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Peer Influence in the Workplace: The Moderating Role of Task Structures Within Organizations*

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Abstract

Peer influence is crucial in shaping work practices within organizations, yet the impact of formal organizational structures on this influence remains underexplored. We argue that task structures, which capture how tasks are allocated and configured within organizations, significantly affect peer interactions and influence. Specifically, we examine how two features of task structures—task variety and task similarity with peers—moderate peer influence in a highly consequential setting: physicians' decisions to perform a birth via caesarean section (C-section) versus vaginal delivery. Using data on nearly 5 million births performed by more than 16,500 physicians across 915 hospitals in Brazil, we find that working alongside peers whose practice style (enduring preference) favors C-sections leads the focal physician to perform more C-sections, even after controlling for features of the mother and the pregnancy. This influence is significantly stronger for physicians with higher task variety and with higher task similarity with peers. Through post-hoc analyses, we provide evidence that the observed behaviors are consistent with a mechanism of information sharing between physicians. This study contributes to our understanding of peer influence in the workplace by showing how the task structure within organizations can either amplify or diminish peer influence. This awareness is particularly crucial for health care organizations in which such dynamics can have life-changing consequences.

Keywords: peer effects, peer influence, social influence, task structure, task variety, task similarity, experts and professionals, practice style, work, physicians, caesarean section, global public health

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Workers often mold their behavior based on their interactions with colleagues in the workplace, a phenomenon commonly known as social or peer influence (Sevcenko et al., 2022). Peer influence has been shown to affect individuals' behaviors and productivity (Mas and Moretti, 2009; Chan, Li, and Pierce, 2014a; Chan et al., 2021), scientists' innovation and entrepreneurial choices (Stuart and Ding, 2006; Nanda and Sørensen, 2010; Kacperczyk, 2013; Azoulay, Liu, and Stuart, 2017), and physicians' prescribing practices (Coleman, Katz, and Menzel, 1957; Agha and Zeltzer, 2022; Zhang, Mohliver, and King, 2023). However, recent research emphasizes that the effects of social influence are not universal and vary significantly across industries and organizational contexts, which highlights the need for increased attention to organizational factors that contribute to these differences (Sevcenko et al., 2022).

Organizational scholars have long acknowledged that interpersonal dynamics in the workplace are influenced by organizations' formal elements, i.e., structures and rules shaping the division and allocation of tasks (Simon, 1947; Selznick, 1949; Thompson, 1967; Nadler and Tushman, 1997; Soda and Zaheer, 2012). But despite recognizing the importance of both formal elements of organizations and informal elements (like social influence) for understanding workers' behaviors, research in these areas has largely progressed independently, overlooking their interconnected influence (Kleinbaum, Stuart, and Tushman, 2013). The neglect of formal elements in research examining social influence in the workplace is unfortunate because both streams of research ''identify interactions among actors as the foundation for understanding behavior and performance'' (McEvily, Soda, and Tortoriello, 2014: 306).

Knowing how formal elements of an organization might shape social interactions as well as the transmission of information and practice conventions holds significant potential for advancing organizational research, particularly when exploring peer influence in the workplace. Task structures, a fundamental component of formal organizational design encompassing the allocation and configuration of tasks (Puranam, 2018), may moderate the extent of peer influence in organizations. Task structures not only define the division of labor but also shape the nature and frequency of workers' social interactions. By shaping who interacts with whom, task structures can either facilitate or hinder the flow of information and the sharing of practices (e.g., Kleinbaum, Stuart, and Tushman, 2013; Clement and Puranam, 2018; Raveendran, Silvestri, and Gulati, 2020). Therefore, examining how task structures moderate peer influence can provide valuable insights into the interplay between formal and informal organizational elements, which can help to explain the observed variability of peer influence across different organizational contexts.

In this article, we examine the extent to which a focal individual's day-to-day work practices are influenced by their peers and how that influence is shaped by the task structures within their organization. Drawing on the rich literature on peer effects and social influence (Coleman, Katz, and Menzel, 1957; Mas and Moretti, 2009; Nanda and Sørensen, 2010; Chan, Li, and Pierce, 2014b; Zhang, Mohliver, and King, 2023), we first argue that when an individual works alongside a set of peers, the peers' work practices may influence their own practices, even with minimal task interdependence. Through mechanisms such as peer pressure (Mas and Moretti, 2009; Silver, 2021), information sharing, and learning (Chan, Li, and Pierce, 2014b; Jarosch, Oberfield, and

Rossi-Hansberg, 2021), exposure to different peers can significantly impact workers' decisions regarding how to perform their work.

After establishing this baseline effect of peers, we explore how features of task structures within organizations moderate the manifestation of peer influence. We argue that having high task variety, which captures the extent to which a worker performs different tasks as part of their job, exposes an individual to a broader range of situations and challenges, which can create greater uncertainty and a natural inclination to seek advice from colleagues. Engaging in a broad range of tasks also expands individuals' social networks, bolstering the relationships they can draw on when they perform their work. We propose, therefore, that peers' influence on an individual's work practices will be stronger for individuals with higher task variety. At the same time, peer effects might also depend on how the individual's tasks relate to those around them. When a focal individual's tasks are similar to those of their peers, this similarity can lead to increased interactions and generate common ground, ultimately facilitating the transmission of knowledge and information about work practices. We predict that peers' influence on an individual's work practices will be stronger in situations in which the individual has higher task similarity with their peers.

We examine these propositions in the context of the Brazilian public health care system, focusing on the influence of peers on a physician's decision to perform a birth via C-section versus vaginal delivery, a choice heavily influenced by the physician in this context (Hopkins, 2000; Domingues et al., 2014; Spinola, 2016; Melo and Menezes-Filho, 2023). Several features make this setting ideal for our purposes. First, women do not develop prior relationships with the physicians who deliver their babies. Mothers receive prenatal care outside hospitals in clinics, arrive at the hospital at arbitrary times based on when they go into labor, and are assigned to the physician on duty at the time of admission[1] (except in the case of medically indicated C-sections, for which women may be told to arrive at a predetermined time).[2] Second, in a maternity ward, small groups of on-duty physicians work through the flow of incoming cases but individually provide care to each of their assigned cases. With this approach to maternity ward scheduling, a given physician tends to work with different combinations of peers over the course of a few shifts, making it possible to study the same physician's behavior across different peer configurations. Conditional on a comprehensive set of hospital–time fixed effects, these features generate quasi-random variation in patient composition and peer configurations, allowing us to examine a physician's C-section decisions across comparable shifts. Finally, our data grant visibility into each physician's task profile, including tasks such as holding patient consultations; managing chronic

[1] Hence, in the public health system, women do not choose their physician based on their preferences, which reduces the role of patient demand for certain forms of delivery. This is corroborated by research showing that in the Brazilian public health system, physicians are the main agent in the decision to perform a birth via C-section or vaginal delivery (Hopkins, 2000; Domingues et al., 2014; Spinola, 2016), and "the pregnant woman has no (or very little) power to influence the choice of birth" (Melo and Menezes-Filho, 2024: 9).

[2] We excluded medically indicated C-sections, which are scheduled in advance, from the regression sample. However, we included these scheduled C-sections in certain calculations (e.g., C-section propensity; physicians' practice styles). We provide details in the Setting and Empirical Approach section below.

conditions like diabetes and hypertension; performing birth-related procedures like vaginal deliveries and C-sections; and conducting surgeries such as laparoscopy, hysterectomy, and tubal ligation. This breadth of tasks enables us to measure and examine the moderating role of task variety, capturing the diversity of tasks a physician performs, and task similarity, reflecting the degree to which a physician's tasks overlap with those performed by their peers.

Using our final dataset, which consists of data on nearly 5 million births performed by more than 16,500 physicians across 915 hospitals in Brazil between 2012 and 2019, we find that a physician is more likely to perform C-sections than vaginal deliveries when they work alongside peers whose practice styles (enduring preferences) favor C-sections. A one standard deviation increase in peers' tendencies to perform C-sections is associated with a one percentage point increase in a physician's likelihood of performing a C-section, which represents an increase of 3 percent from the mean. This equates to an additional 53,000 C-sections in the public health system in our study period. The positive relationship between peers' practice styles and the physician's likelihood of performing a C-section is stronger when the focal physician has greater task variety and when the physician has higher task similarity with their peers. Relying on the richness of the data, we engage in post-hoc analyses to investigate the plausibility of the information-sharing mechanism and, when possible, distinguish it from another frequently cited mechanism of peer influence: peer pressure. Our post-hoc analyses yield patterns consistent with the mechanism of information sharing between physicians, though we cannot completely rule out other mechanisms. We thus find that formal elements of an organization, such as its workers' task structures, can fundamentally shape information sharing among workers and the degree to which peers influence one another's practices in the workplace.

We contribute to the literature on peer effects and social influence by showing how such effects fluctuate based on features of an organization's task structures—specifically, how task variety and task similarity among peers moderate the transmission of information and practices among individuals within organizations. Our findings highlight the role of organizational design decisions in generating variability in peer influence across contexts (Sevcenko et al., 2022), providing insight into the variation observed in the significance of peer effects across various economic sectors and organizations (Cornelissen, Dustmann, and Schönberg, 2017). Our study also contributes to the literature on tasks and task structures in organizations (Cohen, 2013; Chown, 2020; Wilmers, 2020) by emphasizing that decisions regarding how tasks are configured across individuals and groups influence social dynamics in the workplace. Our study underscores the role of formal organizational elements (i.e., task structure) in shaping informal aspects (i.e., social influence) by either fostering or hindering workers' social interactions and information exchange, thus shedding light on the "missing link between formal organization and informal social structure in organizational research" (McEvily, Soda, and Tortoriello, 2014: 335). This interconnectedness suggests how organizations can leverage formal structures to influence the dynamics of organic informal systems. Finally, we contribute to organizational practice in health care organizations by documenting the role of peer influence in shaping the use of C-section, an important and lifesaving surgery that can also expose women and babies to unwarranted risks when it is not medically necessary.

PEER INFLUENCE IN THE WORKPLACE

Researchers interested in understanding peer influence have found that an individual's behavior is often influenced by those to whom they are socially tied (Nanda and Sørensen, 2010; Kacperczyk, 2013). The mechanisms underlying these peer effects derive largely from social influence, whereby certain attitudes of one person can be transmitted to another who works in close proximity (Stuart and Ding, 2006; Nanda and Sørensen, 2010; Kacperczyk, 2013; Liu and Srivastava, 2015). These insights arise from distinct but related literatures on social networks (Ibarra and Andrews, 1993; Greenberg, 2021; Zhang, Mohliver, and King, 2023), peer effects in the workplace (Mas and Moretti, 2009; Chan, Li, and Pierce, 2014a), and the diffusion and adoption of practices (Soderstrom et al., 2016; de Vaan and Stuart, 2019; Mohliver, 2019).

While scholars across these literatures frequently rely on the mechanism of social influence to explain the effects they uncover, the nature of that influence can differ. In some instances, peer influence arises from social pressures, such as pressures to conform (Mas and Moretti, 2009). For example, working alongside a highly productive individual may boost pressure for others to increase their own productivity (Silver, 2021). Similarly, working in close proximity to peers may generate increased pressure to support their initiatives (Chown and Liu, 2015). In other instances, peer interactions can promote information exchange and learning, as one individual provides information or advice to another (Azoulay, Graff Zivin, and Wang, 2010; Chan, Li, and Pierce, 2014b). Interacting with proximate peers can also acquaint individuals with professional norms and expectations (Zhang, Mohliver, and King, 2023) as well as new practices (Greenwood et al., 2019).

Drawing on this rich literature on social influence, we suggest that when an expert works alongside a particular set of peers, the expert's behaviors may be influenced by the peers' *practice styles*: their enduring preferences for some solutions over others when solving problems. Although practice styles have not been examined in the context of social influence, research has shown that they are important determinants of individuals' behaviors and greatly influence decisions ranging from corporate acquisitions to which medical procedures to perform (Bertrand and Schoar, 2003; Van Parys, 2016; Gowrisankaran, Joiner, and Léger, 2022). While prior studies examined the influence of an individual's own practice style on their behaviors and work outcomes (Bertrand and Schoar, 2003; Van Parys, 2016; Gowrisankaran, Joiner, and Léger, 2022), we know less about whether and how peers' practice styles might influence a focal individual's behavior. We argue that differences in exposure to peers' practice styles can be material since their influence may lead the same expert to make different decisions even when they are faced with highly similar problems. Chan, Gentzkow, and Yu (2022: 729) noted that this type of variation is common, even for experts: "Physicians, judges, teachers, and agents in many other settings differ systematically in the decisions they make when faced with similar cases." They explained that this variation can lead to two judges handing down very different rulings to ostensibly identical cases or two physicians providing different treatment plans for patients with nearly identical situations. Given the consequential nature of practice styles, understanding how peers' practice styles influence an individual's work can provide important insights into variation in social influence effects. Considering this body of research highlighting the strength of social influence, we expect the following baseline hypothesis:

Hypothesis 1 (H1): Individuals' work practices will be influenced by their peers' practice styles.

Though intuitive, this baseline hypothesis is not obvious. First, studies of peer influence have not examined the influence of peers' practice styles. Second, studies of peer influence have yielded mixed results, particularly when examining multiple organizations and contexts (Cornelissen, Dustmann, and Schönberg, 2017). Sevcenko et al. (2022) noted that peer influence magnitudes vary significantly by occupation and industry. While peer effects tend to be strong in settings with simple, observable tasks (Sevcenko et al., 2022), how peer influence impacts individuals engaged in expert work or other complex settings is unclear. For instance, studies of scientists have shown mixed results: While some point to the influence of peers (Azoulay, Graff Zivin, and Wang, 2010), others fail to show material effects (Waldinger, 2012). Third, features of the organizations in which the individuals work are seldom examined, leaving a blind spot regarding how organizational characteristics may shape peer influence in the workplace. As noted by Sevcenko et al. (2022: 352), "our understanding of the scope conditions under which peer effects operate . . . continues to be limited." We therefore explore how features of organizations' designs—specifically, task structures—may enhance or diminish peer influence within organizations.

Task Structure as a Moderator of Peer Influence

Tasks are the basic building blocks of work (Cohen, 2013), and a key decision facing any organization's management is how to design task structures, i.e., how tasks are divided and assigned among workers (Nadler and Tushman, 1997; Puranam, 2018; Wilmers, 2020). These design decisions reflect tensions between, for example, centralization and decentralization (Zhou, 2013; Eklund and Kapoor, 2022), autonomy and control (Crilly and Sloan, 2014; Ibanez et al., 2017; Chown, 2021; Balachandran and Eklund, 2024), and specialization and generalization (Byun, Frake, and Agarwal, 2018; Fahrenkopf, Guo, and Argote, 2020).

