Period Mean = 0.18			Medicaid Patient Pre-Period Mean = 0.20			Medicare Patient Pre-Period Mean = 0.16		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DD Estimate									
High BCBS x Post	-0.004	-0.005	-0.002	-0.008	-0.008	-0.010*	-0.003	-0.001	-0.001
	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	(0.004)
County FE	No	Yes	No	No	Yes	No	No	Yes	No
Facility FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	990,344	990,344	990,344	990,344	990,344	990,344	990,344	990,344	990,344

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the facility level. Analytic sample restricted to Florida residents with a mental health problem as their primary diagnosis. 'Post' is equal to one for all quarters after and including 2012 Q1. 'High BCBSFL' are counties with above the median BCBS market share. Only key coefficients reported, and the outcome is equal to one for patients relying on a commercial insurer carrier for coverage of ED care.

TABLE 12
BCBS Carve-Out Effects on the Likelihood a Mentally Ill Patient Presents to the Emergency Department with Suicidal Ideation

	Treated Payer is Privately Insured Pre-Period Mean = 0.086			Treated Payer is Medicaid Pre-Period Mean = 0.092			Treated Payer is Medicare Pre-Period Mean = 0.086		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DDD Estimate									
Payer x High	-0.006	-0.006	-0.006	-0.015*	-0.015*	-0.014*	-0.019**	-0.017**	-0.018**
BCBS x Post	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)
County FE	No	Yes	No	No	Yes	No	No	Yes	No
Facility FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	514,271	514,271	514,271	547,084	547,084	547,084	507,463	507,463	507,463

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the facility level. Analytic sample restricted to Florida residents with a mental health problem as their primary diagnosis. The comparison (control) payer group is composed of self-pay patients. Columns 1-3 have privately insured patients as the treated payer group, columns 4-6 use Medicaid, and columns 7-9 use Medicare as the treatment group. 'Post' is equal to one for all quarters after and including 2012 Q1. 'High BCBSFL' are counties with above the median BCBS market share. Only key coefficients reported, and the outcome is equal to one for patient discharges with a suicidal ideation ICD9 flag (V62.84).

TABLE 13
BCBS Carve-Out Effects on Mentally Ill Privately Insured Patients' Emergency Department Care

	Number of ED Physician Ancillary Services Pre-Period Mean = 4.7			High Intensity of Physician Services Pre-Period Mean = 0.29		
	(1)	(2)	(3)	(4)	(5)	(6)
DD Estimate						
Private x Post	0.086	0.066	0.046	0.0002	-0.002	-0.002
	(0.092)	(0.085)	(0.080)	(0.008)	(0.007)	(0.007)
DDD Estimate						
Private x Post x High	-0.564***	-0.516***	-0.478***	-0.051***	-0.047***	-0.043***
BCBS	(0.168)	(0.156)	(0.154)	(0.016)	(0.015)	(0.016)
County FE	No	Yes	No	No	Yes	No
Facility FE	No	No	Yes	No	No	Yes
Observations	514,271	514,271	514,271	514,271	514,271	514,271

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the facility level
Analytic sample restricted to privately insured and self-pay Florida residents with a mental health problem as their primary diagnosis. 'Post' is equal to one for all quarters after and including 2012 Q1. 'High BCBSFL' are counties with above the median BCBS market share. Only key coefficients reported
High intensity of services outcome is equal to one for encounters with at least 8 CPT procedures.
NOTE: specifications with linear time trends and patient demographics have no material effect on the estimates (available by request)

APPENDIX RESULTS

APPENDIX TABLE A1
Effects of BCBSFL Network and Pricing Shock on Intra-State Physician Migration

	Diff-in-Diff		

PANEL A: Practicing in a High BCBS Area

	All	Under 40 and Entered FL after 2008	Under 40 and Entered FL after 2009	Under 40 and Entered FL after 2010
	(1)	(2)	(3)	(4)
DD Estimate				
Psych x Post	-0.004	-0.012	-0.040	-0.028
(2012-2015)	(0.004)	(0.022)	(0.029)	(0.030)
Physician FE	Yes	Yes	Yes	Yes
Observations	146,788	16,986	12,691	9,203
Unique Physicians	53,708	8,328	7,013	5,662

PANEL B: Practicing in a High BCBS Area

		(1)	(2)	(3)
DD Estimate				
Psych x Post		-0.020	-0.045*	-0.029
(2013-2015)		(0.021)	(0.026)	(0.024)
Physician FE		Yes	Yes	Yes
Observations		16,986	12,691	9,203
Unique Physicians		8,328	7,013	5,662

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level Post includes all survey years between 2012 and 2015 in Panel A and survey years 2013-2015 in Panel B. Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. Only key coefficients reported from the difference-in-differences (DD) models, and all specifications include individual physician fixed effects (FE)

APPENDIX TABLE A2

Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Labor Supply—with 2013-2015 as Post Period

	Triple Diff			
	Accept New Medicaid Pts.	**Accept New Medicare Pts.**	**>30 Pt. Care Hours / Week**	**25 Pts. Or Less / Week**
	(1)	(2)	(3)	(4)
DDD Estimate				
Psych x Post x High BCBS Mrkt Share	0.105***	0.107***	0.040	-0.045*
	(0.035)	(0.035)	(0.033)	(0.027)
BCBS Mrkt Share	Discrete	Discrete	Discrete	Discrete
Observations	138,786	139,270	142,064	140,133

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level

Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties in the "Discrete" variable models. Only the key coefficient is reported from the triple differences (DDD) models. "Post" is now equal to one for the 2013, 2014, and 2015 survey years (i.e., the 2012 wave is considered to pre-period data)

Effects of BCBSFL Network and Pricing Shock on Psychiatrists' Public Insurance Participation—with Physician Fixed Effects

	All				Under Age 60 at Baseline			
	>30 Pt. Care Hours / Week		25 Pts. Or Less / Week		>30 Pt. Care Hours / Week		25 Pts. Or Less / Week	
	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015	Post: 2012-2015	Post: 2013-2015
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DDD Estimate	0.011	0.020	-0.028	-0.025	0.020	0.025	-0.002	-0.006
	(0.033)	(0.032)	(0.024)	(0.025)	(0.041)	(0.039)	(0.030)	(0.029)
BCBS Mrkt Share	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete	Discrete
Physician(FE)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	142,528	142,528	140,599	140,599	113,020	113,020	111,321	111,321
Unique Physicians	53,199	53,199	52,975	52,975	41,465	41,465	41,248	41,248

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level

Post includes all survey years between 2012 and 2015 in odd numbered columns, and covers 2013-2015 survey years in the even numbered columns. Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists. High BCBS Mrkt Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties. Only key coefficients reported from the triple differences (DDD) models, and all specifications include individual physician fixed effects (FE). Age restriction imposed on the first year of an individual physician's panel.

