MATERIAL DEPRIVATION AMONG FEMALE SEX WORKERS IN INDIA*

David Brady  
*University of California, Riverside,*

Sharon Oselin  
*University of California, Riverside*  
Kim M. Blankenship  
*American University*


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*Direct correspondence to David Brady, School of Public Policy, University of California, Riverside, Riverside, CA, 92521 (david.brady@wzb.eu). This research was supported by The Bill & Melinda Gates Foundation (OPP30183; P.I. Blankenship). The views expressed here are those of the authors and do not necessarily reflect the official policy or position of the Bill and Melinda Gates Foundation. We are grateful to the respondents and colleagues in Project Parivartan. We also thank the editors for helpful comments.*
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ABSTRACT

We investigate the prevalence and correlates of material deprivation among female sex workers in India. Building on literatures on working poverty, the informal economy, and sex work, we propose that material deprivation is influenced by household characteristics, human capital, and working conditions. Our data are drawn from Project Parivartan, which includes large samples in three waves of surveys in Andhra Pradesh, India. The measures of material deprivation include whether the respondent has electricity, running water, bathroom, or telephone in the home, and whether she has missed a meal in the past 7 days, not saved money in past 6 months, is in debt, has been evicted in past 5 years, and a summary count of these 8 indicators. The results reveal material deprivation is high and widespread among FSWs. A clear majority of FSWs have not saved money, do not have running water or phones in the home, and are in debt. Near majorities do not have electricity in their homes, or have missed a meal in the past seven days. Altogether, the average FSW experiences 4.75 forms of deprivation, and over 90 percent experience at least three forms. For the specific outcomes of material deprivation, the most influential set of factors are arguably working conditions. For the summary count of the 8 indicators, however, HH characteristics are most influential.
Most of the world’s workers are in developing countries. In many, if not most, developing
countries, a substantial and growing share of workers are engaged in the informal economy
(Martin and Brady 2007; McKeever 1998, 2006; Portes and Hoffman 2003). Workers in the
informal economy experience considerable vulnerability, economic insecurity, and poverty
(Bonnet and Venkatesh 2015). Therefore, a case can be made that the largest group of working
poor in the world are those employed in the informal economies of developing countries.
Although research on the informal economy of developing countries has the potential to
contribute to the study of working poverty, this population remains understudied in the social
science of poverty (Brady and Burton 2015). Even within the growing literature on working
poverty, much less attention has been paid to this population than the formally employed
working poor in rich countries.

While a large share of informal economy workers engage in economic activities that
could otherwise be classified as “legal”, many informal economy workers are engaged in illicit,
marginally legal, or criminal activities (Bonnet and Venkatesh 2015; Uggen and Thompson
2003), which subsequently contributes to their stigmatization. Globally, one prominent form of
marginalized, and often illegal, informal economic activity is sex work. Sex work is widespread
throughout the world, and indeed, there is evidence to suggest that female sex workers (FSWs) in
these contexts are especially vulnerable to economic insecurity. However, just as the informal
economy of developing countries remains understudied, relatively little of the sex work literature
scrutinizes the poverty and deprivation of FSWs after entrance into the trade.

When it comes to understanding the economic situation of FSWs, the emphasis has been
on the economic hardships and vulnerability that push them into sex work. Far less is known
about their economic experiences once they are working as FSWs. Indeed, very little research
fleshes out the material deprivation among FSWs, and whether any of the conditions of sex work reduce or worsen it. Instead, the bulk of extant research examines their criminalization, stigmatization, and related public health concerns (e.g. violence and STI/HIV) (e.g. Blankenship et al. 2008; Oselin 2014; Vanwesenbeeck 2013). Of course, such subjects are salient, and of course, it would be valuable to compare FSWs’ material deprivation to women who are not FSWs. Nevertheless, much can be learned about working poverty by analyzing which aspects of sex work are influential for material deprivation among FSWs. In earlier research, Brady and colleagues (2015) examined factors associated with the amount of payment that FSWs receive from clients. Here, we consider a broader spectrum beyond pay, and examine a variety of indicators of material deprivation that shed further light on this topic.

We provide an analysis of the prevalence and sources of nine indicators of material deprivation among FSWs in India. We utilize data from Project Parivartan (PP), which include large samples in three waves of surveys in Andhra Pradesh, India. The measures of material deprivation include whether the respondent has electricity, running water, a bathroom, or telephone in the home, and whether she has missed a meal in the past 7 days, not saved money in past 6 months, is in debt, has been evicted in past 5 years, and a summary count of these indicators. Following research on working poverty, the informal economy and sex work, we examine three potential sets of sources of material deprivation: household characteristics, human capital, and working conditions.

By analyzing material deprivation, we are studying a relatively neglected aspect of working poverty. Most of the research on working poverty concentrates exclusively on income poverty (e.g. Brady et al. 2010; Brady et al. 2013; Gautie and Ponthieux 2015; Giesselmann 2015; Lohmann 2009). While a few scholars (e.g. Thiede et al. 2015) examine various different
income concepts, very few studies of working poverty go beyond income or earnings poverty to study material deprivation. This is unfortunate given the recent progress in conceptualizing and measuring material deprivation (e.g. especially in Europe; Nolan and Whelan 2010). Kus and colleagues (2015) explain that focusing on income alone has a number of limitations, including that there is often a mismatch between income-based poverty and material deprivation and consumption. Material deprivation often better captures the multidimensional aspects of poverty (Alkire and Foster 2011). Also, the measurement of material deprivation has proven to be more effective in developing countries where reports of income are often unreliable (Krishna 2010). Therefore, our study builds on these substantial advances in the measurement of material deprivation (see Kus et al. 2015).