Task structure influences important outcomes at multiple levels. At the individual level, features of an employee's tasks can influence their motivation, satisfaction, and work performance (Hackman and Oldham, 1976; Deery, Iverson, and Walsh, 2002; Chan and Anteby, 2016; Cech and Waidzunas, 2022; Ranganathan, 2023). Features of task structure, such as job turf and task variety, influence an individual's bargaining power and pay (Wilmers, 2020). Furthermore, organizational decisions about how work is divided shape the degree to which individuals develop into specialists or generalists (Fahrenkopf, Guo, and Argote, 2020). At the organizational level, task structure can affect employee-related performance measures, such as absenteeism and turnover (Deery, Iverson, and Walsh, 2002; Chan and Anteby, 2016), as well as overall performance (Ching, Forti, and Rawley, 2021).

Scholars have noted that organizational task structures function within a web of interpersonal relationships and interactions (Grant and Parker, 2009), but these structures also have the ability to influence those relations. The way that tasks are structured shapes how relationships between individuals evolve within an organization (Clement and Puranam, 2018). Task structure can, for example, bring two individuals into regular contact as they each perform their duties (Raveendran, Silvestri, and Gulati, 2020). As noted by Kleinbaum, Stuart, and Tushman (2013: 1318), "the structure itself induces a great deal of interaction." Placing individuals in the same department, on the same team, or even in close proximity increases the likelihood that they will connect to discuss issues they are facing in their work (Allen, 1977; Chown and Liu, 2015), thereby producing what have been called the "social outcomes of work design" (Grant and Parker, 2009: 324).

Because how tasks are distributed across workers can act as "a common frame of reference that facilitates the emergence of social interactions" (Clement and Puranam, 2018: 3880), task structures may play an important, if undertheorized, role in facilitating or hindering peer influence flows. Although organizational theory recognizes the importance of formal elements (such as task structure) and of informal elements (such as peer influence), less is known about the "interplay between formal organization and informal social structure given their common basis of interactions in organizations" (McEvily, Soda, and Tortoriello, 2014: 300). Below we develop arguments for how two key features of task structure—a worker's task variety and their task similarity with peers—can shape peer effects within an organization.

Worker's Task Variety

Task variety is "the extent to which [workers] must perform different tasks to fulfill their job responsibilities" (Wellman et al., 2020: 1013). Having task variety in a job has been shown to influence an individual's motivation (Hackman and Oldham, 1976; Humphrey, Nahrgang, and Morgeson, 2007), productivity and learning (Boh, Slaughter, and Espinosa, 2007; Narayanan, Balasubramanian, and Swaminathan, 2009), and even their earnings (Wilmers, 2020).

For multiple reasons, a worker's task variety could moderate the effects of peer influence. When task variety is low, such as when the work is structured around a small number of specialized tasks, the narrow scope of tasks often leads to a streamlined, well-practiced approach to work. This limited scope allows workers to build deep familiarity with specific solutions, reinforcing a high level of comfort and predictability. Consequently, these workers may feel less inclined to consult others, as their knowledge in this domain meets most challenges they encounter. Furthermore, task specialization often involves "routinized problem solving," which can prevent workers from seeing or exploring alternative ways to approach their work (Teodoridis, Bikard, and Vakili, 2019: 898). It can increase inflexibility by entrenching individuals in established thought patterns (Dane, 2010) and triggering automated, familiar responses even when another, atypical solution is required (Sternberg, 1996; Bilalić, McLeod, and Gobet, 2008). Individuals with lower task variety may, as a result, be less susceptible to influence from their peers.

In contrast, higher task variety exposes individuals to a more extensive range of situations and types of challenges. Encountering diverse tasks increases the likelihood of facing unfamiliar issues, which can create greater uncertainty and a natural inclination to seek advice from colleagues (Gong et al., 2012). Research has shown that in situations of uncertainty, individuals are more likely to turn to peers for advice, as consulting others can provide additional perspectives and reduce ambiguity (Lim et al., 2020). Task variety, therefore, encourages individuals to view their peers as valuable sources of information who can help them navigate a wide range of work demands. This willingness to connect with others to acquire insight can increase the magnitude of peer influence in the workplace.

Engaging in a high variety of tasks can also expand an individual's social network in the workplace, as diverse tasks often necessitate interactions with a broader spectrum of colleagues. This broader engagement fosters relational capital, enhancing the individual's ability to seek and receive advice from an extensive set of peers (Byun, Frake, and Agarwal, 2018). Having this larger set of possible interactions provides individuals with more individual agency and discretion regarding whom to connect with (Kleinbaum, Stuart, and Tushman, 2013). These interactions establish an interpersonal connection between individuals that can be leveraged in the future to fulfill work-related needs (Kleinbaum, 2012).

Following these lines of research, we theorize that the extent to which a job favors task variety over specialization can amplify the influence of peers, as individuals with greater task variety will be more susceptible to peer influence. This leads to our second hypothesis:

Hypothesis 2 (H2): Peer influence (H1) will be stronger for focal individuals who have higher task variety in their work.

Worker's Task Similarity with Peers

An individual's susceptibility to peer influence may also depend on the similarity between their own tasks and those of their peers. Higher similarity can promote information exchange among workers by increasing their capabilities, opportunities, and motivation for social interactions within organizations (Argote, McEvily, and Reagans, 2003). Performing similar tasks creates common ground for sharing and absorbing information from colleagues (Cohen and Levinthal, 1990), which can enhance mutual understanding (March and Simon, 1958) and promote informal coordination of individual efforts (Fahrenkopf, Guo, and Argote, 2020). When performing similar tasks, workers may develop a common language, which in turn aids communication and knowledge sharing (Weber and Camerer, 2003), facilitating knowledge transfer and learning in organizations (Argote and Fahrenkopf, 2016). For example, research has shown that individuals are more likely to seek advice from others who perform similar job duties (Siciliano, 2015; Lim et al., 2020). The familiarity stemming from performing similar tasks in the past can provide individuals with "insight into the subtleties, difficulties and opportunities associated with performing a particular role" (Ching, Forti, and Rawley, 2021: 2) and may positively influence the perceived trustworthiness of the information source (McEvily, Perrone, and Zaheer, 2003; Reagans, Argote, and Brooks, 2005).

Furthermore, workers with higher task similarity may also have more opportunities for interaction as they go about their tasks. Sharing similar tasks may bring workers physically close to their colleagues, thereby enhancing social interactions (Chown and Liu, 2015; Boudreau et al., 2017; Roche, Oettl, and Catalini, 2024). High task similarity can also foster frequent and recurring interactions that facilitate the exchange of information and improve understanding (Tortoriello, Reagans, and McEvily, 2012). Engaging in similar tasks can thus reduce search costs and create more opportunities for interaction between individuals within the group.

Given these findings, we hypothesize that workers with higher task similarity with their peers will experience stronger peer effects, compared to workers with lower task similarity with their peers. Formally, we propose the following:

Hypothesis 3 (H3): Peer influence (H1) will be stronger for focal individuals who have higher task similarity with their peers.

SETTING AND EMPIRICAL APPROACH

We test these hypotheses in the context of the Brazilian health care system. We focus on understanding how physicians' decisions to perform births via vaginal deliveries or C-sections are influenced by their peers' practice styles and how the task structures within hospitals moderate that peer influence.[3] We use ''practice styles'' here to refer to physicians' overarching decision-making orientations (Epstein and Nicholson, 2009; Currie, MacLeod, and Van Parys, 2016; Currie and MacLeod, 2017; Molitor, 2018; Gowrisankaran, Joiner, and Léger, 2022), described in more detail below.

Institutional Features

For numerous reasons, the Brazilian health care system is an opportune setting for exploring peer influence among physicians. Brazil has one of the highest rates of caesarean births in the world. According to the United Nations Children's Fund, Brazil had a mean C-section rate of 50 percent, the highest rate among 139 countries between 2007 and 2012 and much higher than the 10 to 15 percent recommended by the World Health Organization. From a public health standpoint, leading health care institutions in the country recognize the importance of better understanding the factors associated with the high C-section rate in order to systematically address it (Ministério da Saúde [Brasil], 2016; Borem et al., 2020). Brazil's high rate of C-sections can be attributed to a complex interplay of cultural, social, and institutional factors, which we describe in Online Appendix A. Because peer influence can magnify the high rate of C-sections in hospitals, understanding its role can have both theoretical implications for management research and practical implications for health care policy and management.

The breadth and depth of data available in this setting also make it well suited for testing our hypotheses. Brazil's health care system involves both a publicly funded national health care system (SUS), which provides universal health care coverage to the population, and a privately funded system. Three-quarters of the country's 210 million people depend on free care from SUS, making it one of the largest public health care systems in the world; the remaining

[3] Physicians in our setting are obstetricians-gynecologists (OB-GYNs).

one-quarter are enrolled in private insurance plans. Though we have data on all births in Brazil (in both the publicly and privately funded systems), we have physician claims data only for the publicly funded system. As a result, our analyses focus on births and physician behavior in the public system, or approximately 70 percent of total births. Even with this constraint, the setting provides a wealth of data. We have access to fine-grained data on the births, mothers, physicians, and hospitals for more than 10 million births performed between 2012 and 2019. We also have information regarding the tasks carried out by each physician in a hospital, including not only birth deliveries but also consultations, diagnostics, and other procedures, all documented in the claims records of the respective physicians. These data give us the opportunity to understand the influence of peers on focal physicians' behaviors and how physicians' task structures within their hospitals shape that influence.

Our focus on births in the publicly funded system is further motivated by institutional features of this system in Brazil. Expectant mothers in the publicly funded system generally do not develop prior relationships with the physicians who ultimately deliver their babies, whereas they do in the privately funded system.[4] Prenatal care is primarily delivered at community health centers, while deliveries take place in hospitals. Typically, pregnant women are directed to go to the hospital nearest to their home at the time of labor. There, the women do not have a designated physician for their delivery; instead, they are seen by whoever is on duty at the time of hospital admission. Expectant mothers arrive at a hospital when they are in labor and are matched with an available physician who works at the hospital on a predetermined schedule (Nobrega, 2014). The allocation of an expectant mother to a specific physician in a maternity ward is primarily influenced by factors such as physician availability and workload distribution. Certified nurses and physicians provide support during labor, and the physician determines the method of delivery and assumes responsibility for any necessary medical interventions. These systemic features create quasi-random variation in physician–patient matching, which enables us to examine the behavior of physicians across various work shifts with expectant mothers who have similar likelihoods for C-sections.

By focusing on the publicly funded system, we can also minimize the influence of financial incentives and patient preferences on the physician's decision to perform a vaginal or C-section delivery. While physicians in the privately funded system are often paid by the procedure (i.e., fee for service), those in the publicly funded system are paid fixed compensations and are not financially incentivized to perform more C-sections (Nobrega, 2014; Spinola, 2016; Melo and Menezes-Filho, 2023). The role of women's preferences toward C-sections is also weaker in the publicly funded system. In the privately funded system, in which women choose their physicians, women's preferences for C-sections play an important role (Spinola, 2016; Melo and Menezes-Filho, 2024). This influence is significantly smaller in the publicly funded system (Melo and Menezes-Filho, 2024), as women do not choose their physicians and physicians have stricter protocols for birth care. These distinctions translate into large

[4] The exception is the case of medically indicated C-sections, which constitute about 20 percent of all births in the publicly funded system. We consider these births in the estimation of physicians' practice styles and in the calculation of C-section appropriateness, but we exclude them from the final regression sample.

differences in the rate of C-sections in the privately and publicly funded systems: While the rate of C-section in the public system was 40 percent in 2015, the rate in the private system was 85 percent (Ministério da Saúde [Brasil], 2016).

Thus, specific features of the Brazilian publicly funded health care system make it an appropriate setting for our research. First, the fact that pregnant women are seen by the physician on duty at the time of hospital admission (Nobrega, 2014; Melo and Menezes-Filho, 2024) helps to address concerns about mother–physician matching (or women's preferences for C-section) and generates variation in the types of expectant mothers seen by the physicians. Second, the physician largely decides the mode of delivery in the public health system, and directives and guidelines limit the potential of women choosing the delivery mode (Hopkins, 2000; Spinola, 2016; Melo and Menezes-Filho, 2023). Because physicians' salaries are tied to neither the mode of delivery nor the number of C-sections performed (Spinola, 2016; Melo and Menezes-Filho, 2023), the physician's choice of delivery mode is largely independent of financial considerations. Importantly, physicians often participate in different configurations of coworkers within the same maternity ward across several shifts, enabling an analysis of how differences in peers' practice styles influence a physician's decisions. Finally, the data offer detailed insights into the task structures within organizations, enabling scrutiny of how an individual's task variety and task similarity with peers shape peer influence in the workplace.

Data and Sample Selection

Data for the analysis were drawn from three main databases maintained by the Brazilian Ministry of Health: (1) a database that contains information on all live births in Brazil (Sistema de Informação sobre Nascidos Vivos, SINASC); (2) a database of physician claims records for health care units in the publicly funded national health care system (Sistema de Informações Hospitalares, SIH); and (3) a database that compiles information on all active health care units (i.e., places where health care is provided, such as hospitals; Cadastro Nacional de Estabelecimentos de Saúde, CNES).

The SINASC dataset contains information on all live births, including characteristics of the birth, the mother, and the health care unit in which the birth took place. This dataset gives information on the date, time, and health care unit of birth and several maternal and birth characteristics, including the mother's age, race, municipality of residence, gestational length, type of pregnancy, fetal position, and delivery method (C-section or vaginal), as well as the birthweight. The SIH dataset contains physician claims records that include information on patients (e.g., age, race, municipality of residence); hospital care (including date of admission, date of discharge, principal diagnosis, procedures performed); and a unique physician identifier assigned by the Brazilian Ministry of Health. We leveraged the SIH dataset to gather comprehensive information on tasks performed by each physician. Doing so allowed us to observe the birth delivery methods chosen by individual physicians and to create measures for physicians' task variety and task similarity. We used data on patients and hospital care (age, race, municipality of residence, date of birth, delivery method) to merge the SIH and SINASC datasets. We then used the CNES dataset to incorporate information on the health care units in which the births took place. This final dataset provides information about certain characteristics of health care units (e.g., teaching hospital, for-profit hospital, general hospital) and measures of an organization's size, such as the number of beds in the hospital. We used a unique health unit code, assigned by the Brazilian Ministry of Health, to merge this dataset with the SINASC and SIH datasets.

Our initial sample contained all births performed by OB-GYNs in the public health system in Brazil from 2012 to 2019, which include approximately 10.6 million births performed by more than 18,000 physicians in more than 960 hospitals.[5] We used this full sample (described in more detail below) to estimate (1) each physician's practice style, defined by their overarching inclination toward performing C-sections or vaginal deliveries, and (2) each expectant mother's underlying appropriateness for having a C-section (based on her characteristics and details about her pregnancy).