APPENDIX TABLE A4

Effects of BCBSFL Network and Pricing Shock on New Market Entrants' Labor Supply

	Triple Diff				
	Accept New Medicaid Pts.	**Join Medicaid Program**	**Accept New Medicare Pts.**	**>30 Hours Pt. Care / Week**	**25 Pts. Or Less / Week**
	(1)	(2)	(3)	(4)	(5)
DDD Estimate					
Psych x Post x High BCBS Mrkt Share	0.061 (0.153)	0.022 (0.138)	0.109 (0.152)	0.041 (0.111)	-0.097 (0.113)
BCBS Market Share	Discrete	Discrete	Discrete	Discrete	Discrete
Observations	11,469	12,916	11,515	12,621	12,471

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, robust standard errors

Post includes all survey years between 2012 and 2015. High BCBS Market Share is defined as primarily practicing in a county with above the median BCBS market share among all FL counties (i.e., using the discrete variable version). The analyses restrict to those entering the Florida physician market for the first time in a given year (i.e., "new market entrants")

APPENDIX TABLE A5
Effects of BCBSFL Network and Pricing Shock on Additional Labor Supply Measures

	Plan to Retire within 5 Years		Plan to Leave FL within 5 Years		Work in a Hospital Setting		Number of Counties Where Practice	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Psych x Post	0.003 (0.009)	0.009 (0.015)	-0.008 (0.009)	-0.008 (0.009)	-0.001 (0.011)	-0.014 (0.017)	-0.0293 (0.0230)	-0.029 (0.023)
Psych x Post x (High) BCBS Mrkt Share	0.028 (0.027)	-0.017 (0.079)	0.010 (0.054)	0.010 (0.054)	0.050 (0.031)	0.119 (0.092)	-0.125 (0.133)	-0.125 (0.133)
Effect Size at BCBS Mrkt Share Median (27%)		-0.005		0.003		0.032		-0.034
BCBS Market Share	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous	Discrete	Continuous
Observations	140,385	140,385	140,195	140,195	143,817	143,817	146,252	146,252

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the physician level
Post includes all survey years between 2012 and 2015
Treated group is composed of general psychiatry physicians. Comparison (control) group is composed of all non-psychiatry specialists
Only key coefficients reported from all Triple Differences (DDD) specifications (i.e., discrete and continuous BCBS market share versions)

BCBS Carve-Out Effects on Mentally Ill Privately Insured Patients' Emergency
Department Care

|	**Use of Highest Complexity Billing Code for ED Evaluation** Pre-Period Mean = 0.23		
	(1)	(2)	(3)
DD Estimate			
Private x Post	0.005	0.005	0.002
	(0.008)	(0.008)	(0.007)
DDD Estimate			
Private x Post x High	-0.0008	0.003	0.003
BCBS	(0.015)	(0.014)	(0.013)
County FE	No	Yes	No
Facility FE	No	No	Yes
Observations	436,082	436,082	436,082

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered
at the facility level. Analytic sample restricted to privately insured and self-pay
Florida residents with a mental health problem as their primary diagnosis. 'Post'
is equal to one for all quarters after and including 2012 Q1. 'High BCBSFL' are
counties with above the median BCBS market share. Only key coefficients
reported, and the outcome is equal to one when the ED provider records a
CPT/HCPCS evaluation code for the highest complexity ("level 5") for an
individual ED encounter. Note, the needed variable information is only available
from 2010 Q1 and onward.

APPENDIX TABLE A7

BCBS Carve-Out Effects on the Pr(Payer Type) for Mentally Ill Patient Admitted to Inpatient Care

	Privately Insured Patient Pre-Period Mean = 0.23			Medicaid Patient Pre-Period Mean = 0.23			Medicare Patient Pre-Period Mean = 0.34		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DD Estimate									
High BCBS x Post	0.010	0.006	-0.001	-0.011	-0.001	-0.003	0.005	-0.014	-0.010
	(0.014)	(0.014)	(0.014)	(0.017)	(0.015)	(0.016)	(0.023)	(0.017)	(0.017)
County FE	No	Yes	No	No	Yes	No	No	Yes	No
Facility FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	694,278	694,278	694,278	694,278	694,278	694,278	694,278	694,278	694,278

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the facility level. Analytic sample restricted to Florida residents with a mental health problem as their primary diagnosis. 'Post' is equal to one for all quarters after and including 2012 Q1. 'High BCBSFL' are counties with above the median BCBS market share. Only key coefficients reported, and the outcome is equal to one for patients relying on a particular insurer carrier for coverage of inpatient hospital care.

APPENDIX TABLE A8
BCBS Carve-Out Effects on Mentally Ill Privately Insured Patients' Hospital Inpatient Care

	Total Length of Stay Pre-Period Mean = 4.1			Prolonged Length of Stay Pre-Period Mean = 0.21		
	(1)	(2)	(3)	(4)	(5)	(6)
DD Estimate						
Private x Post	-0.158	-0.114	-0.155	-0.008	-0.005	-0.009
	(0.134)	(0.114)	(0.092)	(0.013)	(0.012)	(0.009)
DDD Estimate						
Private x Post x High	-0.140	-0.067	0.075	-0.006	0.003	0.012
BCBS	(0.243)	(0.174)	(0.160)	(0.022)	(0.017)	(0.016)
County Fixed Effects	No	Yes	No	No	Yes	No
Facility Fixed Effects	No	No	Yes	No	No	Yes
Observations	240,341	240,341	240,341	240,341	240,341	240,341

* P value at 0.10 ** P value at 0.05 *** P value at 0.01, standard errors clustered at the facility level
Analytic sample restricted to privately insured and self-pay Florida residents with a mental health problem as their primary diagnosis. 'Post' is equal to one for all quarters after and including 2012 Q1. 'High BCBS' are counties with above the median BCBSFL market share. Only key coefficients reported
Prolonged length of stay outcome is equal to one for hospital inpatient stays lasting at least 6 days.

Figure 1: BCBSFL Market Shares Across All Florida Counties in 2012

Legend:
- 47.61 - 65.62
- 37.83 - 47.61
- 27.35 - 37.83
- 18.73 - 27.35
- 12.48 - 18.73
- 5.16 - 12.48
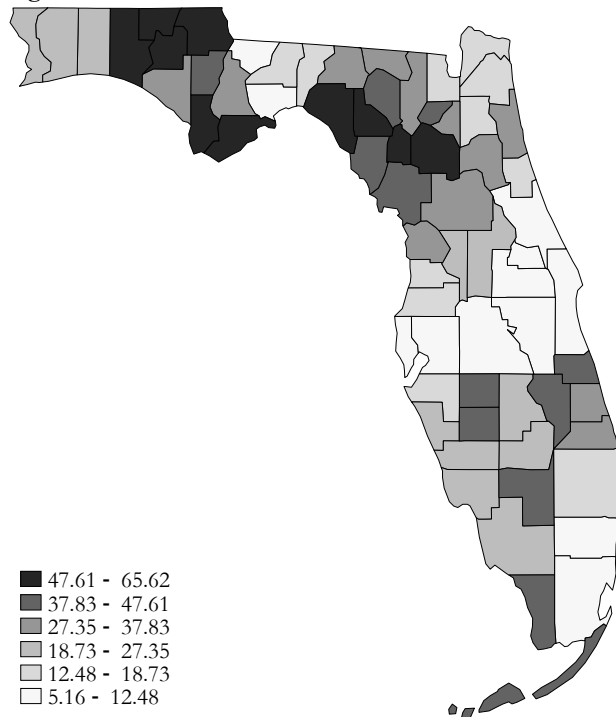
Source: Decision Resources Group proprietary data. Market shares calculated as of January 2012. Numbers in Figure key are percentages of entire commercially insured population in a given county.