This chapter aims to make at least two contributions. First, we investigate the prevalence of material deprivation among this sample of FSWs in India. In the process, we hope to contribute to developments in the social science assessment of material deprivation. Relatedly, we aim to provide a baseline understanding of the extent and types of deprivation among FSWs, which should inform the understanding of poverty and deprivation in the informal economy of developing countries. Second, we contribute to a greater understanding of the correlates and causes of material deprivation more generally. By examining three sets of factors associated with material deprivation, we aim to demonstrate the kinds and relative importance of different factors that drive material deprivation.

MATERIAL DEPRIVATION AND SEX WORK

As noted above, it has long been understood that material deprivation and poverty influence selection into sex work. Although it is certainly not the only factor (see Cobbina and
Osolin 2011), a number of studies demonstrate how poverty pushes women to become FSWs (e.g. Kamndaya et al. 2015). For instance, Hagan and McCarthy (1997) document how sex work is often a response to a lack of food, money, and basic necessities among street youth and especially young women. Chin and Finckenauer (2014) contend that poverty pushes Chinese women into sex work in overseas markets, while similarly Shah (2014) makes the case that sex work is one way for Indian women to combat material deprivation and poverty. Vanwesenbeeck (2013) even argues that economic factors are the strongest factor pulling women into sex work, and this is especially the case in developing countries. In a study also using the PP data, Reed and colleagues (2010) find that debt contributes to women entering sex work.

There is also research showing that material deprivation is common among FSWs globally (Kerrigan et al. 2013; Sahni et al. 2008; Weitzer 1999). Many studies of sex work refer to material deprivation and poverty while describing the setting or respondents (e.g. Brady et al. 2015). For instance, Hoang (2011: 376, 378) characterizes a segment of Vietnamese sex workers as the “low-end sector,” which she describes as: “single mothers. . .who had no more than a grade school education. They were poor, urban women or rural migrants. . .many entered and continued to do this work as a means to escape poverty.” Relatively few studies, however, delve beyond this basic description and scrutinize the extent and types of material deprivation or the factors associated with it. In an exception, Biswas-Diener and Diener (2001) conducted interviews with 31 female and 1 male sex workers living in Calcutta, India. Although there is heterogeneity in the income and living conditions of sex workers, sex workers experience similar levels of material deprivation as slum dwellers and pavement dwellers in Calcutta. Many reside in overcrowded living quarters without basic amenities or access to public utilities.
Using the PP data, Reed and colleagues find that debt is common among FSWs (2010) and that a sizable share of FSWs have experienced evictions (Reed et al. 2011). Using intensive interview data, they also demonstrate the prevalence of economic insecurity and deprivation among FSWs (Reed et al. 2010). For example, their respondents explain: “We had no food for a week last month.” “There was not a day when I could go to sleep without the mental tension of paying the debts and never had the feeling of earning and living within the means without loans to repay.” “In the rainy season, we don't have business and we have to starve … I did not have any money or rice at home. I ... was already in debt” (Reed et al. 2010: 84). Such material deprivation warrants further investigation in part because it has the potential to lead to other deleterious outcomes. Indeed, they demonstrate that FSWs who reported debt are more likely to experience physical violence and engage in riskier sexual behavior (Reed et al. 2010), and FSWs who have been evicted in the past tend to engage in riskier sex and are more likely to have been sexually victimized (Reed et al 2011). Therefore, clearly, material deprivation among FSWs is associated with other disadvantages.

The variation in material deprivation that such studies observe reflects the documented substantial heterogeneity in the sex work labor market in developing countries (Brady et al. 2015). Because sex work is often a principal source of income for FSWs, the documented heterogeneity in pay and working conditions among FSWs should buttress an expectation of heterogeneity in material deprivation among FSWs. Indeed, labor market heterogeneity has been a consistent finding in studies of the informal economy generally and in a variety of specific sectors within the informal economy (Bonnet and Venkatesh 2015; McKeever 1998, 2006; Portes and Hoffman 2003; Uggen and Thompson 2003). It stands to reason that there is similarly, considerable heterogeneity in material deprivation among informal economy workers.
THE SOURCES OF MATERIAL DEPRIVATION

We take this argument one step further and develop expectations about which workers will be more or less materially deprived. In particular, we propose that the sources of material deprivation can be productively organized into three sets of factors: household characteristics, human capital, and working conditions. Our arguments build on the literatures on working poverty, the informal economy and sex work.