After calculating each physician's practice style and each expectant mother's C-section appropriateness, we bound our dataset in several ways. First, we excluded all scheduled C-section deliveries: approximately 1.7 million births for which decisions to perform the birth via C-section were predetermined. Second, we excluded all births during times in which only one physician was on duty in the maternity ward (approximately 3.4 million births) because estimating peer effects is not feasible when no peers are present. Note, however, that the scheduled C-section deliveries and the deliveries when only one physician was on duty were included in our estimation of each physician's practice style and the task structure variables. Last, since the calculation of each physician's task variety and task similarity relies on the observability of tasks performed by the focal and peer physicians in the previous 90 days, we lost some observations from our regression sample due to the inability to calculate these task variables. To ensure consistency across different models, we limited our sample to cases in which both the physician's task variety and task similarity are non-missing. Our final regression sample includes nearly 5 million births performed by over 16,500 physicians across 915 hospitals.

Choice of Delivery Approach: C-Section Versus Vaginal Birth

When a physician is dealing with a mother in labor and trying to determine which approach to take, they consider the characteristics of the mother and baby. In general, vaginal deliveries are preferred because they are usually safest for mothers and babies who have low risk factors (MacDorman et al., 2008; Currie and MacLeod, 2017; Melo and Menezes-Filho, 2024). C-sections are a riskier procedure than vaginal deliveries (Baicker, Buckles, and Chandra, 2006; Kozhimannil, Law, and Virnig, 2013; Currie and MacLeod, 2017); they are major surgeries with longer recovery times and higher potential for infections and other negative outcomes (Jachetta, 2016; Costa-Ramón et al., 2018). In many cases, however, performing a C-section is the appropriate course of action

[5] We restricted the sample to general and specialized hospitals that have at least five years of observations and at least 365 births per year on average. We further excluded cases of mothers who were younger than 14 years old and older than 50 years old, births related to pregnancies of less than 28 gestational weeks, and deliveries linked to traumatic accidents and multiple surgeries. We excluded about 1.4 million births performed by professionals other than OB-GYNs, such as obstetric nurses, residents, and surgeons, given the different nature of their expertise and work (e.g., obstetric nurses can perform only vaginal deliveries, and surgeons do mostly C-sections).

based on the condition of the mother and baby. In some instances, the physician providing the expectant mother's prenatal care may identify the need for a C-section (when medical conditions contraindicate vaginal delivery) well in advance, and the mother will have a scheduled or planned C-section. Reasons include multiple fetuses, non-cephalic (such as breech) fetal presentations, or abnormal placenta positions. In addition, certain conditions that develop during labor, such as hemorrhage, can make a vaginal delivery dangerous and typically indicate a C-section. Important for this study, numerous conditions, such as dystocia (failure to progress or cephalopelvic disproportion), may have unclear diagnoses and can lead to varying interpretations among physicians. Such cases involve a high degree of discretion in determining whether a C-section is necessary, and the final decision between vaginal delivery or C-section is based on the physician's subjective evaluation.

We followed Currie and MacLeod (2017) in using the depth and breadth of our data to model each mother's underlying propensity to receive a C-section (versus vaginal) delivery based on her observable characteristics and those of her pregnancy. This measure, *C-section appropriateness*, is an important input for some of our analyses. We calculated *C-section appropriateness* in two steps. First, we took our initial sample of all births and ran a logit model predicting whether the birth resulted in a C-section. The independent variables in this model include indicators for the following features: mother's age group; mother's number of prior pregnancies and prior C-sections; whether it is a single baby, twins, or three or more babies; whether the fetal position is head down, pelvic, or transverse; gestational length groupings; indicators of morbidities such as pre-existing hypertension, pre-existing hypertension with pre-eclampsia, gestational edema and proteinuria without hypertension, gestational hypertension without significant proteinuria, pre-eclampsia, eclampsia, unspecified maternal hypertension; and several other maternal disorders related to pregnancy and maternal conditions associated with higher risk and delivery problems. The results of this regression are shown in Table 1. The findings are largely as expected: Older mothers, mothers who had prior C-sections, and mothers carrying multiple babies are more likely to get a C-section. Pregnancies with complexities related to fetal and placenta positions are also more likely to result in C-sections. Summary statistics for the main variables are shown in Table 2; additional summary statistics for the prevalence of maternal and pregnancy conditions in our data are provided in Online Appendix B, Table B1.

After estimating this model, we used the estimates to predict the likelihood that a birth would result in a C-section based on these characteristics of the mother and her pregnancy, namely, the predicted *C-section appropriateness* for the expectant mother.[6] As shown in Table 2, this measure has a mean of 0.41 and ranges from a minimum of 0.03, meaning a very high likelihood of a vaginal birth, to a maximum of 1, signaling a very high likelihood that the mother will require a C-section. The distribution of *C-section appropriateness* in the sample,

[6] We experimented with several alternative models and found that the correlation between the ranking of *C-section appropriateness* produced by our model and the ranking produced by the alternatives is above 0.90. These alternatives included a model with fewer risk factors and a model using only the births in the hospitals considered the best in the country. The estimated coefficients were similar in all these models, suggesting that there is little controversy about the ranking of which mothers are the best candidates for C-section. We discuss the classification performance of these models in Online Appendix C.

Table 1. Logistic Regression Predicting C-Section*

	(1) Coefficients	(2) Odds Ratio
Mother's age: Less than 18	–0.193$^{\bullet\bullet\bullet}$	0.824$^{\bullet\bullet\bullet}$
	(0.003)	(0.002)
Mother's age: 21–25	0.237$^{\bullet\bullet\bullet}$	1.268$^{\bullet\bullet\bullet}$
	(0.002)	(0.003)
Mother's age: 26–30	0.476$^{\bullet\bullet\bullet}$	1.610$^{\bullet\bullet\bullet}$
	(0.003)	(0.004)
Mother's age: 31–35	0.681$^{\bullet\bullet\bullet}$	1.977$^{\bullet\bullet\bullet}$
	(0.003)	(0.006)
Mother's age: More than 35	0.899$^{\bullet\bullet\bullet}$	2.458$^{\bullet\bullet\bullet}$
	(0.004)	(0.009)
Mother's prior C-section: One prior C-section	2.154$^{\bullet\bullet\bullet}$	8.619$^{\bullet\bullet\bullet}$
	(0.002)	(0.020)
Mother's prior C-section: Two+ prior C-sections	4.528$^{\bullet\bullet\bullet}$	92.537$^{\bullet\bullet\bullet}$
	(0.007)	(0.606)
Pregnancy type: Twins	1.794$^{\bullet\bullet\bullet}$	6.012$^{\bullet\bullet\bullet}$
	(0.009)	(0.056)
Pregnancy type: Three+ babies	2.317$^{\bullet\bullet\bullet}$	10.145$^{\bullet\bullet\bullet}$
	(0.089)	(0.903)
Fetal position: Pelvic	2.396$^{\bullet\bullet\bullet}$	10.974$^{\bullet\bullet\bullet}$
	(0.006)	(0.065)
Fetal position: Transverse	3.397$^{\bullet\bullet\bullet}$	29.873$^{\bullet\bullet\bullet}$
	(0.037)	(1.118)
Constant	-0.975$^{\bullet\bullet\bullet}$	0.377$^{\bullet\bullet\bullet}$
	(0.003)	(0.001)
Observations	10,649,875	10,649,875
Pseudo R-squared	0.289	0.289
Log pseudolikelihood	–7304407.6	–7304407.6

$^{\bullet}$ $p < .05$; $^{\bullet\bullet}$ $p < .01$; $^{\bullet\bullet\bullet}$ $p < .001$. Robust standard errors are in parentheses.
* Omitted categories are mother's age: 18–20 years; mother's prior pregnancies: 0; mother's prior C-sections: 0; pregnancy type: single; fetal position: head down. Regression includes unreported indicators for number of prior pregnancies and gestational length, and for missing values for mother's race, mother's prior pregnancies, mother's prior C-sections, pregnancy type, fetal position, and gestational length. Indicators for many conditions are also included but not reported to conserve space; see Online Appendix Table B1.

shown in Figure 1A, is rather spread out. As expected, *C-section appropriateness* positively correlates with having a C-section (see Online Appendix Figure C2). Figure 1B shows the distribution of *C-section appropriateness* for each mode of delivery. Despite significant variation, cases of vaginal delivery are concentrated at low values of *C-section appropriateness*, while cases of C-section are concentrated at high values. Bear in mind that this assessment of C-section appropriateness is based on the norms in Brazil at the time of the study.

Dependent Variable

Our dependent variable, *C-section*, is a binary variable equal to one if the birth was performed by a C-section and zero if the mother had a vaginal delivery.

Summary statistics, shown in Table 2, reveal that 34 percent of births in our regression sample were C-sections.[7]

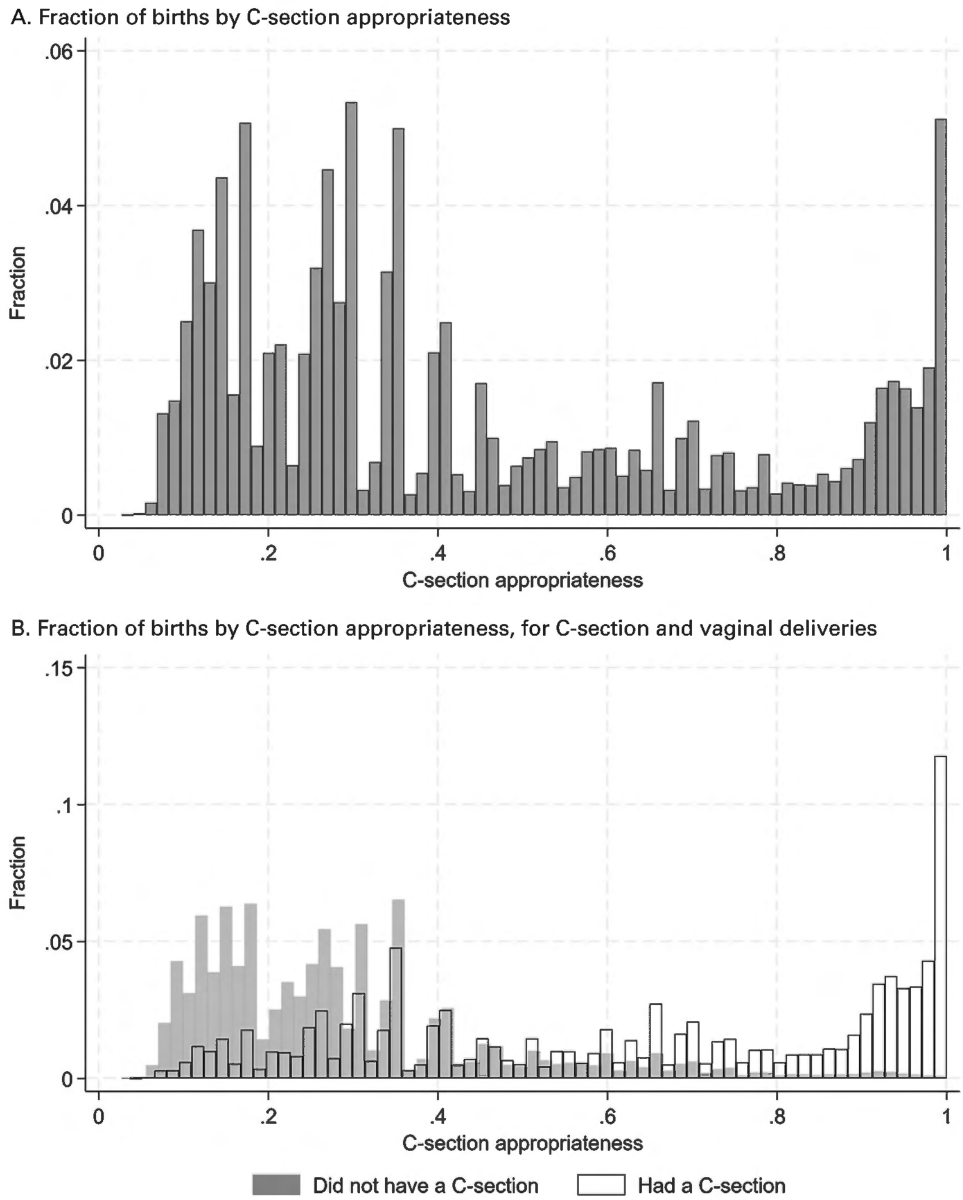
Table 2. Summary Statistics*

	Mean	SD	Min	Max
Behavior: C-section (0/1)	0.34	0.48	0.00	1.00
Peers' practice styles	0.46	0.06	0.03	1.00
Physician's practice style	0.45	0.06	0.03	1.00
Physician's task variety	1.42	0.47	0.00	4.88
Physician's task similarity	0.85	0.18	0.00	1.00
C-section appropriateness	0.41	0.28	0.03	1.00
Practice style of the pool of peers	0.46	0.04	0.15	1.00
Maternity ward's patient volume	2.99	1.69	1.00	26.00
Maternity ward's number of providers	3.36	1.80	2.00	23.00
Mother's age: Less than 18	0.11	0.31	0.00	1.00
Mother's age: 18–20	0.18	0.38	0.00	1.00
Mother's age: 21–25	0.28	0.45	0.00	1.00
Mother's age: 26–30	0.21	0.41	0.00	1.00
Mother's age: 31–35	0.14	0.34	0.00	1.00
Mother's age: More than 35	0.08	0.27	0.00	1.00
Mother's prior pregnancies: First pregnancy	0.37	0.48	0.00	1.00
Mother's prior pregnancies: Second pregnancy	0.28	0.45	0.00	1.00
Mother's prior pregnancies: Third pregnancy	0.16	0.36	0.00	1.00
Mother's prior pregnancies: Fourth+ pregnancy	0.15	0.36	0.00	1.00
Mother's prior pregnancies: Missing	0.05	0.21	0.00	1.00
Mother's prior C-section: No prior C-section	0.75	0.43	0.00	1.00
Mother's prior C-section: One prior C-section	0.14	0.35	0.00	1.00
Mother's prior C-section: Two+ prior C-section	0.04	0.19	0.00	1.00
Mother's prior C-section: Missing	0.07	0.26	0.00	1.00
Pregnancy type: Single	0.99	0.10	0.00	1.00
Pregnancy type: Twins	0.01	0.10	0.00	1.00
Pregnancy type: Three+ babies	0.00	0.01	0.00	1.00
Pregnancy type: Missing	0.00	0.03	0.00	1.00
Fetal position: Head down	0.95	0.21	0.00	1.00
Fetal position: Breach	0.03	0.16	0.00	1.00
Fetal position: Transverse	0.00	0.03	0.00	1.00
Fetal position: Missing	0.02	0.14	0.00	1.00
Pregnancy term: 28–31 weeks	0.01	0.10	0.00	1.00
Pregnancy term: 32–36 weeks	0.10	0.30	0.00	1.00
Pregnancy term: 37–38 weeks	0.25	0.43	0.00	1.00
Pregnancy term: 39–40 weeks	0.51	0.50	0.00	1.00
Pregnancy term: 41–42 weeks	0.11	0.32	0.00	1.00
Pregnancy term: 43+ weeks	0.01	0.10	0.00	1.00
Pregnancy term: Missing	0.00	0.05	0.00	1.00
Observations	4,981,710			

* All variables except the following are binary: peers' practice styles; physician's practice style; task variety; task similarity; C-section appropriateness; practice style of the pool of peers; maternity ward's patient volume; and maternity ward's number of providers.