Figure 2: Number of Physician Practices in Florida 2009-2015 by Specialty and BCBS Market Penetration
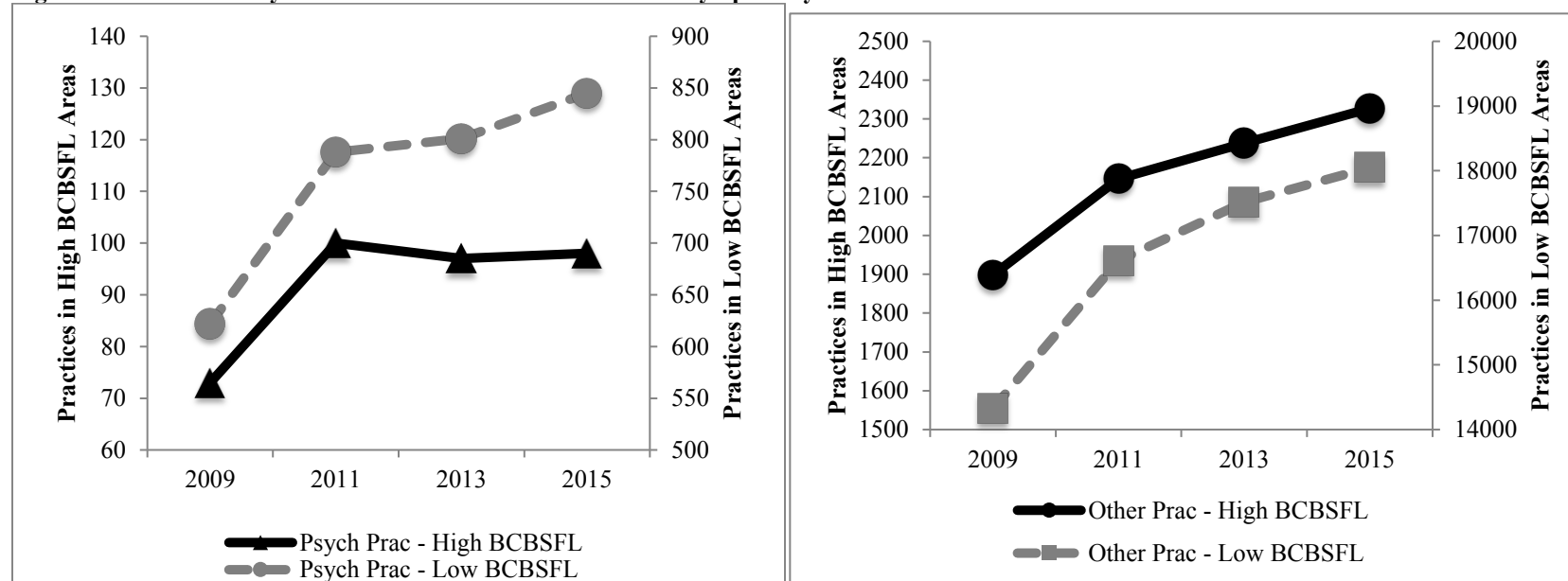
Figure 3: Share of Florida Physician Workforce in Psychiatry from 2009-2015
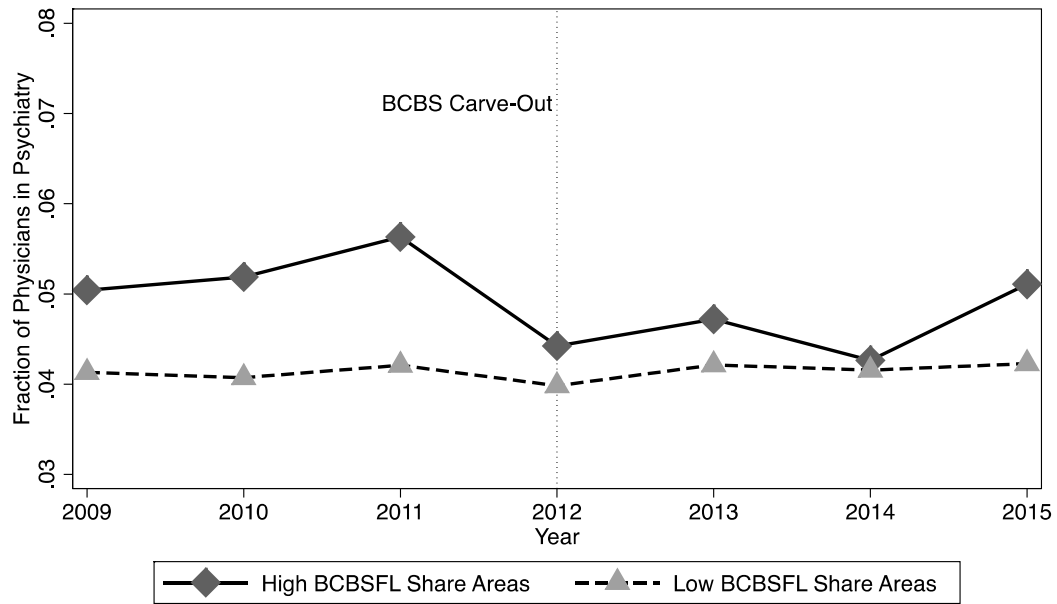
Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

Figure 4: Net Physician Growth and Contraction Over Two-Year Intervals in Florida
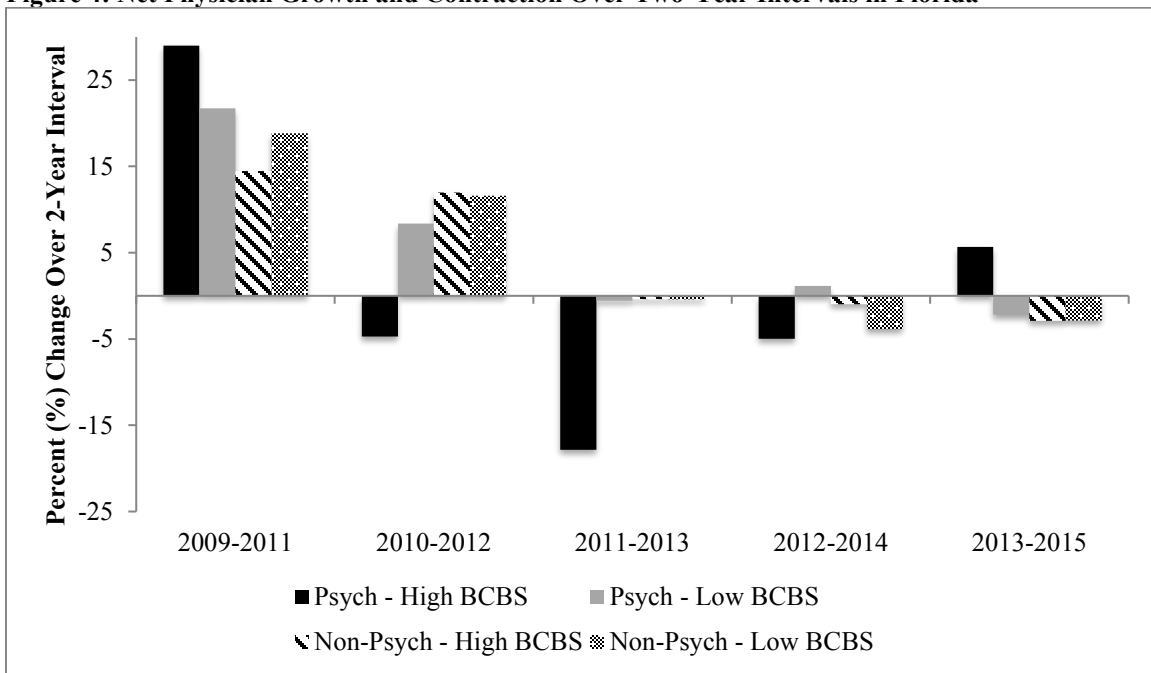
Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively. Note, the typical survey respondent is re-surveyed every two years during his/her license renewal process.