Household Characteristics

Central to the well-being and economic behavior of FSWs and most actors are the close family and kin to which one is reciprocally dependent. Families avoid economic hardship by pooling resources and with through economies of scale. Families also work together in adopting economic strategies to bring resources into the household. Indeed, the working poverty literature consistently shows household characteristics matter (Brady et al. 2010; Lohmann 2009). For example, Brady and colleagues (2013) find that working poverty is less common in married couples and households headed by middle-aged people. By contrast, working poverty is more common in households with children, uncoupled households, and among households headed by young and old people. Household characteristics are also relevant in the informal economy. For example, Robinson (1993) shows that late 19th century U.S. families adopted alternative informal economic strategies (e.g. wives and children’s employment or taking in boarders) in response to financial duress prompted by the loss of a husband’s earnings or having multiple children. Families and households therefore function as “proximal foreground” priorities or immediate exigencies that guide everyday decisions and behavior (Hagan and McCarthy 1997). For example, Venkatesh (2006) shows how fluid dynamics in the household trigger women’s
occasional “homework” like cooking meals, renting out rooms, and childcare. Uggen and Thompson (2003) show that cohabiting allows criminals to ease up on illegal earnings.

On one hand, families can provide support and resources that buffer against economic hardship. The presence of other employed people in a household plausibly reduces the material deprivation of FSWs. Using the PP data, Reed and colleagues (2010) find lower debt levels among FSWs who are currently married, have a male partner or receive financial support from others. Moreover, the support of other earners likely raises a FSW’s reservation wage such that sex work is only worthwhile when earnings are high. For instance, married FSWs in Ecuador and Mexico earn more than unmarried FSWs (Arunachalam and Shah 2008). Using the PP data, Brady and colleagues (2015) show that the payments received by FSWs are higher if the FSW has other contributors to household income or parent(s) in the household. They also find that being married is associated with greater earnings in the past week. As a result, the presence of household members who bring economic resources and/or are employed likely enhances the earning power of FSWs and this insures against FSWs’ material deprivation.

On the other hand, families generate needs that drain resources. Many studies establish that family needs cause women to enter and conduct sex work (Sahni et al. 2008; Vanwesenbeeck 2001). Davis (1993) finds that FSWs receive little monetary or emotional support from families, and that women often enter sex work because of parental rejection or pressure. Lim (1998) concludes that women can turn to sex work after the departure of a husband. Similarly, Brady and colleagues (2015) show that being separated/divorced/widowed is associated with lower payments received by FSWs. Thus, family needs could make FSWs more vulnerable and reliant on sex work due to their underlying economic insecurity.
**Human Capital**

Human capital is defined as a worker’s stock of experience, education, skills, and social resources. Consistent with longstanding literatures, many studies show educational attainment strongly influences whether someone is working poor (Brady et al. 2010; Gautie and Ponthieux 2015; Lohmann 2009). For instance, Brady and colleagues (2013) find that having less than a high school degree increases the odds of working poverty by a factor of 2.8 in 2010 in the U.S.

Similarly, scholars underscore that human capital increases earnings in the informal economy (Bonnet and Venkatesh 2015; McKeever 2006; Portes and Hoffman 2003; Uggen and Thompson 2003). McKeever (1998), for example, shows that the same factors (e.g. education and experience) that raise wages in the formal sector also enhance wages in the informal sector of South Africa. The literature also documents the labor market benefits of having social networks and mentoring relationships with other informal sector workers (Hagan and McCarthy 1997; Uggen and Thompson 2003). For example, building on the classic concept of tutelage relationships, Hagan and McCarthy (1997) develop the concept “criminal capital” to show social networks support engaging in and profiting from illegal work. Consistent with this, Loughran and colleagues (2013) show that criminal capital – especially experience and specialized skills – significantly increases illegal earnings.

The salience of human capital has been supported in research specifically on sex work. Studies by economists demonstrate how sex work is a market with returns to human capital, and show the positive effects of age and beauty (e.g. Arunachalam and Shah 2008, 2013; Logan 2010). Using the PP data, Brady and colleagues (2015) find that age – a proxy for beauty – has a strong negative relationship with FSWs’ payments received and the number of clients and
earnings in the past week.¹ They also show strong effects on payments received and earnings for being able to read or write (a measure of literacy). Literacy is likely to be useful for FSWs because it a) opens alternative employment opportunities; b) therefore raises their reservation wages; and c) encourages self-efficacy, which would be instrumental in negotiations with clients, brokers and the police. In their analysis of the PP data, Reed and colleagues find that greater education and literacy are associated with lower rates of debt (2010), and that there are lower rates of eviction among more educated FSWs (Reed et al. 2011). Like the informal sector more broadly, studies have documented the role of social networks and mentors for FSWs (e.g. Brents et al. 2010; Sanders 2005). Consistent with this, Brady and colleagues (2015) find that the number of sex workers known by a given FSW is positively associated with the number of clients and total earnings in the past week.

To the extent that human capital increases returns in the informal labor market, human capital should also help avoid material deprivation. As labor market earnings are typically the most important economic resource for FSWs, human capital could be quite instrumental in improving the economic security of FSWs.

**Working Conditions**

Sociologists have long argued that the sector, industry, and firm size of a given job exerts influence on labor market outcomes above and beyond human capital and other factors (e.g. Avent-Holt and Tomaskovic-Devey 2010; Brady et al. 2011; Fullerton and Villemez 2011; Kalleberg et al. 1981). The argument has been that these structural contexts exert exogenous influence regardless of the fact that workers tend to select into certain contexts. These literatures

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¹ In traditional conceptions of human capital, age is also often a proxy for experience. However, Brady and colleagues (2015) show that experience has no effect on earnings. There do not appear to be any returns to experience, and age has a clear negative association with earnings.
have been especially influential in the study of working poverty (e.g. Gautie and Ponthieux 2015; Giesselmann 2015; Lohmann 2009). For instance, Brady and colleagues (2013) show large effects of industry and occupation on the probability of individual working poverty in the U.S. Moreover, they show that part-time employees are far more likely, while public sector workers are much less likely, to be working-poor. The implication for our analysis is that working conditions are likely to have an influence on the material deprivation of FSWs. As suggested above, it is also plausible that working conditions mediate the relationships between household characteristics and human capital and material deprivation.