[7] The C-section rate in the initial sample is 44 percent. The rate of C-section in the regression sample is lower than the rate in the initial sample because we excluded all scheduled C-sections from the regression sample.

Figure 1. Distribution of C-Section Appropriateness*



* C-section appropriateness is the predicted likelihood, based on the logistic regression reported in Table 1, that a birth will result in a C-section based on several maternal and pregnancy characteristics.

Independent Variables

Physician's practice style. Although our main independent variable is the practice styles of the peers working alongside a focal physician, we first needed to calculate each physician's own practice style regarding C-sections. Consistent with research on CEOs' and physicians' styles (Bertrand and Schoar, 2003; Van Parys, 2016; Gowrisankaran, Joiner, and Léger, 2022), we defined a practice style as a fixed, time-invariant characteristic of a physician. (We also implemented a time-varying measure as a robustness check, which we describe below.) In our context, practice style captures the physician's underlying preference for performing C-sections instead of vaginal deliveries, controlling for the characteristics of the mother and her pregnancy. Relying on physicians' practice styles, rather than their current practices, helped us to empirically address the reflection problem common in studying peer effects (Manski, 1993; Mas and Moretti, 2009) and to mitigate the impact of hospital-level arbitrary shocks that may simultaneously influence the practices of both a focal physician and their peers. We estimated each physician's practice style by using an AKM-type model (Abowd, Kramarz, and Margolis, 1999), a two-way fixed effects specification that isolates the persistent influence of the hospital from the individual physician's enduring propensity to perform a C-section. We took advantage of the mobility of several physicians across hospitals in the sample to identify physicians' styles separately from hospitals' styles.[8] Specifically, we estimated the following regression model, using ordinary least squares:

$$Csection_{i(ph)} = \gamma\ X_i + \mu_p + \mu_h + \varepsilon_{i(ph)},$$

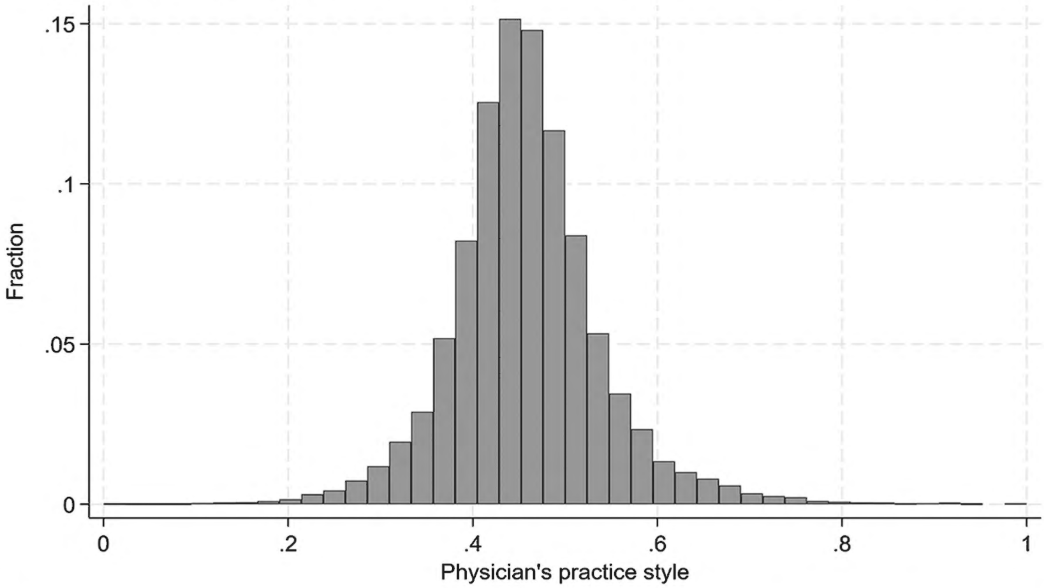
where $Csection_{i(ph)}$ is an indicator for whether the birth i (delivered by physician p in hospital h) is a caesarean section, X_i accounts for the appropriateness of getting a C-section based on the characteristics of the mother and the pregnancy (*C-section appropriateness*), μ_p are physician fixed effects, and μ_h are hospital fixed effects. We estimated this model using our initial sample, which includes all 10.6 million births. Our measure of *Physician's practice style* is the physician fixed effect estimated from this regression $\widehat{\mu_p}$ (normalized to have a minimum of 0 and a maximum of 1). Figure 2A shows the distribution of *Physician's practice style*. Physicians show significant variation in practice styles, with higher values of this variable associated with a higher propensity to perform a C-section (even after we controlled for characteristics of the mother and pregnancy). We used this measure of *Physician's practice style* to construct our main independent variable, *Peers' practice styles*.

Peers' practice styles. To determine the practice styles of a focal physician's peers, we calculated the average of the *Physician's practice style* for all peers who work (i.e., deliver a baby) in the same maternity ward that the focal physician is working in at about the same time (i.e., on the same shift or within a given time window around the focal birth). Our main specification uses the mean practice style of all peer physicians who perform a delivery in the same maternity ward in the window of four hours before to four hours after the focal birth time. That is, for a given focal birth, we calculated *Peers' practice styles* by taking the mean of the *Physician's practice style* for all peers who perform

[8] AKM estimates of the contribution of firm effects can be biased in the presence of limited mobility of workers across firms. In Online Appendix D, we focus on the largest connected set, which includes physicians and hospitals linked to at least one other hospital through the mobility of a physician. The findings presented in this article remain robust when we considered this alternative sample. Detailed results of the analysis limited to the largest connected set are provided in Online Appendix D.

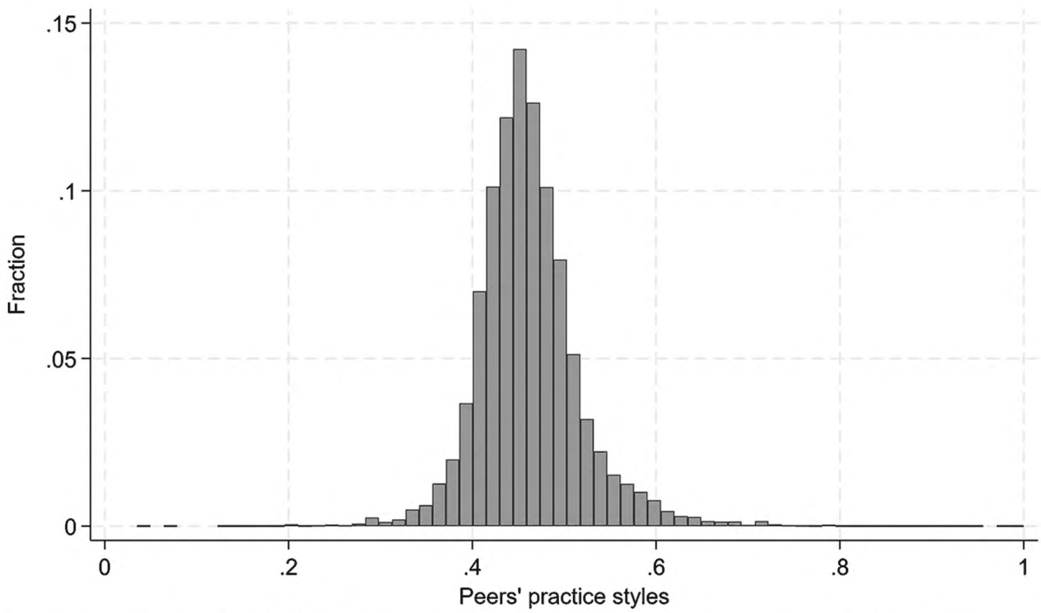
Figure 2. Distribution of Physician's Practice Style and Peers' Practice Styles

A. Physician's practice style*



* Low values represent a conservative practice style, and high values represent an aggressive practice style. All else equal, a physician with a conservative practice style will be more likely to perform a vaginal delivery, while a physician with an aggressive practice style will be more likely to perform a C-section.

B. Peers' practice styles*



* Low values indicate that peers have a more conservative practice style, and high values indicate that peers have a more aggressive practice style.

deliveries within that time window, weighted by the number of deliveries.[9] We experimented with multiple time windows—e.g., two hours before and after; six hours before and after; a typical work shift in the maternity ward, i.e., from 7 a.m. (p.m.) to 7 p.m. (a.m.); and day—and report the analysis using these alternative time windows as robustness checks. The variable *Peers' practice styles* ranges from a minimum of 0.03 to a maximum of 1 in the regression sample (Table 2). Figure 2B illustrates the distribution of this variable in the regression sample and highlights notable variation in peers' practice styles. Figure B1 of the Online Appendix shows the mean and standard deviations of *Peers' practice styles* by each individual physician, demonstrating significant dispersion in the practice styles of peers for the same individual physician.[10]

Moderating Variables

We examined how task structures within hospitals shape the extent of peer influence in the workplace. Drawing from recent organizational research on tasks (Wellman et al., 2020; Wilmers, 2020), we explored how workers' task variety and task similarity serve as key factors moderating peer influence within organizations. We used a comprehensive database of physician claims records to compile all the tasks performed by each physician, including consultations, diagnostic evaluations, and a range of medical procedures—from routine treatments like diabetes management to deliveries (vaginal and C-section) and surgeries such as hysterectomies, laparoscopies, and tubal ligations. Tasks are categorized and assigned specific codes by the Ministry of Health, ensuring a standardized approach to documenting physician activities. This database provides unparalleled visibility into the provision of medical tasks, capturing every instance of a physician performing a task. Leveraging these detailed records, we created measures for each physician's task variety and task similarity (i.e., how closely the tasks performed by a focal physician resemble those carried out by their peers). Examples of the tasks performed by physicians in our sample are presented in Online Appendix Table B2.

Physician's task variety. In our context, tasks refer to a broad range of clinical and surgical procedures, from routine consultations to more-complex interventions, such as high-risk deliveries and major surgeries. Physician's task variety reflects the breadth and diversity of tasks within a physician's practice. For instance, a physician with high task variety might engage in a mix of activities that includes managing pregnancy intercurrences, treating chronic conditions like diabetes, and performing both minor and major surgeries. Conversely, a physician with low task variety might focus more narrowly on

[9] We used a leave-out measure in which we calculated, for each physician–birth, the average style of all other physicians, excluding the style of the focal physician. We calculated a weighted average peer style based on the number of deliveries of each provider to account for the larger influence of those physicians who deliver many versus few babies in the maternity ward during the time window.

[10] Figure B2 of the Online Appendix depicts the mean and standard deviations of *Peers' practice styles* by day of the week and hour of the day. This figure shows some fluctuation but no stark disparity in *Peers' practice styles* across days of the week and hours of the day.

a few procedures, such as conducting deliveries. Figure 3 illustrates the task profiles (at two different levels of task aggregation) for two physicians in our data: one with low task variety and one with high task variety. The physician with high task variety performs a broader mix of childbirth, clinical procedures, consultations, obstetric surgeries, and surgical procedures (e.g., hysterectomy), while the physician with low task variety focuses mainly on childbirth and obstetric surgeries.

We calculated physician's task variety by using the Theil entropy score, a measure previously applied to assess task variety within jobs (Wilmers, 2020). We calculated task variety for each physician i in quarter t, using the following formula:

$$Entropy_{i,t} = \sum_{j=1}^{m} \left(\frac{N_{i,j,t}}{N_{i,t}}\right) * log\left(\frac{N_{i,t}}{N_{i,j,t}}\right)$$

where $N_{i,j,t}$ represents the total number of times physician i performed task j in quarter t, and $N_{i,t}$ is the total number of tasks performed by physician i in quarter t (thus, $N_{i,j,t}/N_{i,t}$ represents the share of task j out of all tasks performed by physician i in quarter t). The variable $Entropy_{i,t}$, representing the entropy-based task variety of a physician in a specific quarter, quantifies the diversity of tasks undertaken by the physician. A higher score indicates that the physician engages in a more diverse set of tasks, while a lower score suggests a more focused practice with a narrower set of tasks. We define *Physician's task variety* as the physician's entropy score based on the tasks performed in the hospital during the previous quarter. We performed multiple robustness checks, described below, to address concerns that this measure may not adequately account for the similarity (or lack thereof) between tasks or the differences between the breadth and distribution of an individual's set of tasks.