Figure 5: Fraction Accepting New Medicaid Patients 2009-2015 in High (Panel A) and Low (Panel B) BCBSFL Areas
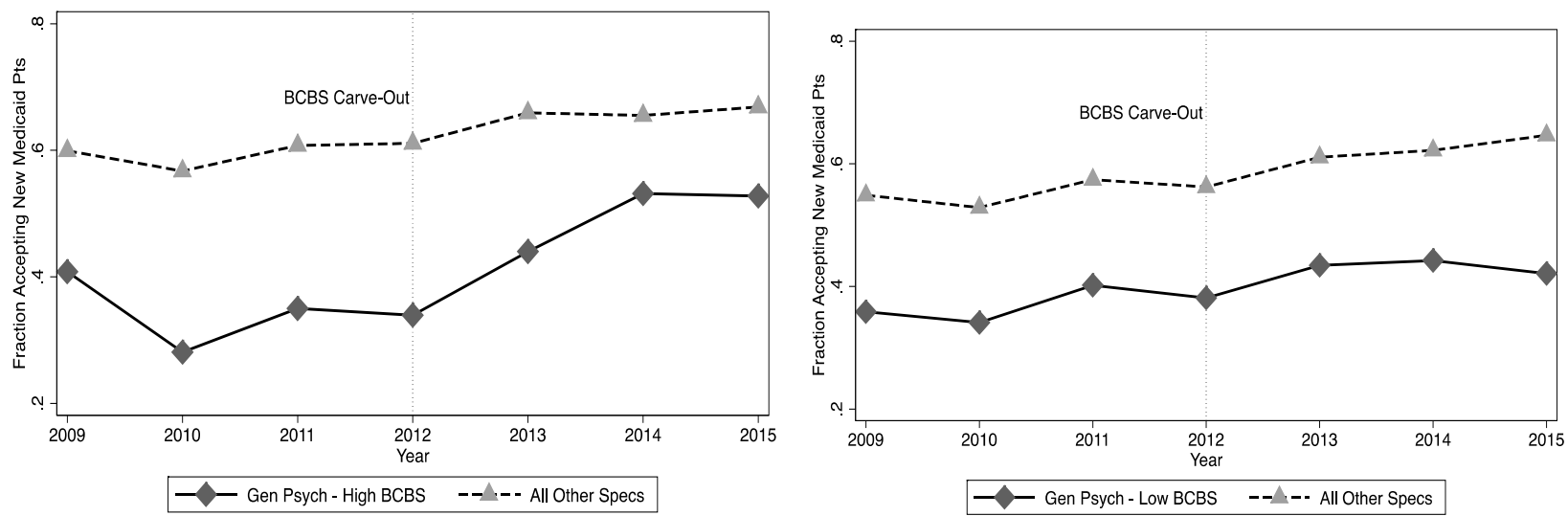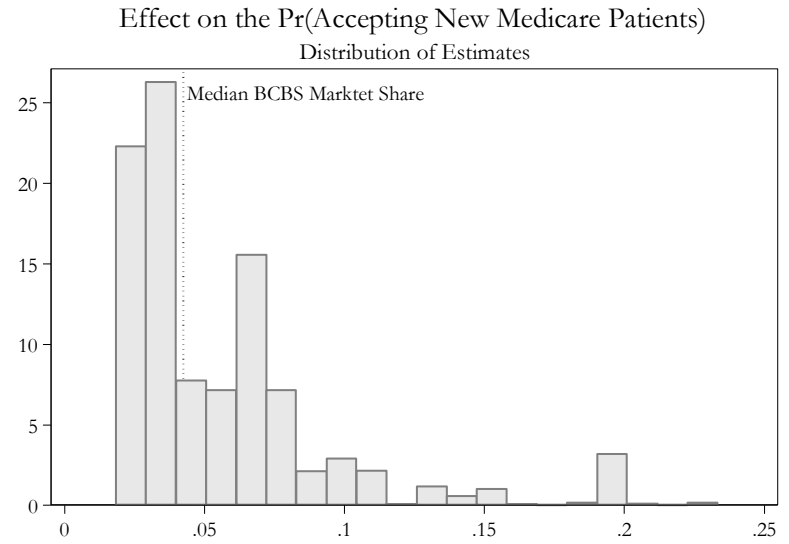

Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

Figure 6: Fraction Accepting New Medicare Patients 2009-2015 in High (Panel A) and Low (Panel B) BCBSFL Areas
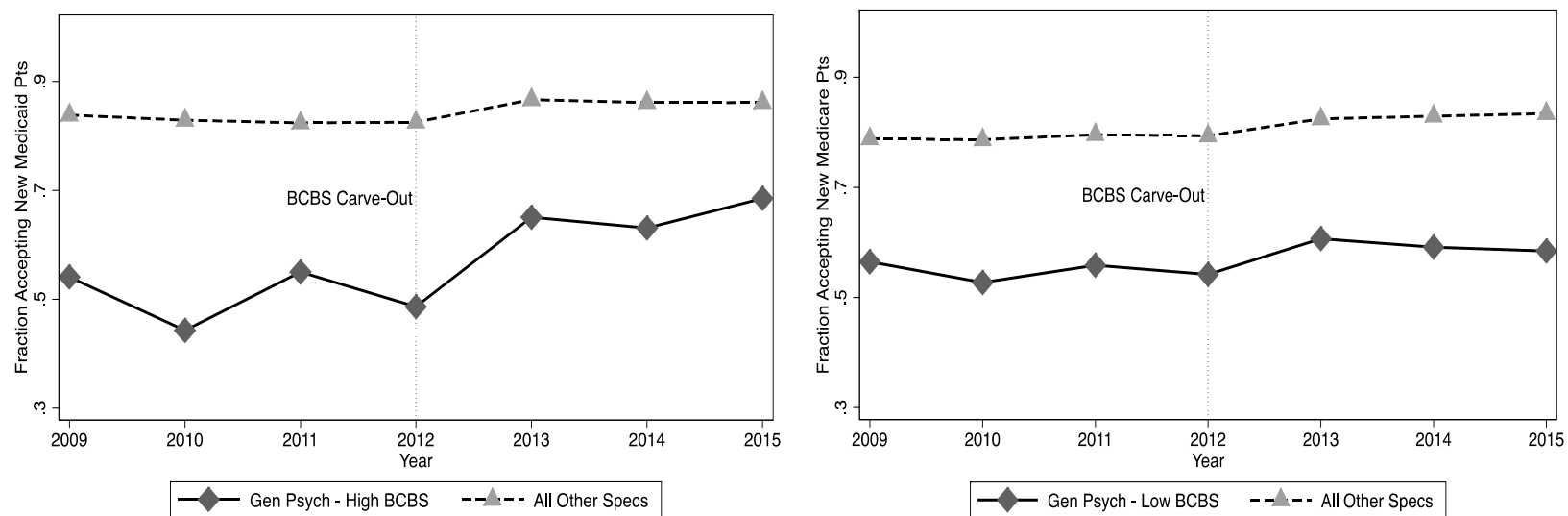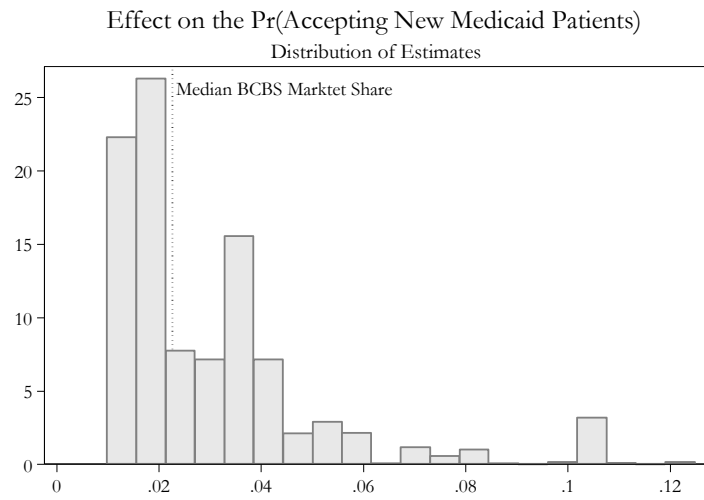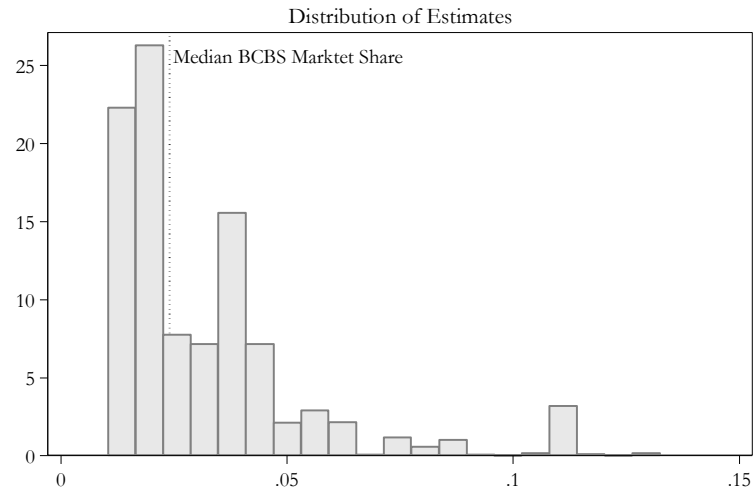

Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

Figure 7: Average Number of Ancillary Physician Services Performed in the Emergency Department
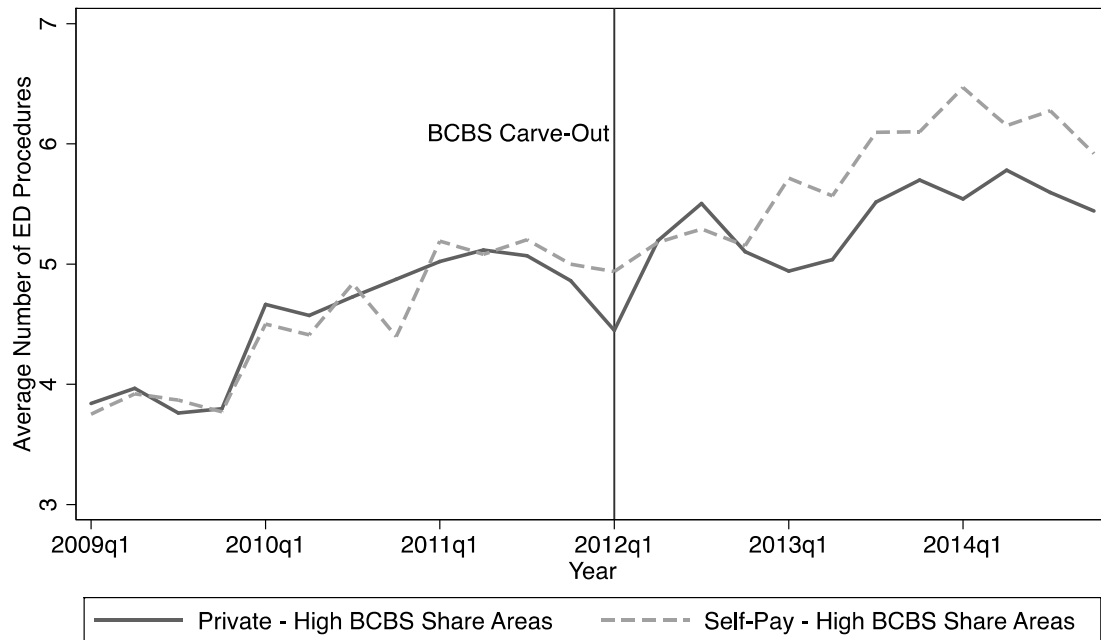
Source: Florida AHCA discharge data. Restricts to encounters with a primary diagnosis (ICD-9) of a mental health problem. Counts reflect the total number of CPT codes for a specific encounter that are listed in addition to the evaluation billing code (i.e., all additional physician services performed)