Largely because comparative data on informal sector workers across industries and sectors are rare, there is little research on how such structural contexts influence informal work generally. Nevertheless, there has been considerable attention to such structural contexts in the study of sex work. Most prominently, an extensive literature documents important differences across sex worker venues (Brady et al. 2015). Indeed, the literature often posits venue as the central stratifier for FSWs (Murphy and Venkatesh 2006; Weitzer 2009). For instance, scholars often explain that there is variation in earnings, violence and well-being by whether the FSW works indoors or outdoors (Weitzer 2005). Rarely, however, does the literature go beyond the basic differences across venue and explore the specific types and extent of deprivation. In an exception using the PP data, Reed and colleagues (2010) show that home-based FSWs have the highest rate of debt, followed by highway-based, street-based, brothel-based and hotel-based. Reed and colleagues (2011) also find the lowest rates of eviction among hotel-based FSWs, followed by highway-based, brothel-based, street-based and highway-based.

Beyond venue, one crucial factor with enduring consequences is the conditions in which the FSW initially entered sex work (Cobbina and Oselin 2011). Some FSWs are deceived or
trafficked into sex work, and many begin sex work before reaching adulthood (Weitzer 2009). In their analysis of the PP data, Brady and colleagues (2015) find that about 16 percent of FSWs began sex work before age 18. Such FSWs tend to receive lower payments and have a higher number of clients than FSWs that entered at/after 18.

Many FSWs work with brokers, who recruit and screen clients, manage schedules, provide security, and collect payments from clients, among other tasks (Weitzer 2009). These brokers, often working as brothel managers, can provide safer working conditions (Brents et al. 2010). Some FSWs work with brokers to avoid police harassment (Chapkis 2000), and brokers have an interest in maintaining the well-being of FSWs to enable their continued sex work. Conversely, others argue brokers exploit FSWs by extracting an unfairly large share of payments, removing autonomy, and failing to actually provide services of value (Brady et al. 2015). For instance, Chapkis (2000) concludes that managers and brokers remove decision-making power from FSWs in interactions with clients, scheduling, and rates of pay. Most studies, however, have focused on security or payments and little research scrutinizes the relationship between brokers and material deprivation.

Two final working conditions could result from household characteristics, human capital and other working conditions, and therefore could be proximate and mediating influences on material deprivation. First, the payments received from clients is a useful indicator of the earnings of FSWs (Arunachalam and Shah 2013; Brady et al. 2015; Logan 2010). Payments received are likely a key source of household income and enable FSWs to purchase well-being and address needs. Greater payments also allow FSWs to meet their economic needs while working less and having fewer clients. Second, the number of clients speaks to the quantity of labor effort, and the pace and schedule of work. Additional clients increase the risk of abuse and
harassment and exposure to disease and illness. At the same time, a greater number of clients can enhance total earnings. Even independent of a potentially mediating relationship between other factors and material deprivation, we expect payments received and the number of clients to influence the material deprivation of FSWs. Moreover, as payments received and number of clients do not capture all aspects of earnings and work effort, household characteristics, human capital, and other working conditions should be associated with material deprivation independent of these last two measures.

METHODS

Our data are drawn from three cross-sectional surveys, administered in 2006, 2007, and 2009-2010, with samples of 812, 673, and 850, respectively. All three were recruited using respondent driven sampling (RDS). Five seeds in the first and third, and 10 in the second, representing different groups of FSWs, completed the survey and distributed coupons to up to three members of their network who met the study’s eligibility criteria (recruits). Recruits then had the opportunity to distribute coupons to up to three other FSWs in their network. To ensure the final sample was independent of the initial seeds, we completed at least six recruitment waves and generated a sample size of at least 500 in each wave (Magnani et al. 2005). Despite some limitations, RDS has proven useful for recruiting hidden populations like FSWs and there is evidence that it produces samples that are more representative than place-based sampling or other feasible alternatives (Magnani et al. 2005).

The data were gathered as part of a multi-method study of FSWs in the Rajahmundry area of the East Godavari district in Andhra Pradesh, India. Rajahmundry’s metropolitan area has a population of about half a million and is one of several large urban areas in the largely rural,
agriculturally prosperous East Godavari district. It is an informative site because it is located on National Highway 5, a major north-south route for truckers, and is known as a location for FSWs. Although Rajahmundry is different than large metropolitan centers in developing countries, such as Mumbai, Rajahmundry is likely a typical case of and is plausibly representative of India’s medium/smaller cities, towns, and villages (Sahni et al. 2008). More generally, we propose our sample captures much of the diversity of sex work that can be found in India and other developing countries (Biradavolu et al. 2009; Blankenship et al. 2008; Brady et al. 2015; George et al. 2010; Kotiswaran 2008;). Biradavolu and colleagues (2009: 1542) estimate there were approximately 1500 FSWs in the area at the point in time of the first survey.