Physician's task similarity with peers. We calculated physician's task similarity with peers by using the cosine similarity between the tasks performed by the focal physician and the tasks performed by their peers on duty. We calculated this variable in two steps. First, we calculated the cosine similarity between the tasks performed by physician i and every other physician j in the hospital in quarter t, using the following formula:

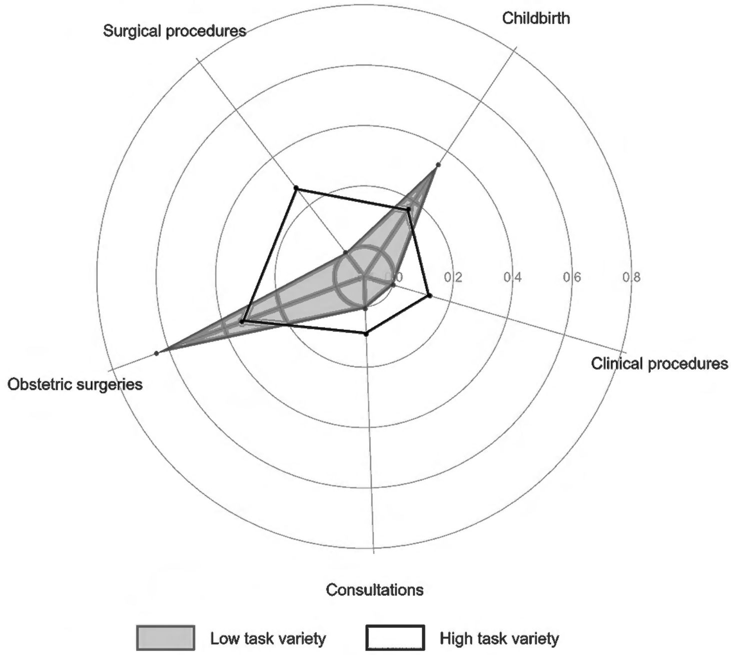
$$Cosine\ similarity_{i,j,t} = \frac{v_{i,t} \cdot v_{j,t}}{(||v_{i,t}|| * ||v_{j,t}||)}$$

where $v_{i,t}$ and $v_{j,t}$ are vectors representing the tasks performed by physician i and physician j in quarter t, respectively, $\cdot$ denotes the dot product of the two vectors, and $||v_{i,t}||$ and $||v_{j,t}||$ denote the Euclidean norms of the vectors $v_{i,t}$ and $v_{j,t}$.[11] With non-negative elements, the cosine similarity ranges from 0 to 1,

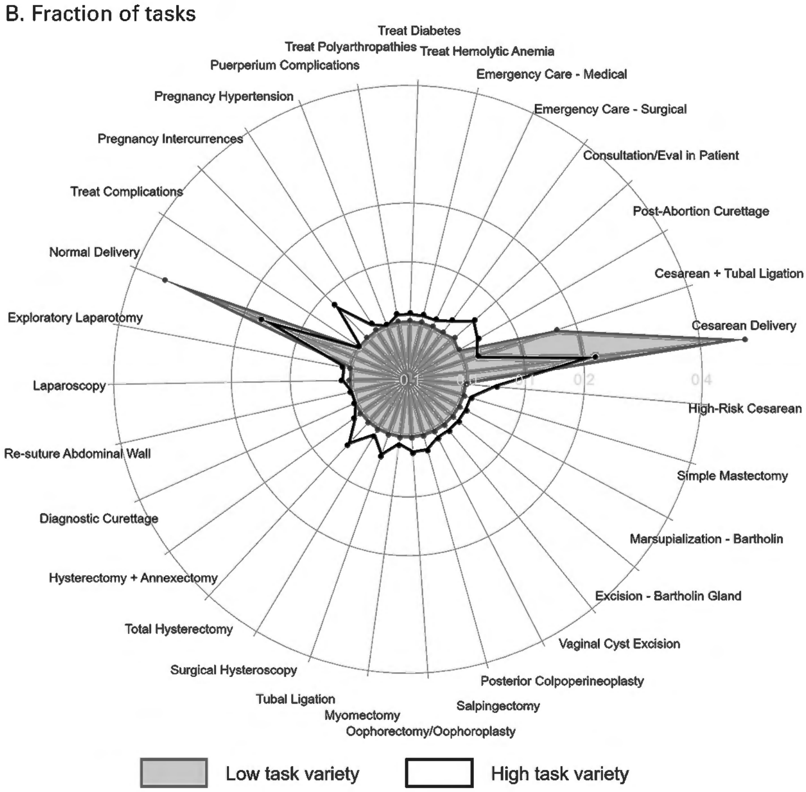
[11] Each element of this vector corresponds to a specific task, and the value of each element indicates the number of times that particular task was performed by physician i during quarter t. For instance, if the vector includes tasks like patient consultations, vaginal deliveries, caesarean sections, tubal ligations, and hysterectomies, the value of each element would represent the respective number of times each task was undertaken by physician i during quarter t. This vector provides a quantitative representation of the tasks performed by a physician within the specified time period.

Figure 3. Physicians' Task Profiles*

A. Fraction of tasks at the task group level



B. Fraction of tasks



* Each spike represents a task group in Figure 3A and an individual task in Figure 3B. The grids indicate the share of each task in the physician's overall workload, starting from −0.1 for clearer visualization, though the task share is between 0 and 1. Figure 3B presents the distribution of individual tasks.

with values closer to 1 implying higher similarity. Second, for each focal birth, we calculated *Physician's task similarity* by averaging the cosine similarity between the focal physician *i* and every peer physician *j* who performs deliveries four hours before and after the focal birth time.[12]

Control Variables

We controlled for several variables that may influence the likelihood that a mother will receive a C-section rather than a vaginal delivery. In our regressions, we included controls for the mother's characteristics (age category, past pregnancies, prior C-sections) and pregnancy characteristics (single/multiple, fetal position, pregnancy length). We also added indicators for various conditions associated with the likelihood of a C-section or adverse pregnancy outcome, which are listed in the Choice of Delivery Approach section above. Our models further control for the maternity ward's patient volume in the four hours prior to the focal birth and the number of providers working at the maternity ward around the time of the focal birth (within the window four hours before and after the birth). Last, to address the exclusion bias observed in studies of peer effects (Guryan, Kroft, and Notowidigdo, 2009; Caeyers and Fafchamps, 2020), we controlled for the average practice style of the complete pool of physicians who worked at the hospital within the previous 30 days.

Our models include a full set of physician fixed effects to account for any time-invariant proclivity of a physician to perform a C-section. To account for various characteristics of a workplace that may systematically vary across days of the week and hours—e.g., patient volume, patient composition, staff size—we included hospital $\times$ day of the week $\times$ hour fixed effects. These fixed effects control for systematic differences between weekdays and weekends or morning and evening shifts that may influence the likelihood of a C-section. Finally, we included hospital-by-quarter fixed effects to account for both time-invariant characteristics of hospitals (e.g., teaching versus for-profit) and time-varying characteristics of hospitals (e.g., size of the maternity ward) that may influence the likelihood of a C-section. The hospital $\times$ quarter fixed effects also control for temporal variation in the propensity to perform a C-section that is common across all physicians within a hospital.

Empirical Strategy

We examined a physician's decision to perform a C-section when working alongside different peer groups, accounting for several characteristics of the mother, pregnancy, and workplace environment that may confound this relationship. Thus, we were looking at changes in a physician's individual behavior (i.e., a within-physician effect). This estimation is possible because a given

[12] Similar to how we calculated task variety, we used cosine similarity lagged by one quarter to mitigate the potential influence of current decisions regarding birth delivery on the measurement of task similarity. We calculated the *Physician's task similarity* by taking a weighted average cosine similarity, factoring in the number of deliveries performed by each peer physician. This approach accounts for the higher exposure to physicians who deliver more babies in the maternity ward within the specified time window.

physician works in many peer group configurations over time. Specifically, we estimated the following equation using ordinary least squares[13]:

$$Csection_{i(pht)} = \boldsymbol{\beta}\ Peers'\ practice\ styles_{i(pht)} + \gamma\ X_{i(pht)} + \mu_p + \delta_{ht} + \varepsilon_{i(pht)},$$

where $Csection_{i(pht)}$ is an indicator of whether the birth *i* (delivered by physician *p* in hospital *h* in time *t*) was a caesarean section. $Peers'\ practice\ styles_{i(pht)}$ captures the practice styles of peer physicians (in which higher values indicate that peers are more inclined to perform C-sections relative to vaginal deliveries, when we control for features of the mother and the pregnancy), and $X_{i(pht)}$ represents controls for the mother's characteristics and birth characteristics described above. The models also include physician fixed effects (μ_p), hospital $\times$ quarter fixed effects, and hospital $\times$ day of the week $\times$ hour fixed effects (δ_{ht}). We computed two-way clustered standard errors at the physician and hospital levels, to account for potential serial correlation at the physician and hospital levels.[14] Note that sample sizes are slightly reduced in some regression models because some individual observations appear only once within a group. As recommended by Correia (2015), we removed these singleton observations from the regressions. The coefficient β in the above model captures the influence of peers' permanent practice styles on a physician's current decision to perform a C-section. A positive β indicates that working alongside peers with practice styles that favor C-sections over vaginal deliveries increases a physician's likelihood of performing a C-section (H1).

Our theory further proposes that the influence of peers' practice styles on a focal physician's behavior will be greater when the focal physician engages in a wider variety of tasks in the hospital (H2). To test this hypothesis, we interacted the variable *Peers' practice styles* with the variable *Physician's task variety*. A positive coefficient for the interaction term indicates that peer influence is stronger for physicians with higher task variety in their work. Finally, we argue that the influence of peers on a physician's behavior will be greater when the focal physician and their peers engage in similar tasks (H3). We tested this hypothesis by interacting the variable *Peers' practice styles* with the variable *Physician's task similarity*. A positive coefficient on the interaction term suggests that peer influence is stronger for physicians whose tasks are similar to those of their peers.

The estimation of peer influence poses several challenges; the primary obstacles involve reflection bias, correlated effects, exclusion bias, and nonrandom assignment. Reflection bias refers to the challenge of disentangling the causal impact of peers from the reciprocal influence they might have on one another (Manski, 1993). Following recent research on peer effects (Mas and

[13] We used linear probability models given the computational demands arising from the size of the dataset (over 5 million observations) and the number of covariates (50+ control variables, approximately 16,000 physician fixed effects, 24,000 hospital $\times$ quarter fixed effects, and 120,000 hospital $\times$ day of the week $\times$ hour fixed effects). Linear probability models are easier to interpret and have been extensively employed by researchers using administrative data to examine binary outcomes such as C-section and patient mortality (Epstein and Nicholson, 2009; Greenwood, Carnahan, and Huang, 2018).

[14] Given that the variable *Peers' practice styles* is derived from estimates of *Physician's practice style*, we also computed bootstrap standard errors to account for potential measurement error in *Physician's practice style*. We discuss the results in more detail below.

Moretti, 2009; Cornelissen, Dustmann, and Schönberg, 2017), we addressed the reflection problem by focusing on the influence of peers' permanent practice styles instead of their current practices. A regression model of changes in peers' current practices on changes in a focal physician's contemporaneous C-section decisions presents a challenge, as the behavior of peers may influence the focal physician and vice versa. Our approach based on peers' permanent practice style addresses this reflection problem in that the practice style of each individual peer physician remains constant over time.

Correlated effects can emerge when contextual factors simultaneously impact the actions of both focal individuals and their peers. For example, a certain day of the week at a given hospital may routinely have higher volumes of expectant mothers requiring C-sections, which may shape the behavior of both focal physicians and peers. We addressed this issue by including hospital $\times$ day of the week $\times$ hour fixed effects, which purges any contextual effects that affect all physicians in a particular day-of-week and hour combination.

Examining peer effects within the boundaries of an organization might also introduce the problem of exclusion bias. This issue arises because the sampling of peers is done without replacement, meaning an individual cannot be considered their own peer. Exclusion bias stems from the fact that each individual's peers are drawn from a population of different characteristics. Because peers of physicians who favor C-sections are selected from a pool with a lower measure of the *Physician's practice style* variable, exclusion bias tends to underestimate the magnitude of peer effects. We addressed this issue by implementing a correction proposed by Guryan, Kroft, and Notowidigdo (2009), which involves controlling for the practice style of all physicians in the hospital, excluding the focal physician (*Practice style of the pool of peers*).[15] Further, exclusion bias is particularly problematic when the pool of peers is fixed and small (Caeyers and Fafchamps, 2020). In our setting, the composition of peer groups varies considerably due to the influx and departure of physicians in a hospital. While the size of the physician pool in a hospital can be small, substantial variation exists across hospitals, and our findings are largely consistent when we limit the analyses to larger hospitals with 20 or more physicians in the course of a year.

Finally, an important issue in studying peer effects is the possibility of nonrandom assignment of individuals and peer groups. One concern with our empirical approach is that physicians with specific practice styles might sort into shifts with idiosyncratic characteristics, resulting in spurious estimates of peer effects. For example, physicians with practice styles favoring C-sections might prefer to work on certain days and hours when expectant mothers are more likely to need a C-section. In this case, the positive correlation between peers' practice styles and a physician's likelihood to perform a C-section is confounded by (invariant) characteristics of the shift and by the composition of patients in the shift. A second concern is that physicians may be matched with other physicians on a particular shift based on their characteristics (e.g., practice style) or the characteristics of their peers. For example, physicians with practice styles that favor vaginal deliveries might be matched with physicians who favor C-sections, which could bias our results. We addressed these concerns in several ways.

[15] We specifically controlled for the mean practice style of all peer physicians who worked at the hospital within the previous 30 days.

First, we excluded all scheduled C-sections from our regression sample, removing cases in which the C-section procedure was decided in advance and scheduled to a particular day and time, which may correlate with the characteristics of physicians on the shift. By removing all scheduled C-sections, we also limited the chances of a woman having chosen a specific physician or a physician having chosen a specific case.

Second, we included a large set of hospital–time fixed effects (day of the week by hour [e.g., Mondays 7 a.m.] indicators and quarter–year [e.g., 2017q1] indicators, both fully interacted with hospital indicators) to allow for arbitrary sorting of physicians and peer groups across shift types (i.e., day of the week by hour combinations). Inclusion of these fixed effects helps to address the possibility of physicians sorting into shifts with specific organizational features (e.g., peers with a particular practice style) and patient types (e.g., expectant mothers needing a C-section on Monday mornings).[16] For example, if physicians whose practice style favors C-sections regularly work on Monday mornings—when a higher number of patients might require a C-section—the positive correlation between the style of peers and the likelihood of a C-section could be spuriously explained by the characteristics of the shift. The inclusion of hospital $\times$ day of the week $\times$ hour fixed effects controls for any enduring differences across hospital shifts.

Third, we conducted a typical test for random assignment (Guryan, Kroft, and Notowidigdo, 2009; Caeyers and Fafchamps, 2020) and found that *Peers' practice styles* does not predict the practice style of a focal physician (see Online Appendix Table B3). We also investigated whether the practice styles of peers systematically correlate with certain observable characteristics of the expectant mothers. If the confounding mechanism revolves around physicians sorting into different shifts, we should expect women and pregnancies to be observably similar across different peer groups, conditional on hospital–time fixed effects. We found little evidence that peers' practice styles correlate with relevant characteristics of expectant mothers, conditional on hospital–time fixed effects (see Table 3). We also show that our peer influence estimates are robust to different samples (e.g., day versus night shifts, weekday versus weekend shifts), models (e.g., including physician $\times$ day-of-week $\times$ hour-of-day fixed effects),[17] and variable specifications (e.g., calculating peers' practice styles using multiple time windows).

Finally, to address the concerns regarding physicians matching with one another based on practice style (and other observable characteristics) or physicians matching to specific shifts, we implemented a selection-on-observables approach using inverse probability of treatment weights (Chown and Liu, 2015; Azoulay, Liu, and Stuart, 2017). This method portrays the non-random matching

[16] Even with hospital–time fixed effects, the nature of our setting and data allows the estimation of peer effects. We can recover peer effect estimates because of changes in schedule, turnover, vacation, and retirement of peers. That is, in a given day of the week–hour combination (e.g., Monday 7 a.m.), the same maternity ward exhibited different peer group configurations. The characteristics of our setting and sample—exclusion of planned C-sections, no prior relationship between patients and providers, natural variation in time of labor—minimize the possibility of a provider having anticipated variations in the pool of (non-scheduled) patients in a given day of the week–hour combination.

[17] The results from these alternative models are not included in the manuscript or Online Appendix but can be obtained from the authors upon request.