Figure 8: Fraction of Encounters with a High Number of Ancillary Physician Services Performed in the Emergency Department
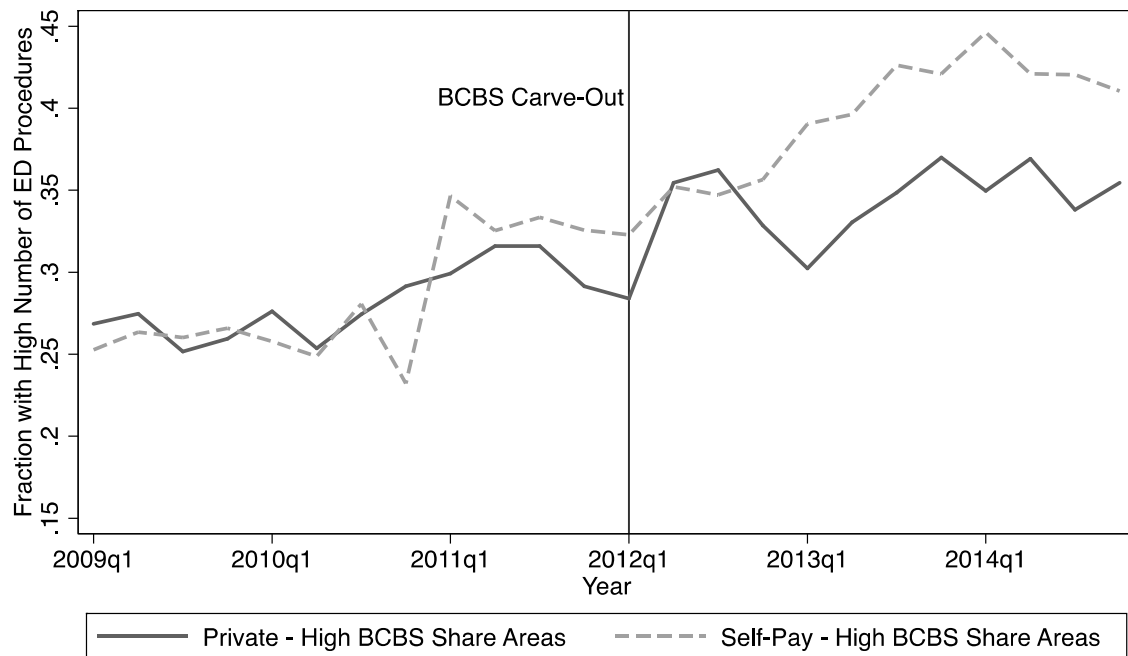
Source: Florida AHCA discharge data. Restricts to encounters with a primary diagnosis (ICD-9) of a mental health problem. The outcome is equal to 1 for all ED encounters with at least 8 listed CPT codes for additional physician services beyond the initial evaluation

Appendix Figure A1: Fraction Devoting More Than 30 Hours to Patient Care Per Week 2009-2015 in High (Panel A) and Low (Panel B) BCBSFL Areas
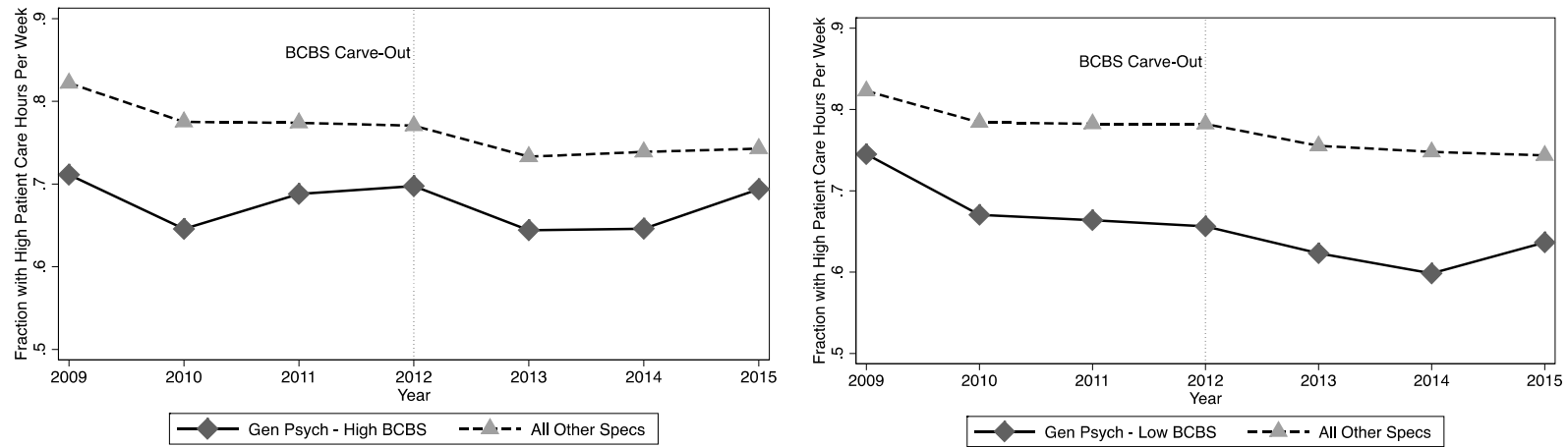
Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

Appendix Figure A2: Fraction Seeing 25 Patients or Less Per Week 2009-2015 in High (Panel A) and Low (Panel B) BCBSFL Areas
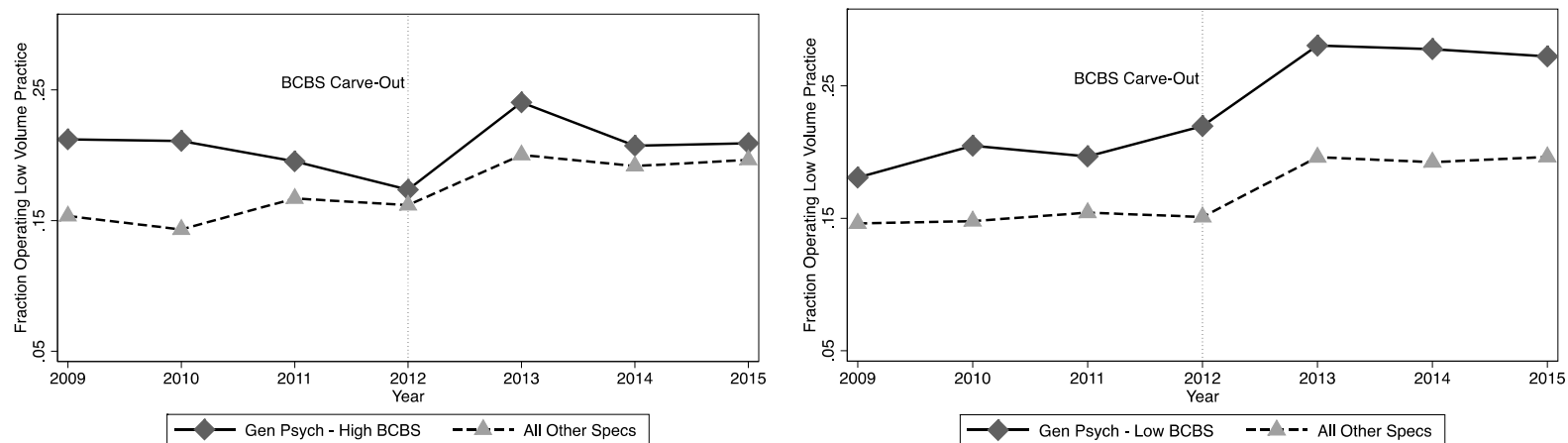
Source: Florida physician workforce survey. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

**Appendix Figure A3: Distribution of Effects for Key Outcomes**

Effect on the Pr(Accepting New Medicaid Patients)

Distribution of Estimates

Effect on the Pr(Accepting New Medicare Patients)

Distribution of Estimates

Effect on the Pr(At Least 31 hours with Patient)