To be eligible, respondents had to report being at least 18 years old and to have exchanged sex for money at least once in the prior year. The surveys lasted 90-120 minutes, and were conducted in Telugu by trained interviewers after confirming participants’ informed consent. Respondents received a modest compensation for participation and for recruiting other FSWs. We merge the three survey waves. After accounting for missing data, this yields a sample of 2,251. The appendix contains descriptive statistics for the independent variables.

**Dependent Variables and Estimation**

We analyze nine measures of self-reported material deprivation. The first eight are binary measures, each coded with deprivation as 1 (reference=no deprivation). The models for these eight measures utilize logistic regression. The first four inquire whether the respondent lacks a resource in her home: no electricity, no running water, no bathroom, and no telephone. The next three assess if the respondent has experienced an event of deprivation in a period of time leading

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2 In analyses available upon request, we dropped respondents from the second and third wave if they reported having participated in earlier waves. The results were completely consistent.
up to the survey: *missed meal in past seven days*\(^3\), *not saved money in past six months*, and *evicted in past five years*.\(^4\) The next indicator identifies whether the respondent is currently *in debt*. Finally, we sum all eight measures to construct a summary count of the *number of deprivations* that the respondent has experienced or is experiencing. By summing the eight measures, we propose it is a reasonable assumption to measure deprivation with one dimension. Moreover, as some of the questions are asked in different parts of the survey, we expect that summing the measures reduces any effects of response position bias. Because the last dependent variable is a count and exhibits overdispersion, we analyze it with negative binomial regression.

**Independent Variables**

The analyses include six measures of the household characteristics of the respondents. *Other contributors to income* is a binary measure for whether another HH member contributes income. About 27 percent of the sample has other contributors. Marital status is measured with non-mutually exclusive dummies for *married* and *separated/divorced/widowed* (reference = never married). The modal marital status is separated/divorced/widowed (65 percent), followed by married (45 percent). Children are measured with *# of children*. The average FSW in our sample has 1.8 children. We also include binary variables for *husband in household* (reference= no husband present) and *parent(s) in household* (reference = no parent present).\(^5\) About a third of the sample has a husband present, and almost a quarter have a parent present in the HH.

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\(^3\) Project Parivartan also included intensive interviews. In those interviews, our interviewers reported that the question about having missed a meal was one of the most sensitive and uncomfortable questions in the survey. Respondents even broke into tears in answering it, and preferred to not talk about this. This is interesting given the survey asked about a wide variety of personal, hygenic, familial, and sexual issues.

\(^4\) The missed meal questions specifically asked: “In the past seven days, have you missed a meal because you did not have enough money for food?”

\(^5\) The husband in household variable includes both “legal” and “temporary husband”/“boyfriend”/“lover.”
Next, we include six variables measuring human capital. *Age* is in years. The average FSW in our sample is 32 years old. We also include *age-squared* to allow for a nonlinear relationship. *Literacy* is a binary measure of whether respondents can read or write (reference=neither). Slightly less than one quarter of our sample can read or write. We include the *# of S.W. known* as a measure of social networks and social capital. The average respondent knows 10 other SWs. As an indicator of other gainful employment, the likely human capital that requires, and the higher reservation wage that results, we include a binary measure of whether the respondent has *other work*. Almost half of respondents are engaged in other employment. Finally, we assess respondents’ access to government social services with a binary measure of whether the FSW possesses a *ration card*. If an FSW has a ration card, this reflects capacities to navigate government bureaucracies and access to resources from the state. Having a ration card also likely enables FSWs to raise their reservation wage. Obviously, as a ration card provides commodities like food, it should directly reduce material deprivation as well. About two-thirds of our sample has a ration card.

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6 Although, many FSWs are less than 18 years old, our sample is confined to respondents reporting to be at least 18.

7 Ideally, we would include a measure of experience, such as the number of years the FSW has been practicing sex work. Unfortunately, we slightly altered the question about the age of entry from waves 2 to 3 (changing from an interval to ordinal response). Moreover, even though we could take the difference between current age and age of entry to calculate years of experience, it would be highly problematic to assume that all FSWs worked consistently during that period. In addition, it is unclear if self-reports from FSWs for the number of years of experience would be reliable and valid.

8 If one holds ration card, the state provides her/him with a limited supply of free basic goods like food. Thus, a ration card is an in-kind or near-cash welfare transfer. For a description, see: [http://www.archive.india.gov.in/howdo/howdoi.php?service=7](http://www.archive.india.gov.in/howdo/howdoi.php?service=7). Technically, FSWs are not prevented from acquiring a ration card as sex workers. However, they often do not have ration cards because as sex workers it is difficult for them to provide proof of residence or a picture, which are often required to acquire a ration card.
We measure working conditions with seven variables. To capture the venue in which the FSW works, we include two dummy variables for brothel and street/highway. The second dummy for street/highway consolidates FSWs working outdoors, and the reference for these dummies are multiple venues or working at home. 12.5 percent of respondents work in brothels, and 40 percent work outdoors. Started sex work (S.W.) at young age is a binary measure of whether one began before the age of 18. Almost 17 percent of our sample reports entering sex work at a young age. Deceived into S.W. is a binary measure of whether a respondent reports having been “lured, cheated or forced into the business.” About 10 percent report having been lured, cheated or forced into the business. In contrast to working independently, we include a dummy for if a FSW works with or for a broker. About 15 percent of respondents work with brokers. Payment received for the last client is the real (2009) rupees actually received by the FSW. To calculate this, we utilize information on both what the last client paid, and what share of that amount went to the FSW (e.g. as opposed to a broker). The mean payment received was