Table 3. Peers' Practice Styles and Maternal and Pregnancy Characteristics*

	(1) High-Risk Births	(2) Low-Risk First Births	(3) Mother's Age	(4) Had Prior C-Section	(5) Fetal Position: Breech or Transverse	(6) Pregnancy Weeks	(7) Birthweight in Grams
Peers' practice styles	0.016	0.000	0.062	0.012	0.005	0.018	10.849
	(0.011)	(0.006)	(0.119)	(0.010)	(0.003)	(0.031)	(7.585)
Physician FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospital × Day of week × Hour FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospital × Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,969,667	4,969,667	4,969,667	4,612,053	4,865,688	4,956,709	4,890,022
Adjusted R-squared	0.055	0.030	0.024	0.084	0.059	0.055	0.035

• $p < .05$; •• $p < .01$; ••• $p < .001$. Two-way clustered standard errors at the hospital and physician levels are in parentheses.
* This table shows the results from ordinary least squares (OLS) models predicting maternal and pregnancy characteristics as a function of peers' practice styles. The variation in sample size across the models is attributed to the presence of missing observations in the dependent variable. Each model shows a separate regression for the following dependent variables: (1) indicator for high-risk births (mothers with prior C-section or with babies in breech/transverse position), (2) indicator for low-risk first births (first-time mothers of single baby at term in head-down position), (3) mother's age, (4) indicator for prior C-section, (5) indicator for breech or transverse fetal position, (6) gestational length (in weeks), and (7) newborn's birthweight (in grams).

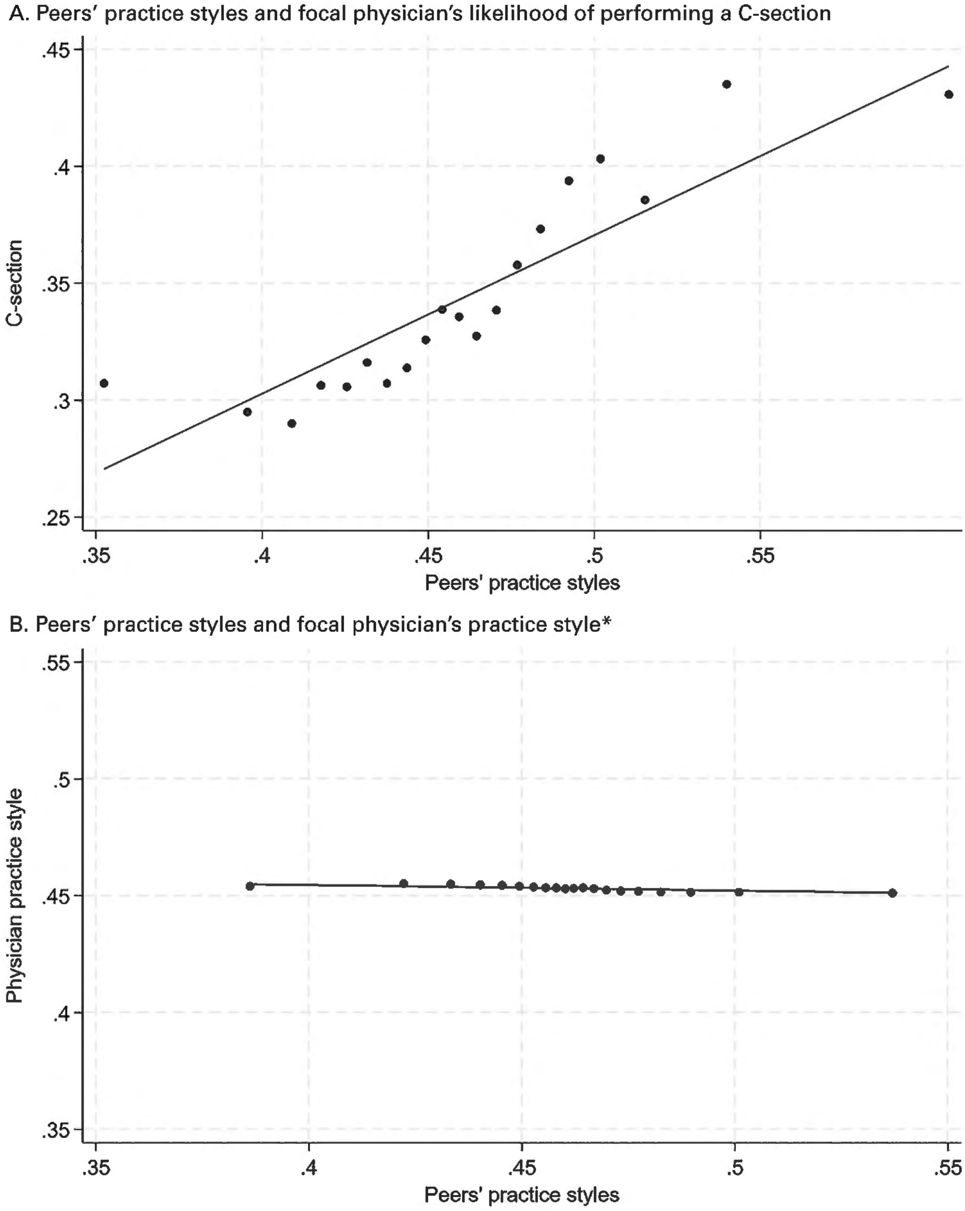
of physicians as a selection problem (Azoulay, Liu, and Stuart, 2017). That is, we observed the realized matches between physicians on shifts but did not observe all the potential combinations of physicians and shifts that did not occur—the counterfactual pairings. Following convention, we analyzed data in a two-stage sample selection framework (Heckman, 1979). We describe this method in more detail in Online Appendix E. This approach yields consistent results, providing further evidence that our results are not driven purely by matching physicians to particular peer groups.

RESULTS

Figure 4A shows a binned scatterplot of the relationship between peers' practice styles and a physician's likelihood of performing a C-section, without fixed effects.[18] The positive relationship suggests that physicians are more likely to perform C-sections when working alongside peers whose practice style favors this practice, providing preliminary support for H1. In Figure 4B, the binned scatterplot shows a weak relationship between peers' practice styles and the focal physician's own style, indicating that physicians with specific styles are not more likely to work alongside similarly oriented peers, consistent with random assignment.

[18] A model that includes physician fixed effects and hospital × time fixed effects produces a similar figure. Binned scatterplots provide a non-parametric way of visualizing the relationship between two variables by grouping the independent variable into evenly spaced bins, calculating the mean of the dependent variable within each bin, and then plotting the average values of both variables. The figure was generated using the Stata command *binscatter2*.

Figure 4. Peer Influence and Random Assignment



* This model includes the practice style of the pool of peers as a control variable, as well as hospital × time fixed effects to account for physician selection into each hospital at particular day-of-week and hour combinations.

Table 4. Peer Influence and Physician's Task Structure*

	(1)	(2)	(3)	(4)
	C-Section			
Peers' practice styles	0.178•••	0.058	0.036	–0.067
	(0.025)	(0.049)	(0.056)	(0.062)
Physician's task variety		–0.041••		–0.039••
		(0.014)		(0.014)
Peers' practice styles × Physician's task variety		0.090••		0.083••
		(0.031)		(0.031)
Physician's task similarity			–0.084••	–0.079••
			(0.028)	(0.028)
Peers' practice styles × Physician's task similarity			0.190••	0.180••
			(0.063)	(0.063)
Practice style of the pool of peers	–0.441•••	–0.444•••	–0.438•••	–0.440•••
	(0.091)	(0.090)	(0.090)	(0.089)
Maternity ward's patient volume	–0.017•••	–0.017•••	–0.017•••	–0.017•••
	(0.001)	(0.001)	(0.001)	(0.001)
Maternity ward's number of providers	0.015•••	0.015•••	0.015•••	0.015•••
	(0.001)	(0.001)	(0.001)	(0.001)
Mother and pregnancy controls	Yes	Yes	Yes	Yes
Physician FE	Yes	Yes	Yes	Yes
Hospital × Day of week × Birth hour FE	Yes	Yes	Yes	Yes
Hospital × Quarter FE	Yes	Yes	Yes	Yes
Observations	4,969,667	4,969,667	4,969,667	4,969,667
Adjusted R-squared	0.450	0.450	0.450	0.450

• $p < .05$; •• $p < .01$; ••• $p < .001$. Two-way clustered standard errors at the hospital and physician levels are in parentheses.

* Sample excludes scheduled C-sections and is restricted to births performed by physicians during times in which at least one peer is in the maternity ward. The dependent variable is an indicator variable that equals one if the mode of delivery is an unscheduled C-section and zero if it is a vaginal delivery. The independent variable *Peers' practice styles* is the weighted average practice style of all peers delivering babies in the same maternity ward during the interval of four hours before and after the focal birth time. All models include control variables for the mother's characteristics (age category, past pregnancies, prior C-sections) and pregnancy characteristics (single/multiple, fetal position, pregnancy length). The models also include indicators for various conditions that are associated with the likelihood of a C-section or adverse pregnancy outcome.

Table 4 reports the models testing the hypotheses.[19] Model 1 examines the relationship between *Peers' practice styles* and the physician's likelihood to perform a C-section (H1). The coefficient on *Peers' practice styles* is positive and statistically significant, indicating that physicians are more likely to perform a C-section when working alongside peers whose practice styles favor C-sections. An increase of one standard deviation in *Peers' practice styles* (SD = 0.06) is associated with a one percentage point increase in a physician's likelihood of delivering a C-section (a 3 percent increase from the mean rate of

[19] Online Appendix Table B4 presents naïve models that include only physician fixed effects, excluding hospital-by-time fixed effects. The results from these models are consistent with our main findings.

C-section in the regression sample).[20] Based on our sample of nearly 5 million births, this translates to an additional 53,000 C-sections in the public health system. These findings corroborate H1.

We next considered how the variety of tasks performed by a physician moderates the influence of peers' practice styles on their behavior regarding C-sections (H2). To do so, we interacted *Peers' practice styles* and the variable *Physician's task variety*. Model 2 reports the regression estimates. We found that, consistent with H2, the physicians who undertake a greater variety of tasks within the hospital are more susceptible to their peers' influence. Peer influence is four percentage points stronger for physicians with one standard deviation higher task variety ($0.09 \times 0.47 = 0.04$). Hence, peer influence is 73 percent higher for physicians with one standard deviation higher task variety ($0.04/0.058 = 0.73$). For robustness, we performed the same analysis but replaced our continuous measure of *Physician's task variety* with an indicator variable that is equal to 1 if the physician has a task variety above the median among physicians in the country. The estimates from this regression (Online Appendix Table B5, Model 2) indicate that peer influence is 5.9 percentage points stronger for physicians with high task variety compared to those with low task variety. This difference represents a 40 percent increase in the magnitude of peer influence relative to physicians with low task variety ($0.059/0.149 = 0.4$).

Finally, we investigated how a physician's task similarity shapes their peers' influence on the physician's behavior regarding C-sections (H3). Table 4, Model 3 shows the estimates of a regression model that includes an interaction between *Peers' practice styles* and the variable *Physician's task similarity*. This model shows that the influence of peers' practice styles on a physician's behavior is more pronounced among physicians who perform tasks that closely resemble those performed by their peers. Peer influence is three percentage points stronger for physicians with one standard deviation higher task similarity ($0.19 \times 0.18 = 0.03$), implying that peer influence is 95 percent higher for physicians with one standard deviation higher task similarity ($0.03/0.036 = 0.95$). For robustness, we performed this analysis using an indicator variable that is equal to one for physicians with task similarity above the median among physicians in the country. The estimates from this regression (Online Appendix Table B6, Model 2) indicate that peer influence is 6.7 percentage points stronger for physicians with high task similarity compared to those with low task similarity (a 45 percent increase relative to the peer influence on physicians with low task similarity). These findings support H3.

Table 4, Model 4 shows estimates from a saturated model testing both H2 and H3. In this model, the interactions between *Peers' practice styles* and the variables capturing the physician's task structure remain positive and significant, supporting our moderating hypotheses. The results are consistent when we used bootstrap standard errors.[21] These findings suggest that the task

[20] A physician who shifts from working with peers who have a typical median practice style (*Peers' practice style* = 0.46) to working with peers in the 99th percentile of practice style (*Peers' practice style* = 0.64) experiences a 3.4 percentage point increase in the likelihood of performing a C-section. This represents a 9.4 percent increase relative to the mean C-section rate in the sample.

[21] Online Appendix Table B7 shows the results using bootstrap standard errors clustered at the hospital and provider levels. The bootstrap standard errors were computed via a nonparametric bootstrap method with 50 replications, involving resampling of the data. The conclusions we draw in this article remain consistent when we used bootstrap standard errors.

structure within organizations significantly shapes the magnitude of peer influence in the workplace.

Robustness Checks

We performed several checks to examine the credibility of our empirical approach and the robustness of our findings. First, we examined the credibility of our empirical approach by investigating whether *Peers' practice styles* systematically correlates with observable characteristics of the mothers and pregnancies. Even though the features of our setting and inclusion of hospital–time fixed effects greatly reduce the influence of physician sorting across shift types, a lingering concern is that peers with practice styles favoring C-sections will work at times when mothers are more likely to need a C-section, resulting in a positive correlation between the *Peers' practice styles* and the likelihood of a C-section. If this is the case, *Peers' practice styles* would be positively related to mother and pregnancy characteristics that predict C-sections. Table 3 examines the relationship between *Peers' practice styles* and several mother and pregnancy characteristics. We found that *Peers' practice styles* is not significantly related to high-risk births, low-risk first births, mother's age, mother with prior C-sections, baby in breech or transversal position, pregnancy length, or baby's birthweight.[22] Together, these results indicate that *Peers' practice styles* is not systematically correlated with maternal and pregnancy characteristics predicting a C-section, and suggest that our findings are not driven by changes in patient composition across peer group configurations.

Second, we examined whether physicians and their peers are randomly assigned to one another and to shifts. Although the characteristics of the setting and controls for shift type mitigate concerns about physician selection into shifts, the nature and breadth of the data prevent us from completely ruling out non-random assignment. As described above, we conducted multiple analyses to address this concern: (1) We conducted a typical test for random assignment to assess whether peers' practice styles predict the practice style of the focal physician (see Online Appendix Table B3), and (2) we implemented two selection-on-observables approaches to account for the possibility that a physician might choose certain shifts or specific peers (see Online Appendix E). Online Appendix Table B3 shows that, after we controlled for shift type (i.e., hospital $\times$ day of the week $\times$ hour fixed effects), there is no indication of physicians being non-randomly assigned to their peers.[23] In addition, the results from Online Appendix E show that the paper's conclusions remain unchanged even after we implemented two different selection-on-observables corrections that model the assignment of physicians to peers and to shifts.