Effect on the Pr(At most 25 Patients)
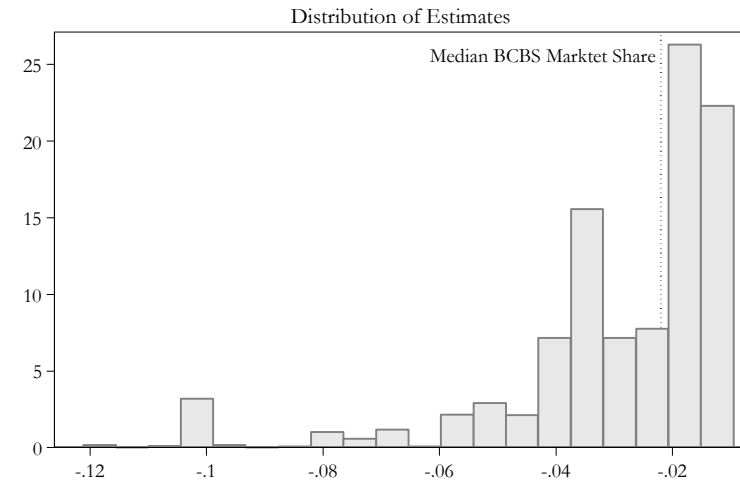
Appendix Figure A4: Fraction of Providers Enrolled in the State Medicaid Program (Extensive Margin Participation) 2009-2015
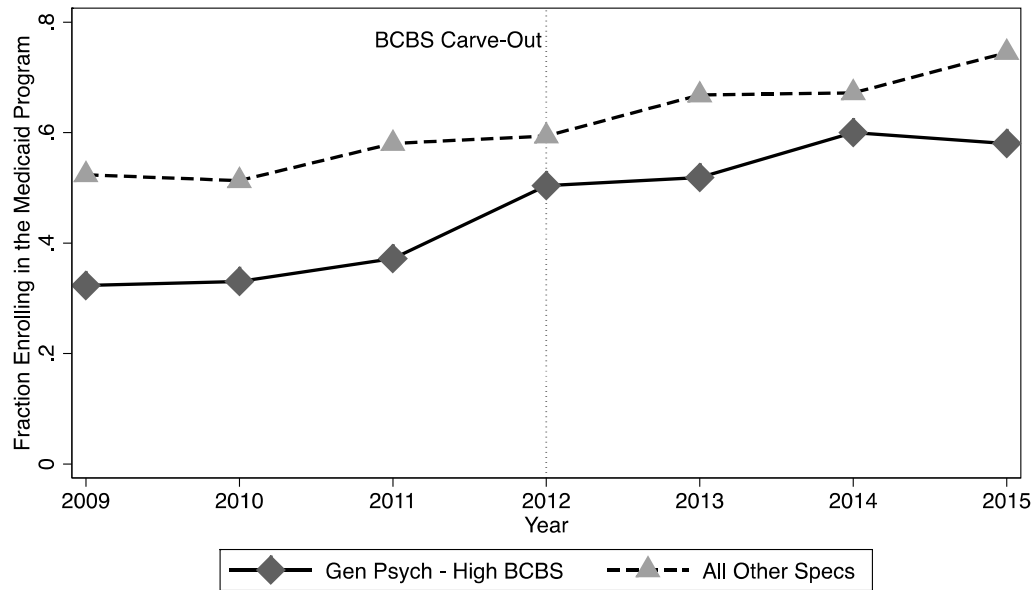

Source: Florida physician workforce survey combined with the Provider Master List of Florida Medicaid. "High" and "Low" BCBS counties reflect counties above and below the median BCBS market share as of January 2012, respectively.

Appendix Figure A5: Fraction of Privately Insured Versus Self-Pay Mentally Ill ED Encounters with Suicidal Ideation in High BCBS Areas
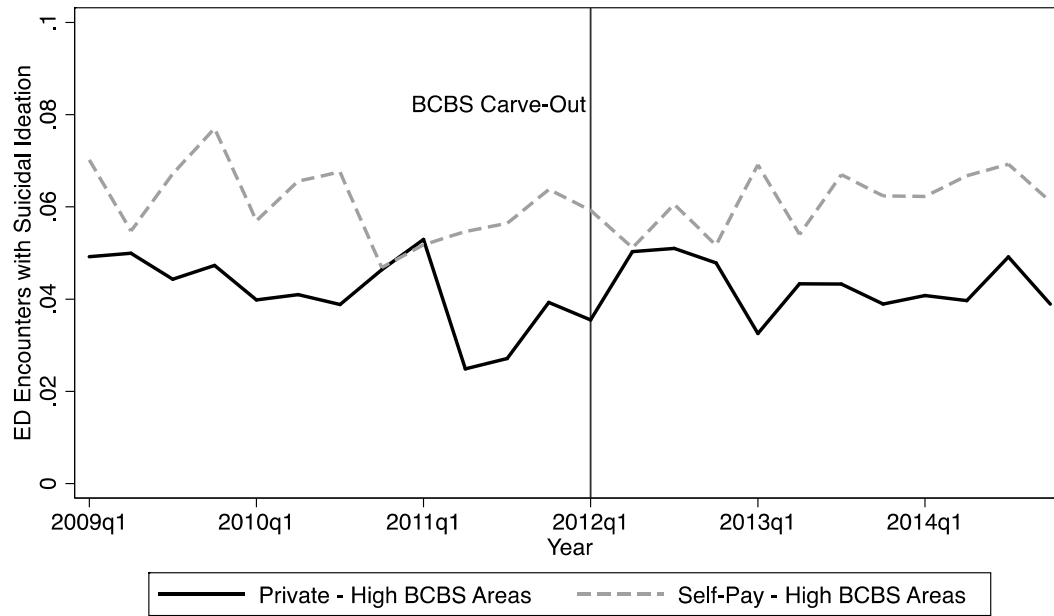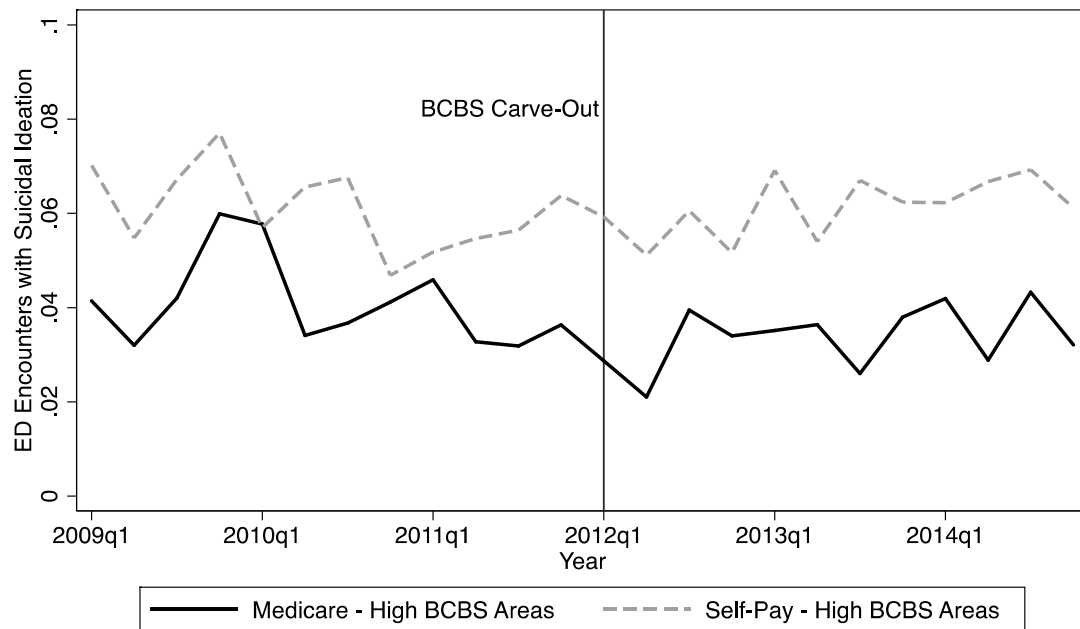