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9 On one level, the venue of sex work might signal the degree of economic informality. For example, FSWs working solely at home might be more informal than those working at a brothel. However, in reality, we suspect the boundaries between formal and informal are far more porous and unclear than can be captured by venue or other working conditions. As we argue throughout, working conditions like venue are plausibly associated with different vulnerabilities. But, we are less certain about their associations with formality.

10 One respondent was missing on age, but answered affirmatively to a question about whether she entered sex work before puberty. For that one respondent, we imputed that she was less than 18 at entry.

11 Unfortunately, our data do not allow us to differentiate between different kinds of brokers. We experimented with a variety of measures (e.g. whether respondent resides with a “madam/owneramma,” paid someone to bring last client, paid broker to use a place for the last client, or experienced violence from broker). The results were consistent regardless of whether we combined or separated these measures. There is substantial overlap, so it is not possible to compare multiple measures in the same model. Very few were classified as omitted with our measure that would be classified with any alternative (see Brady et al. 2015).

12 Unfortunately, we did not ask about mean payment per client. However, payment from last client is less prone to recall error and has precedent in the literature (Lever and Dolnick 2010).
about 256 rupees. Using a self-report for the past days, we include number of clients. The average number of clients in the past week was about 10.

Last, all models adjust for the survey wave with dummies for the 2007 or 2009 survey (reference=2006). Though we do not discuss them below, these two dummies are robustly significantly and negatively associated with the material deprivation outcomes. We cannot be certain of a trend given the limitations of RDS. However, these results suggest that material deprivation has declined among FSWs from 2006-2009.

RESULTS

Prevalences of Deprivation

Table 1 displays the prevalence of each of the nine measures of deprivation. The most common form of deprivation is the measure of not having saved money in the past six months. In our sample, almost 90 percent of respondents have not saved money. The next most common is no telephone in the home (84 percent).\(^{13}\) Nearly 82 percent of respondents are in debt, almost three quarters do not have running water in their homes (74 percent), and a majority has missed a meal in the past seven days (54 percent). About 45 percent of respondents do not have a bathroom in their homes. Sizable minorities do not have electricity in their homes (28 percent) or have been evicted in the past five years (20 percent).

These results suggest material deprivation is widespread in our sample. Although one could argue that some measures of deprivation are not as serious (e.g. no telephone), others indicate a strikingly high prevalence of severe material deprivation. Clear majorities of FSWs

\(^{13}\) Many respondents have cell/mobile phones, and this question may prompted some respondents to answer whether they have a landline phone. Therefore, it is less clear that this form of deprivation is particularly severe. Unfortunately, we did not ask if respondents had a cell phone.
lack access to clean water sources in the home (i.e. no running water), lack sufficient plumbing/waste disposal (i.e. no bathroom), and experience food insecurity (i.e. missed meal in past seven days). All of these are substantial health risks and manifestly signal severe deprivation. Moreover, the vast majority of FSWs are economically insecure as indicated by greater than 80 percent not having saved money in the past six months or being in debt.

The summary count measure indicates that the average FSW in our sample is experiencing or has experienced 4.75 deprivations out of a possible 8. A closer inspection of the frequency distribution also reveals that less than one percent experiences zero deprivation (13 cases), and only 2.7 percent (61 cases) experience one form of deprivation. By contrast, over 90 percent of respondents experience at least three forms of deprivation. As well, 20 percent experiences 6 forms of deprivation, 11.4 percent experiences 7 forms, and 3.2 percent experience all 8 forms of deprivation. Therefore, our results suggest widespread and high levels of material deprivation among FSWs in our sample.

**Models of Material Deprivation**

Table 2 displays the models of deprivation for the nine dependent variables. As noted above, the first eight models are logistic regressions and the last is negative binomial regression. We display average marginal effects and z-scores, which enable better comparisons between models and outcomes. We first report the results of sets of independent variables across the eight binary indicators of deprivation. We do so because any one deprivation outcome may have measurement error, and we care most about independent variables with robust effects across several different outcomes. Second, we discuss the magnitudes of various effects for each set of outcomes. Third, we consider the results for the summary # of deprivations.
Among the HH independent variables, two variables have more robustly statistically significant effects. Having other contributors in the HH significantly reduces five of the eight initial binary outcomes. For example, having other contributors reduces the probability of lacking electricity in the home by about 8 percent. Being married significantly reduces two deprivation outcomes, but perhaps surprisingly, significantly increases three deprivation outcomes. For instance, being married reduces the probability of having missed a meal in the past seven days by about 7 percent, but increases the probability of having been evicted in the past five years by about 7 percent. Two other HH variables – being separated/divorced/widowed, and # of children – are significantly and positively associated with four material deprivation outcomes. Having a husband present is significantly associated with two outcomes, and having parent(s) present is associated with one outcome.