Third, we considered the robustness of the findings to alternative measures of *Peers' practice styles*. Our main independent variable looks at the average practice style of peers who delivered babies in the hospital in the time window

[22] High-risk births involve mothers who have had a previous C-section or whose baby is in a breech or transverse position. Low-risk births involve first-time mothers between the ages of 18 and 30, who are full term, have a single baby in a head-down presentation, and do not have any clinical indications for a C-section.

[23] Our analysis in Table 3, which demonstrates that *Peers' practice styles* is not systematically correlated with the characteristics of mothers and pregnancies, further supports the idea that physicians do not self-select into shifts based on patient composition.

from four hours before the focal birth to four hours after the focal birth. We investigated the sensitivity of our peer influence estimate to alternative time windows: two hours before and after the focal birth, six hours before and after the focal birth, a window based on typical work shifts (7 to 7), and birth date. Online Appendix Table B8 shows the results based on these different independent variables. Across the models, we found a positive relationship between *Peers' practice styles* and the likelihood of a C-section. The magnitude of the coefficients decreases as the time window increases, suggesting that peer influence is larger for a narrower set of peers who are more likely to be in the maternity ward during the focal birth. Thus, our main findings are robust to alternative measures of peers' practice styles.

Fourth, we explored alternative ways to capture a physician's task variety. In Online Appendix Table B5, we present various measures of *Physician's task variety*. Model 1 uses the entropy score (the same variable used in our main analyses in Table 4), while Model 2 uses an indicator variable denoting physicians with high task variety (above the median of physicians in the country). In Model 3, we incorporated a measure of task concentration using the Herfindahl–Hirschman index,[24] and Model 4 uses an indicator variable for physicians with high task concentration (above the median of physicians in the country). The results of these models support our primary findings.

One concern with our measure of task variety is that it may not fully capture the diversity of tasks. For example, a consultation for diabetes treatment may be quite similar to one for hypertension, and a C-section could resemble a C-section in a high-risk pregnancy. To address this, we took advantage of features of the Ministry of Health's standardized hierarchical coding system, in which tasks are assigned ten-digit codes, with each pair of digits representing a category or subcategory. We calculated task variety by using increasingly aggregated definitions: at the six-digit, four-digit, and two-digit levels (our original measure used the full ten-digit codes). For instance, at the four-digit level, all consultations are grouped as one task, while all obstetric surgeries are grouped as another. Online Appendix Table B9 reports regressions using these alternative measures of task variety based on six-, four-, and two-digit codes, showing that our findings remain consistent across these varying definitions of task variety.

Another concern with our task variety measure is that it may capture both the breadth of tasks (i.e., the number of distinct tasks) and the distribution of activity across those tasks (i.e., how evenly the tasks are performed). To clarify the relative importance of these dimensions, we created a separate measure of task breadth, defined by the number of distinct tasks a physician performs. When we substituted task breadth for task variety in our models, we found that task breadth alone marginally moderates peer influence (see Online Appendix Table B10). In contrast, task variety continues to significantly moderate peer influence even when we controlled for task breadth (see Online Appendix Table B11). These results suggest that the moderating effect of task variety is not solely about performing a greater number of distinct tasks but, rather, reflects a meaningful distribution of activity across tasks.

[24] Note that the Herfindahl–Hirschman index measures task concentration, which is the opposite of task variety. Therefore, the sign of the interaction term between *Peers' practice styles* and the Herfindahl–Hirschman index measure of task concentration will be reversed.

Fifth, in Online Appendix Table B6, we investigate alternative measures of *Physician's task similarity*. Model 1 uses the cosine similarity score (used in our main analyses in Table 4), while Model 2 uses an indicator variable for physicians with high task similarity (above the median of physicians in the country). In Model 3, we incorporated a measure of task dissimilarity based on Euclidean distance, and Model 4 uses an indicator variable for physicians with high task dissimilarity (above the median in the country).[25] The results from these analyses provide further support for our findings.

Sixth, we explored the robustness of our findings by using a time-varying measure of *Physician's practice style* rather than a time-invariant measure based on physician fixed effects. We computed the time-varying measure using the physician's cumulative C-section rate up to 24 hours prior to the focal birth time.[26] We then used this alternative measure of physician's practice style to determine the variable *Peers' practice styles*, based on the peers who perform deliveries within the four-hour window before and after the focal birth time. Note, however, that this measure captures prior behavior (i.e., C-section rate) rather than a physician's underlying tendency to perform C-sections (after we controlled for features of the mother and the pregnancy). The results based on this alternative variable are presented in Online Appendix Table B12. Although we opted for a time-invariant measure of physician's practice style to address the reflection problem, the findings remain qualitatively consistent with this alternative approach.[27]

Lastly, we assessed the sensitivity of peer effects estimates to various subsamples. A potential concern is that our findings will be limited to specific shifts or days of the week. Online Appendix Table B13 shows that our peer influence estimates are robust to samples of both day and night shifts (Models 1 and 2, respectively) and samples of both weekdays and weekends (Models 3 and 4, respectively). Another concern is that our findings may be driven by private hospitals involved in both public and private health care systems. Online Appendix Table B14 demonstrates that our results remain consistent in the subset of public hospitals, in which physicians do not interact with those handling births in the private system during their shifts. Furthermore, our results are consistent when we restricted the sample to hospitals with more than 20 providers, as organizations with larger pools of workers are less likely to suffer from exclusion bias in the estimation of peer effects (Online Appendix Table B15). Finally, we found that our estimates of peer influence are robust to considering only those times when there is one peer, which suggests that our decision to take the mean of peers' practice styles is not driving the effects (see Online Appendix Table B16). These results suggest that peer influence permeates various hospital settings and circumstances.

[25] The measure of task dissimilarity reflects the extent to which tasks differ, essentially representing the opposite of task similarity. Therefore, the sign of the interaction term between *Peers' practice styles* and a *Physician's task dissimilarity* will be reversed.

[26] Deliveries within the last 24 hours were excluded from the Model 3 calculation to mitigate potential bias stemming from contemporaneous factors that might influence the C-section behavior of both the focal physician and their peers.

[27] The coefficients of these regressions closely mirror those reported in the article, but the interaction between *Peers' practice styles* and *Physician's task variety* is not statistically significant at the conventional p value of 0.05.

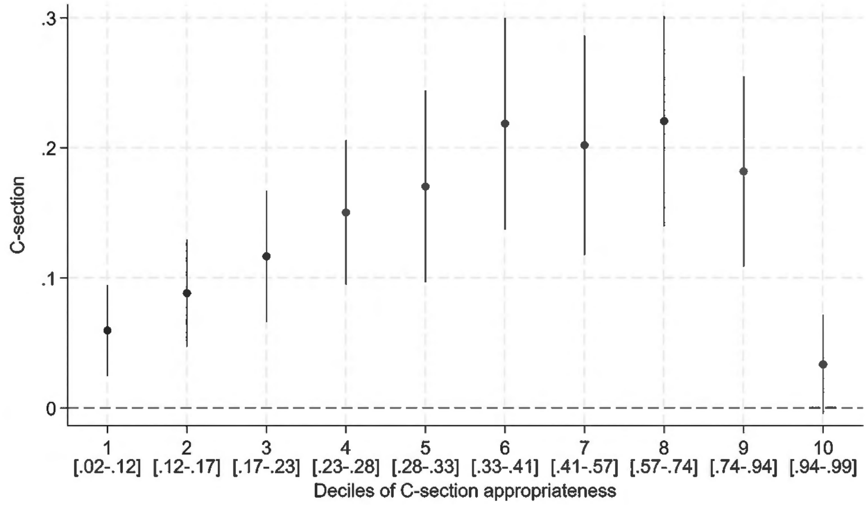
Mechanism Underlying Peer Influence

While we were unable to test the mechanism underlying peer influence directly in the field, we conducted multiple post-hoc analyses and identified patterns that are consistent with the mechanism of information sharing between physicians. Our post-hoc analyses aimed to investigate the plausibility of the information-sharing mechanism and, when possible, to distinguish it from another frequently cited mechanism of peer influence: peer pressure. The peer pressure mechanism observed in the literature derives from workers experiencing ''disutility if they are observed behaving selfishly by their peers'' due to either sanctions by coworkers or shame (Mas and Moretti, 2009: 114).

First, we argue that physicians will be most likely to seek information and advice from their peers in situations in which they face difficulties determining an appropriate solution. Specifically, when work is uncertain, it can heighten an individual's motivation to seek others who can provide advice (Lim et al., 2020). In our case, an appropriate solution is clearer for low levels of *C-section appropriateness* (in which a vaginal delivery is recommended) and for high levels of *C-section appropriateness* (in which a C-section is recommended). Physicians will be more likely to seek information or advice from peers on cases in the middle range of *C-section appropriateness* (when which procedure to perform is most unclear). To assess this reasoning, we conducted a split-sample analysis by dividing the sample into deciles of *C-section appropriateness*. If information sharing is an important mechanism in our setting, peer influence should be stronger for cases in the middle range of *C-section appropriateness* (i.e., the birth is just as likely to result in a C-section as it is to result in a vaginal delivery). Our findings indeed show that the magnitude of peer effects on the likelihood of a C-section is greater for these types of cases (see Figure 5; Online Appendix Table B17), supporting the mechanism of information sharing. In contrast, it is unlikely that peer influence would be higher for uncertain cases if peer pressure were the mechanism driving the effects; uncertainty would not lead to increased threat of sanctions from peers or shame. In fact, potential sanctions or shame would be less likely for uncertain cases since it could be argued that either approach—C-section or vaginal delivery—is clinically defensible.

Second, if peer pressure were driving our effects, we would expect that peer influence would be magnified when the focal physician is working alongside very senior peers. In these instances, physicians would likely observe these senior peers' approaches to delivering babies and would potentially mimic their behaviors. This could result in the transmission of peer influence even in situations without information exchanged between the physicians. To test this, we first determined each physician's level of experience based on the number of years since completing their residency. Next, for each focal physician, we calculated the number of peers in the maternity ward who fall within the top tercile of the experience distribution. Finally, we assessed whether peer influence increases when peers are more experienced by including an interaction term between *Peers' practice styles* and *High-experienced peers* (Table 5, Model 1). Contrary to expectations if peer pressure were the underlying mechanism, we found that peer influence diminishes as the number of high-experienced peers increases. This helps us rule out peer pressure as a mechanism.

Figure 5. Peer Influence on Cases of Greater Clinical Uncertainty*



* This figure shows estimates and 95 percent confidence intervals for the coefficient of *Peers' practice styles* across different samples, segmented by deciles of *C-section appropriateness*. The output of these split-sample regressions is reported in Online Appendix Table B17. The values reported in brackets on the x-axis represent the range of *C-section appropriateness* values for each decile. Lower values of *C-section appropriateness* indicate that a vaginal delivery is recommended, and higher values of *C-section appropriateness* indicate that a C-section is needed. Clinical uncertainty is most pronounced in the middle range of *C-section appropriateness*.

Our final two mechanism checks provide further evidence that our results are consistent with the information-sharing mechanism, though they do not help us rule out the peer pressure mechanism. If information sharing were driving our effects, we would expect that physicians with more experience in an organization might be less likely to seek information from their peers (Lim et al., 2020). The reasons for this decreased likelihood might include these physicians' greater level of confidence in their own abilities and knowledge, greater familiarity with the organization's culture and procedures, and greater concern about protecting their image of competence. Furthermore, individuals with a high level of expertise may systematically fail to seek input from others due to cognitive entrenchment or lack of perspective taking and may discount others' advice (Zhang, Harrington, and Sherf, 2022). We examined whether the magnitude of peer effects is smaller for physicians with more experience, measuring experience by the number of years since completing residency. Table 5, Model 2 shows that the influence of peers on a physician's behavior toward C-section is smaller for physicians with more experience. These findings reinforce that our results are consistent with the mechanism of information sharing. However, this test does not fully rule out peer pressure as a possible mechanism, as peer pressure may be heightened for less-experienced physicians who might observe and mimic their peers' behaviors in an effort to fit in.

Lastly, we examined how the busyness of the maternity ward influences the magnitude of peer effects. Information sharing between physicians requires them to have time for interaction; for an individual to gain information from

Table 5. Information-Sharing Mechanism Underlying Peer Influence*

	(1)	(2) C-Section	(3)
Peers' practice styles	0.196•••	0.387•••	0.253•••
	(0.026)	(0.095)	(0.040)
High-experienced peers	0.009•••		
	(0.002)		
Peers' practice styles × High-experienced peers	–0.016••		
	(0.005)		
Physician's log experience		0.061••	
		(0.022)	
Peers' practice styles × Physician's log experience		–0.080•	
		(0.034)	
Maternity ward's patient volume	–0.017•••	–0.017•••	–0.004
	(0.001)	(0.001)	(0.005)
Peers' practice styles × Maternity ward's patient volume			–0.028•
			(0.011)
Practice style of the pool of peers	–0.439•••	–0.361••	–0.433•••
	(0.092)	(0.111)	(0.090)
Maternity ward's number of providers	0.015•••	0.015•••	0.015•••
	(0.001)	(0.001)	(0.001)
Mother and pregnancy controls	Yes	Yes	Yes
Physician FE	Yes	Yes	Yes
Hospital × Day of week × Birth hour FE	Yes	Yes	Yes
Hospital × Quarter FE	Yes	Yes	Yes
Observations	4,969,667	2,821,224	4,969,667
Adjusted R-squared	0.450	0.449	0.450

• $p < .05$; •• $p < .01$; ••• $p < .001$. Two-way clustered standard errors at the hospital and physician levels are in parentheses.
* The sample in Model 2 is limited to physicians with information about residency completion date.

another, they must be able to ''gain timely access to that person's thinking'' (Borgatti and Cross, 2003: 432). When the maternity ward is particularly busy, opportunities for interaction become scarcer as each physician must manage more cases and has less down time for interactions with coworkers between and during deliveries. As a result, if the peer effect is driven by information sharing between physicians, we would expect the magnitude of the effect to decrease with an increase in patient volume. Therefore, we investigated how patient volume moderates the relationship between *Peers' practice styles* and the likelihood of a C-section. Specifically, we estimated the likelihood of a C-section as a function of *Peers' practice styles*, *Maternity ward's patient volume* (in the last four hours), and an interaction between these two variables (Table 5, Model 3). In this model, the interaction between *Peers' practice styles* and *Maternity ward's patient volume* is negative, suggesting that peer influence is weaker during periods of high patient volume. This finding supports the mechanism of information sharing: In periods of high patient volume, when physicians are likely busy, fewer opportunities may exist for seeking information and advice from peers. Taken together, these analyses yield patterns consistent with the mechanism of information sharing on the part of physicians, though we cannot completely rule out other mechanisms.