Source: Florida AHCA discharge data. Restricts to ED encounters with a primary diagnosis (ICD-9) of a mental health problem. Episodes are considered to have included suicidal ideation if an ICD-9 flag (V62.84) is listed as an additional diagnoses

Appendix Figure A6: Fraction of Medicaid Insured Versus Self-Pay Mentally Ill ED Encounters with Suicidal Ideation in High BCBS Areas
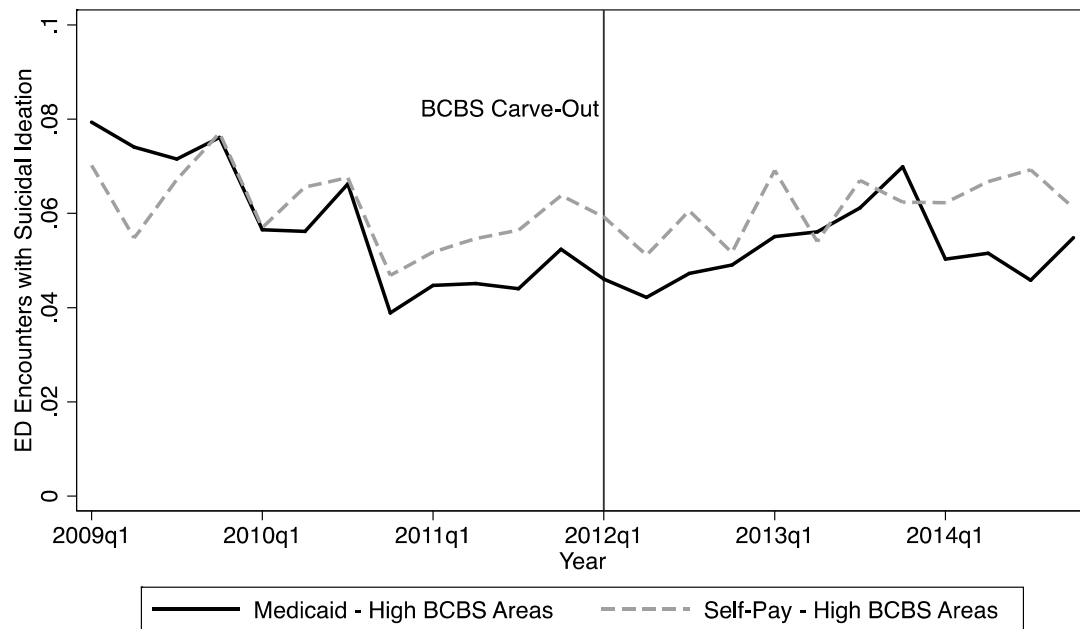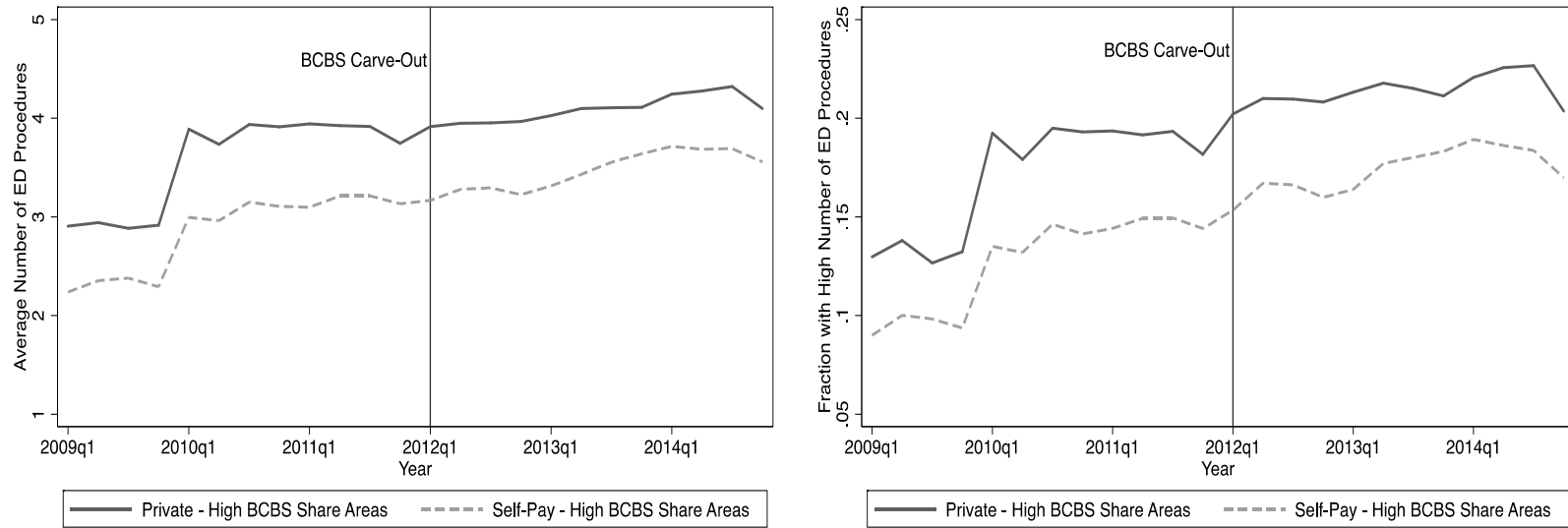

Source: Florida AHCA discharge data. Restricts to ED encounters with a primary diagnosis (ICD-9) of a mental health problem. Episodes are considered to have included suicidal ideation if an ICD-9 flag (V62.84) is listed as an additional diagnoses

Appendix Figure A7: Fraction of Medicare Insured Versus Self-Pay Mentally Ill ED Encounters with Suicidal Ideation in High BCBS Areas

Source: Florida AHCA discharge data. Restricts to ED encounters with a primary diagnosis (ICD-9) of a mental health problem. Episodes are considered to have included suicidal ideation if an ICD-9 flag (V62.84) is listed as an additional diagnoses

Appendix Figure A8: Average Number of Ancillary Physician Services Performed in the Emergency Department for Non-Mentally Ill Patients as well as Fraction of High-Intensity Encounters

Source: Florida AHCA discharge data. Excludes all encounters with a primary diagnosis (ICD-9) of a mental health problem. Counts reflect the total number of CPT codes for a specific encounter that are listed in addition to the evaluation billing code (i.e., all additional physician services performed). The second panel outcome is equal to 1 for all ED encounters with at least 8 listed CPT codes for additional physician services beyond the initial evaluation