Among the human capital independent variables, literacy has the most robust effect across outcomes. Being able to read or write is significantly negatively associated with four outcomes and significantly positively associated with being in debt. For example, being literate significantly reduces the probability of lacking a bathroom by nearly 20 percent. The # of SW known is significantly negatively associated with three outcomes and significantly positively associated with having been evicted in the past five years. Having a ration card is significantly negatively associated with two outcomes, and significantly positively associated with one. Age, age-squared and other work are not very robustly associated with material deprivation across outcomes, affecting only one or two outcomes each.

Of the working conditions variables, two variables have more robust effects. Working in an outdoor (i.e. street or highway) venue is significantly positively associated with six material deprivation outcomes. For example, working outdoors increases the probability of having missed
a meal by about 9 percent. The payment received from the last client is significantly negatively associated with five outcomes, and significantly positively associated with having been evicted in the past five years. For example, multiplying the coefficient by a standard deviation increase in last payment received reveals that such an increase is associated with a .12 lower probability of lacking electricity in the home. Four working conditions variables are significantly associated with three material deprivation outcomes: deceived into SW (+), working in a brothel (- and +), and # of clients (-), and working with a broker (- and +). By contrast, having started SW before 18 is not robust and is only significantly associated with lacking electricity in the home.

Turning to comparing the magnitude of significant effects within groups of dependent variables, we begin with the four measures of lacking electricity, running water, bathroom or telephone in the respondent’s home. The three largest influences on these outcomes are literacy, payment received for the last client, and working with a broker. Arguably, working conditions have the most robust and largest effects for these four outcomes. Although HH characteristics and human capital certainly matter, working conditions exerts the greatest influence on deprivation in the home.

For the three outcomes assessing having experienced an event of deprivation (i.e. missed meal, not saved money, and evicted), the largest influences appear to be HH characteristics and working conditions. Being married or separated/divorced/widowed mostly significantly increase these forms of deprivation. Also, having been deceived into SW or working outdoors substantially increase the probability of having experienced events of deprivation. Finally, for the measure of being in debt, the HH characteristics and working conditions variables exert the most influence. With both the events of deprivation and being in debt, working conditions are arguably even more influential than HH characteristics. For example, the largest single influence
on being in debt is working with a broker. However, the next largest single influence in this set of outcomes is perhaps being separated/divorced/widowed.

Finally, we turn to the summary count of the # of deprivations. Four HH variables are significantly associated with the count of deprivations. Having other contributors to the HH’s income reduces the # of deprivations by .35. Being separated/divorced/widowed increases the # of deprivations by .49. Each additional child increases the # of deprivations by .16. Having a husband present increases the # of deprivations by .28.

Only one human capital variable, literacy, is significantly associated with the # of deprivations. Being able to read or write reduces the # of deprivations by .59. By contrast, age, other work, # of SW known, and having a ration card are not significantly associated with the # of deprivations. Two measures of working conditions are significantly associated with the # of deprivations. Working outdoors increases the # of deprivations by .38. A standard deviation in the payment received for the last client reduces the # of deprivations by .18.

Therefore, it appears that HH characteristics rival working conditions as most influential to the # of deprivations. More HH variables are significant, and collectively these HH variables exert a larger influence on the # of deprivations than human capital and working conditions variables. It is likely that this partly owes to the fact that 4 of the 8 deprivation measures are focused on the household (e.g. lack of electricity). Nevertheless, combining all 8 indicators provides a more comprehensive index that could have more reliability than any one indicator.

**DISCUSSION**

This study investigates the prevalence and correlates of material deprivation among female sex workers in India. Our data are drawn from Project Parivartan, which includes large
samples in three waves of surveys in Andhra Pradesh, India. The measures of deprivation include 8 separate indicators along with a summary count of those indicators. Our data show material deprivation is high and widespread among FSWs. A clear majority of FSWs have not saved money, do not have running water or phones in the home, and are in debt. Near majorities do not have electricity in their homes, or have missed a meal in the past seven days. Altogether, the average FSW experiences 4.75 forms of deprivation, and over 90 percent experience at least three forms.

Our study has several distinctive strengths. First, we exploit a unique large dataset on FSWs in the developing world. Our dataset is not narrowly focused on health or sexual behavior and includes a range of relevant variables. Second, our study focuses on an understudied group of vulnerable workers in the informal economy. Third, our study concentrates on material deprivation within this population, which is also relatively novel. As we explained, many scholars comment on the material deprivation of FSWs or identify deprivation as an explanation for why FSWs enter sex work. Our study uniquely investigates the heterogeneity in material deprivation among FSWs. To the best of our knowledge, FSWs have rarely been studied in this particular way. In the process, we uniquely contribute to understanding how and why FSWs vary in their exposure to material deprivation.