DISCUSSION AND CONCLUSION

Researchers have long been interested in understanding how both formal and informal elements of organizations influence the behavior of those working within them (Simon, 1947; Thompson, 1967). In this study, we examined how features of the organization's task structure moderate peer influence. We focused on two aspects of task structure: the degree of task variety inherent in each individual's work and the degree of similarity between an individual's tasks and those of their peers. Physicians in our sample were more likely to perform a C-section on expectant mothers when they were working alongside peers whose practice style tends to favor C-sections over vaginal deliveries, and this influence was magnified when the focal physician had higher task variety in their work and higher task similarity with their peers. Exploring the mechanism underlying these effects through multiple analyses, we find evidence consistent with the idea that peer influence in our case is driven by information sharing. Our study contributes to the literatures on peer influence and task structures within organizations, as well as to research on physician practices in health care organizations.

Contributions to Literature on Peer Influence

Our study contributes to the literature on peer effects (Mas and Moretti, 2009; Chan, Li, and Pierce, 2014a) and social influence (Stuart and Ding, 2006; Nanda and Sørensen, 2010) by showing how peer influence varies depending on the task structures within organizations. Recent scholarship has underscored the nuanced nature of social influence, cautioning against its universal application and highlighting its contextual variability (Cornelissen, Dustmann, and Schönberg, 2017; Sevcenko et al., 2022). In this study, we emphasize that the organizational contexts in which peer influence manifests represent important moderating factors. Organizational decisions regarding task allocation create differences in individuals' task variety (or specialization), which ultimately influences their inclination to seek and assimilate information from peers. Further, the task distribution within groups, with members performing similar or dissimilar sets of tasks, changes the social fabric within those groups, influencing their reliance on peer inputs. Thus, our research suggests that the task structures within organizations play a significant role in explaining the variability of peer influence observed across different organizational settings and industries.

A second contribution to the literature on peer influence comes from examining the impact of peers' practice styles on individual practices, rather than focusing solely on productivity (e.g., Mas and Moretti, 2009; Chan, Li, and Pierce, 2014a). Specifically, we show that peers' enduring practice styles can shape a person's own practices. This is an important extension as it shows that individuals can be influenced by numerous features of those around them beyond their immediate productivity.

While peer effects have been frequently found in settings with simple tasks, the evidence is mixed when it comes to complex work (Azoulay, Graff Zivin, and Wang, 2010; Waldinger, 2012). In contrast to prior studies, which have tended to focus on outcomes such as productivity (Mas and Moretti, 2009) or the transmission of attitudes and behaviors via social ties (Kacperczyk, 2013; Chan et al., 2021), our study examines how peers influence the day-to-day decision making of experts within organizations. This focus on peer influence among highly skilled workers engaging in complex tasks across varied organizational settings is an important addition to the literature. We find that peers' approaches to solving problems can be malleable, leading an expert within the same organization to adopt varying practices for similar cases depending on which peers are simultaneously in the workplace. While this malleability may ultimately improve outcomes in some instances, that is not necessarily the case. In this way, our study adds to a stream of research examining the transmission of seemingly detrimental behaviors, e.g., prescribing opioids (Zhang, Mohliver, and King, 2023), backdating stock options (Mohliver, 2019), and committing theft and fraud in organizations (Chan et al., 2021). Peer information sharing may enhance decision making in some cases, but our study cautions that it can also propagate practices that could generate poor outcomes for those involved.

Our study also contributes to our understanding of the mechanisms behind peer influence. Through multiple post-hoc analyses, we find patterns consistent with physicians seeking information and guidance from peers to address patient problems. In these instances, peers' practice styles shape the information or advice they may offer, influencing the focal individual's decision making regarding how to solve problems. This mechanism extends across various organizational contexts, underscoring the significance of information sharing as a powerful catalyst for shaping decision making (Ecken and Pibernik, 2016). Although information sharing is akin to learning, the concepts differ in some respects. Whereas learning is often related to permanent cognitive and behavioral changes, we see information sharing as an instrument to help determine an appropriate course of action in a specific work situation or problem, which may produce transitory changes in behavior (as advice on a case may not generalize to other cases).

Lastly, our work provides a useful connection between streams of literature focused on understanding formal aspects of organizations (Thompson, 1967; Nadler and Tushman, 1997) and informal aspects (Brass, 1984; Borgatti and Cross, 2003). While these lines of research have tended to evolve independently, scholars show increasing interest in understanding the role of formal aspects of an organization in shaping social interactions that occur within it (Soda and Zaheer, 2012; Kleinbaum and Stuart, 2014; McEvily, Soda, and Tortoriello, 2014; Clement and Puranam, 2018). Because peer influence can shape various important organizational outcomes, comprehending how task structures can either amplify or mute this influence is valuable for managing social dynamics within organizations (Chan et al., 2021; Sevcenko et al., 2022).

Contributions to Literature on Task Structure

Scholars have shown a growing interest in examining the causes and consequences of different task structures within and around organizations (Cohen, 2013; Chan and Anteby, 2016; Wilmers, 2020; Anthony, 2021; Augustine, 2021; Cohen and Mahabadi, 2022; Raveendran, Puranam, and Warglien, 2022). Our study contributes to this literature in multiple ways. First, we extend our understanding of the effects of task variety on individuals and organizations. Wilmers (2020) highlighted the importance of task variety as an organizational design decision, showing how an individual's task variety influences their bargaining power and economic outcomes. We extend the research examining task variety (Hackman and Oldham, 1976; Humphrey, Nahrgang, and Morgeson, 2007) and specialization (Bilalić, McLeod, and Gobet, 2008; Teodoridis, Bikard, and Vakili, 2019) by showing that an individual's task variety is an important moderator shaping their susceptibility to peer influence. Thus, decisions regarding workers' task allocation may profoundly shape the social environment at work, ultimately amplifying or muting flows of peer influence. With this knowledge, managers can determine which types of behaviors, practices, and attitudes may be subject to peer influence, and they can consider how they may structure tasks to moderate the transmission of these aspects of work across peers.

Second, we examine the role of task similarity (between the focal individual and their peers) in modulating peer influence in the workplace. We find support for our hypothesis that individuals who have higher task similarity with their peers will experience enhanced peer influence. This finding builds on research noting that the division of labor within a group can significantly affect the group's interaction patterns and how information is shared within the group (Bunderson and Boumgarden, 2010). It also extends work by Ching, Forti, and Rawley (2021), who found that when teams engaged in e-sports games, having functional familiarity with others on the team helped individuals overcome coordination challenges. Our study diverges from this literature in that the individuals we study work quite independently and maintain a high level of autonomy and control over their own work. It is, therefore, even more surprising that we see clear patterns of peer influence moderated by features of the task structure. Considering task similarity within groups in addition to individuals' task structure enriches understanding of organizational phenomena, highlighting that focusing solely on an individual's task structure misses critical group-level dynamics. Examining task similarity within groups offers an important lens for capturing social interactions within organizations.

One challenge in many existing studies on task structure is that they are limited to using broad categories of tasks (Autor and Handel, 2013; Wilmers, 2020). While a tradeoff often exists between gathering detailed task-level information and getting information across multiple organizations, our setting provides both. We have data from more than 1,350 unique tasks performed by more than 16,500 physicians across 915 hospitals. As a result, we were able to closely examine the task structure of individuals and groups across organizations and show how task structure shapes peer influence in the workplace. The presence of detailed task-level data is a valuable feature of many public health care systems (Chown, 2020), providing extraordinary visibility into the daily work tasks of experts and other workers. While the use of health care data for studying work presents some boundary conditions, such detailed task-level data enable rich explorations of important organizational phenomena.

Contributions to Organizational Practice in Health Care

Finally, we contribute to organizational practice in health care organizations by documenting the role of peer effects in shaping the use of C-section, an important and sometimes lifesaving surgery that, when performed without medical necessity, can expose women and babies to unwarranted risks. The use of C-section has risen significantly worldwide over the past few decades. While the World Health Organization recommends a C-section rate of 10 to 15 percent or less, many countries exceed this limit: The U.S. C-section rate is about 32 percent, for example, and in some Latin American countries, the rate exceeds 50 percent (Betran et al., 2021; Melo and Menezes-Filho, 2023). Peer influence among physicians may play a significant role in the elevated use of C-sections, as it does when medical professionals make prescription decisions (e.g., Coleman, Katz, and Menzel, 1957; Agha and Zeltzer, 2022; Zhang, Mohliver, and King, 2023). Identifying the importance of peer influence and understanding the mechanisms that lead to the high use of C-sections in Brazil is crucial for developing effective policies to reduce unnecessary procedures.

Our research documents that peers shape a physician's decision to perform a C-section and that this influence is greater for physicians with higher task variety and who have higher task similarity with their peers. In our sample of nearly 5 million births, the impact of peer influence translates to an additional 53,000 C-sections. While we lack specific estimates for developing countries, a 1 percent increase in C-sections (one-third of the increase we found in our context) is associated with an additional $9.5 million in annual health care costs in developed countries (Villar et al., 2006). Peer influence in our setting is likely linked to information sharing and is greater for births for which the appropriate approach is less certain and for less-experienced physicians. By providing some evidence of the mechanisms behind the high use of C-sections, our research can help organizational leaders and policymakers design interventions to promote practice change and improve maternal and neonatal outcomes.

Finally, our findings contribute to a growing body of work on the determinants of physician behavior, treatment choices, and quality of care. Extant research shows significant variation in physicians' practices, with substantial implications for quality of care (Baicker, Buckles, and Chandra, 2006; Chandra and Staiger, 2007; Van Parys, 2016). Our findings suggest that, for example, the practice styles of prominent physicians can influence those of their peers, deeply shaping professional practices within hospitals and potentially leading to substantial variations in care across different hospital settings.

Limitations and Directions for Future Work

While our study benefits from a setting in which thousands of individuals perform their work inside organizations and across many different task structures, we focus on one type of health care professional: OB-GYNs. We also focus on a situation with a binary choice—performing a birth via vaginal or C-section delivery—which is simpler than what workers may face when considering multiple viable options for solving work problems. Our theorizing is quite general and would apply to numerous scenarios in which individuals work alongside others with opportunities for information exchange. Future research could examine whether the same dynamics occur when individuals face other types of problems in their work and across different organizational settings.

We operationalized the source of peer influence as stemming from an individual's practice style. We based this decision on prior studies in both health care and management. For example, Bertrand and Schoar (2003) used the concept of a manager's style to understand how much variation in firm policies could be attributed to a given manager, arguing that such policies had much to do with a manager's stable decision-making orientation. Currie, MacLeod, and

Van Parys (2016), as well as Gowrisankaran, Joiner, and Léger (2022), used this concept to capture physicians' enduring approaches to understanding and diagnosing problems they faced at work. We align with prior research in assuming that practice styles remain relatively stable over time, a feature that allows us to address the reflection problem in peer effects research. However, future studies could examine the potential for individuals' practice styles to vary and the consequences of that variation. In a first step in this direction, we extended our analysis to include a time-varying measure of practice style as a robustness check. Further theoretical and empirical work in this area is an important avenue for future research. Future studies might examine the many ways in which an individual's practice style may influence their own work and the work of those around them.

A further challenge in our setting is that we cannot ensure completely random assignment of peer groups. This challenge is common in studies of peer influence (Mas and Moretti, 2009; Kim, Song, and Valentine, 2023), leading to concerns regarding selection bias. The features of our setting help given the rotating assignment of incoming cases to physicians and the ad hoc assignment of physicians to peers. We performed numerous checks and multiple selection-on-observables models to address concerns that our results are biased due to non-random assignment of peer groups. While the results remain consistent across these analyses, it would be useful for future research to examine the combined effects of peer influence and task structure in controlled settings, with peer random assignment, to further enhance understanding of causality in these peer influence flows.

It is also important to note that the effects of task variety and task similarity (as moderators of peer influence) are correlational. Given the features of our setting, we cannot identify a causal relationship between task structure and peer influence. Physicians may exert some influence over the set of tasks they perform as a part of their job, thus shaping their task variety and (potentially) their task similarity. Our interviews with physicians in Brazil indicate that the variety of tasks performed by physicians is determined by both the hospital's division of labor (i.e., how they bundle tasks into jobs) and the individuals themselves.[28] Examining the role of task structure through random assignment or a natural experiment would be a difficult but fruitful avenue for future research.

An additional limitation is that our study was conducted in a single country and focused on a publicly funded health care system, which may affect the external validity of our findings; private health care systems may differ in terms of expectant mothers' influence over delivery decisions and socio-demographic characteristics. However, while Brazil is perhaps an extreme setting to study births, with an unusually high C-section rate (Betran et al., 2021), it is a very useful context for examining professional and organizational factors associated with high C-section rates. Given that several countries, including the U.S., exhibit growing C-section rates, it is important to understand whether our findings

[28] We conducted eight background interviews with OB-GYNs to enhance our understanding of the maternity ward setting and health care system in Brazil. Each interview lasted approximately 30 minutes and covered various aspects of their work, including shift and patient assignments, collaboration with colleagues, and decision making in delivery methods. These conversations provided valuable context on work dynamics and physician interactions. Given that these interviews were intended to inform our understanding rather than serve as primary data, we did not include them in the manuscript.

on the influence of peers' practice styles on physicians' decisions to perform C-sections are also found in other contexts.

Our study indicates the importance of understanding how the organization of tasks and work within organizations plays a critical role in shaping peer influence. While we focus on two fundamental features of task structure—a worker's task variety and their task similarity with peers—numerous other features of organizations' task structures are worthy of examination. For example, future studies could examine how social influence in the workplace is shaped by decisions regarding task allocation and segregation (Chan and Anteby, 2016), the characteristics of tasks within workers' jobs (Wilmers, 2020), and features of the overarching task structures within the organization.

Further, while this article primarily examines how task structures shape individuals' susceptibility to peer influence, future research could explore how these structures also grant certain individuals a heightened capacity to exert influence over others, reflecting and reinforcing power dynamics within organizations. Task structures often carry implicit hierarchies, granting certain individuals greater capacity to influence others. Rather than moderating social influence, task structures may enable influence to flow more readily from central or critical roles, allowing these individuals to shape team norms, behaviors, and workplace attitudes. Examining how task structures reflect and reinforce these power dynamics could reveal insights into the interplay of organizational structure, social influence, and inequality, shedding light on how these elements collectively shape employee behavior.

Lastly, building on the premise that both formal and informal organizational elements are essential to understanding worker behavior, future research could explore the co-evolution of these elements in organizations, examining how changes in one domain influence the other over time. While this study focuses on how formal task structures impact social dynamics, future studies might investigate how informal social relationships can drive adaptations in formal structures. For instance, strong social bonds within an organization could facilitate shifts toward flatter hierarchies or flexible task arrangements, as these networks support communication, trust, and shared goals that reduce the need for rigid oversight. Understanding how informal relationships can both challenge and reinforce formal organizational structures could provide richer insights into the adaptability and evolution of organizational processes, highlighting the mutual influence and interdependence between formal and informal organizational elements.

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Supplementary Material

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