Our analysis is framed by literatures on working poverty, the informal economy, and sex work. From these literatures, we propose three sets of factors that are likely to influence material deprivation: household characteristics, human capital, and working conditions. We demonstrate these factors do substantially matter. In the process, we offer a typology or organizing schema for research on poverty in the informal economy. Potentially, future research can use this framework as a way to coherently present sets of similar factors driving working poverty.
Altogether, the results demonstrate that a combination of the three sets of factors is consequential to the various dependent variables. It is also telling how several of the independent variables have fairly robust effects across dependent variables. Most robust among the household characteristics are the following: having other contributors in the household, being married, being separated/divorced/widowed, and the # of children. The key human capital variable is literacy, as being able to read or write is significantly associated with six dependent variables outcomes.\textsuperscript{14} Across the nine outcomes, working conditions are arguably most influential among the three sets of factors. Working in an outdoor venue and last payment received are significantly associated with seven dependent variables. Four working conditions variables (deceived into SW, working in a brothel, # of clients, and working with a broker) are associated with at least three outcomes. While the summary count of deprivation suggests household characteristics are most important, the robustness of the effects of working conditions variables is also telling.

In addition to demonstrating robust patterns across different measures, our analyses reveal some important and interesting differences in the measures of deprivation. For example, it is interesting that debt is positively associated both with having a ration card and higher last payment received, but also positively associated with having been deceived into sex work and working for a broker. This likely reflects the fact that debt is both a measure of material deprivation and access to loans/resources. In our fieldwork, we learned that our respondents sometimes use their ration cards as collateral and to make payments on debt. We also learned that brothel owners and brokers often charge FSWs for the room or services, and hold debt on FSWs as a result that they must pay off by working in the brothel or for a broker.

\textsuperscript{14} At the same time, we acknowledge that literacy is surprisingly positively associated with having been evicted. It is difficult to make sense of this result, and we would emphasize that for most of the other outcomes, literacy is beneficial.
We would highlight at least three other implications of these findings. First, that working conditions matter as much as they do is supportive of our underlying argument that working conditions may mediate the effects of household characteristics and human capital on material deprivation. It is difficult to estimate exactly how these effects might mediate. However, given the prominence of working conditions in these results, and given the prior evidence that household characteristics and human capital influence selection into working conditions, the reasoning seems plausible. In analyses available upon request, we reestimated the models while variously omitting all working conditions variables or omitting last payment received and # of clients. The results are only suggestive but support our interpretation of mediating effects. Such an argument confirms the importance of working conditions to life chances and well-being, but also asserts the role of household characteristics and human capital as underlying influences.

Second, even adjusting for working conditions in the models, the families and households of FSWs certainly matter to material deprivation. Having children, partners, and others in households can enable or constrain FSWs considerably. The broader implication of this is that we miss something important in the study of working poverty if we only concentrate on work. Indeed, to understand working poverty, one cannot disassociate family from work. The personal lives of FSWs are essential to improving well-being, and targeted interventions to aid the children of FSWs would substantially ease the burdens on these women and families.

Third, more generally, our study can inform interventions to assist in avoiding poverty and deprivation. While we only have cross-sectional data and cannot identify causal effects, our evidence could form the basis of tests of hypotheses about such causal effects. In addition to providing resources for and to children, ration cards are significantly negatively associated with lacking electricity or a bathroom. Though there is likely a selection process, raising the literacy
of FSWs could be associated with a number of reductions in material deprivation. Conversely, additional jobs are not shown to be effective in reducing material deprivation. While higher payments received and a greater # of clients are negatively associated with material deprivation, it is not clear that alternative employment and income generation methods (besides sex work) would alleviate material deprivation.

In sum, our study is one step towards greater attention to informal sector workers in the developing world. As noted in previous work (Brady et al. 2015), the women in our study are some of the most disadvantaged and vulnerable women in the world. The study of working poverty would benefit from greater attention to populations like these. More generally, the social sciences of poverty and inequality would be enriched by greater research on disadvantaged and stigmatized workers in the informal economy (Brady and Burton 2015).
REFERENCES


Table 1. Prevalence of Material Deprivation Among Female Sex Workers (N=2251).

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<tr>
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<th>No Electricity</th>
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<th>No Telephone</th>
<th>Missed Meal in Past 7 Days</th>
<th>Not Saved Money in Past 6 Months</th>
<th>Evicted in Past 5 Years</th>
<th>In Debt</th>
<th># of Deprivations</th>
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Table 2. Models of Material Deprivation Among Female Sex Workers (N=2251): Average Marginal Effects (and Z-Scores in Parentheses).

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Working Conditions
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<td>-0.000*</td>
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<td>-0.000*</td>
<td>-0.000*</td>
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<tr>
<td># of Clients in Past 7 Days</td>
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</tbody>
</table>

Note: Constants and controls for wave are not shown. References: no other contributors in the home, never married, no husband present, no parents present, cannot read or write, no other work, no ration card, did not start SW before 18, was not lured/forced/cheated into SW, works in a non-brothel and indoor venue, does not have broker, and wave 1.

* p<.05; ** p<.01
**Appendix.** Descriptive Statistics for Independent Variables.

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<th>Mean</th>
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<tr>
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<tr>
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<tr>
<td>Husband Present</td>
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<td>Parent(s) Present</td>
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<td>.419</td>
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<td><strong>Human Capital</strong></td>
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<td>Age²</td>
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<td>Literacy</td>
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<td># SW Known</td>
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<td>Other Work</td>
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<td>Ration Card</td>
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<td><strong>Working Conditions</strong></td>
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<td>Started SW Before 18</td>
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<tr>
<td>Deceived Into SW</td>
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<td>Street/Highway Venue</td>
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<td>Payment Received for Last Client</td>
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<td># of Clients in Past 7 Days</td>
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<tr>
<td>Wave 3</td>
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