Supply-Side Shocks: Strikes and Utilization of Contraception in Kenya

Are Doctors or Nurses More Essential for a Thriving Family Program?

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The issue of how shocks affect health care utilization has been extensively studied, with fewer studies on the impact of shocks on preventative behavior, including family planning. Studies on shocks in family planning include evaluations of impact of economic crisis in Indonesia (McKelvey, Thomas, and Frankenberg 2012), the impact of environmental and economic shocks in Mozambique (Hernández-Correa 2010), agricultural shocks on planned postponement of fertility in Tanzania (Alam and Portner 2016) which show divergent results on fertility regulating behavior. This paper makes two important contributions to the literature on impact of shocks in family planning: it is the first to examine impact from the supply side perspective and the first to differentiate between withdrawal of services by type of provider of family planning.

Kenya's public health system suffered two major blows in 2017: a four-month doctors' strike followed two months later with a 5-month nurses' strike. The strikes were aimed at pushing for the implementation of the collective bargaining agreement between the government at the national and county level and the service providers. The strikes paralyzed the health sector in the country with patients forced to seek expensive services in private hospitals.

Kenya has had several occasions of health care strikes in the past. In 1997, nurses went on strike, with doctor's representatives saying they were effectively on strike as well, as they were unable to care for the large number of patients without nurses or paramedics ("Nurses Strike Threatens", 1997). The impacts were especially felt in rural areas, where private facilities were scarce. In 2012, the government fired 25,000 nurses after they refused to return to work, striking over pay, allowances, and working conditions ("Kenya Sacks 25,000", 2012).

A 100-day Doctor's strike began in December 2016, due to the demand for higher wages, better working conditions, and more doctor hires ("Kenya Doctors End" ,2017). 2500 public health institutions were affected by the strike, which ended in March 2017. In June 2017, after a delay in agreed upon raises, nurses went on strike. The Kenya National Union of Nurses ended the strike November 2, 2017 (Odongo 2017).

Previous research on the 2017 nurses' strike has shown negative impacts on several health sectors. In the first month of the strike, an editorial in The Lancet tied 12 patient deaths to lack of care. People were waiting in long lines and paying high fees to utilize private facilities ("Kenya's Nurses Strike", 2017). One study of two health centers (one private and one public) looked at the number of deliveries during the two strikes (Coughtrey-Davenport 2017). They found that deliveries during the doctors' strike at the public facility declined by 98%, and during the nurses' strike by 89%, while at the private facility, deliveries increased by 171% and 161% respectively. The increase in private facility deliveries was not large enough to offset the decline in public deliveries, leaving the author to conclude there had been an increase in home births.

Immunizations were negatively impacted by the nurses' strike. Njugun finds a 57% decline in fully immunized infants during the strike in 18 county referral hospitals. This number was partially mitigated by the 252% increase in provisions by faith-based health facilities.

Research on the impact of strikes is not only important to estimate past damages, but to understand current situations. In February 2019, hospital nurses in 10 counties went on strike, with another 18 counties potentially planning to strike (Mueni 2019). President Kenyatta directed the Ministry of Health and county governments to fire nurses who did not return to work ("Nurses Dig In", 2019). In early March, the government announced that nurses will now be hired on a contract basis, which limits benefits and bars union membership (Namatsi 2019).

Data

We include family planning commodity and visits data in our analysis, taken from the Kenyan District Health Information System (DHIS2), which records monthly facility level data. We use national and county level data in our analysis. Using data from the DHIS2, we estimate the impact of the Doctors' and Nurses' strike on public sector family planning distribution. All health providers can distribute all methods, except for sterilizations, which must be performed in the gynecological ward by a doctor[1]. Our paper analyses the distribution of family planning through the public health sector from December 2015 through August 2018, focusing on the dips and recoveries around the two strikes[2]. Methods included in this analysis include contraceptive pills (including Combined and Progestin only), male condoms, injectables (Depo-Provera), Implants (Jadelle and Implanon), IUDs (Copper), tubal ligations, and vasectomies[3]. To discuss all methods simultaneously, we convert methods distributed into Couple Years of Protection (CYPs). The table below shows the CYP factor for each method.

Method	Couple Years of Protection
Tubal Ligation	10
Vasectomy	10
Implants- Implanon	2.5
Implants- Jadelle	3.8
IUDs- Copper	4.6
Contraceptive Pill	1/15
Injectables- Depo Provera	¼
Male Condoms	1/120

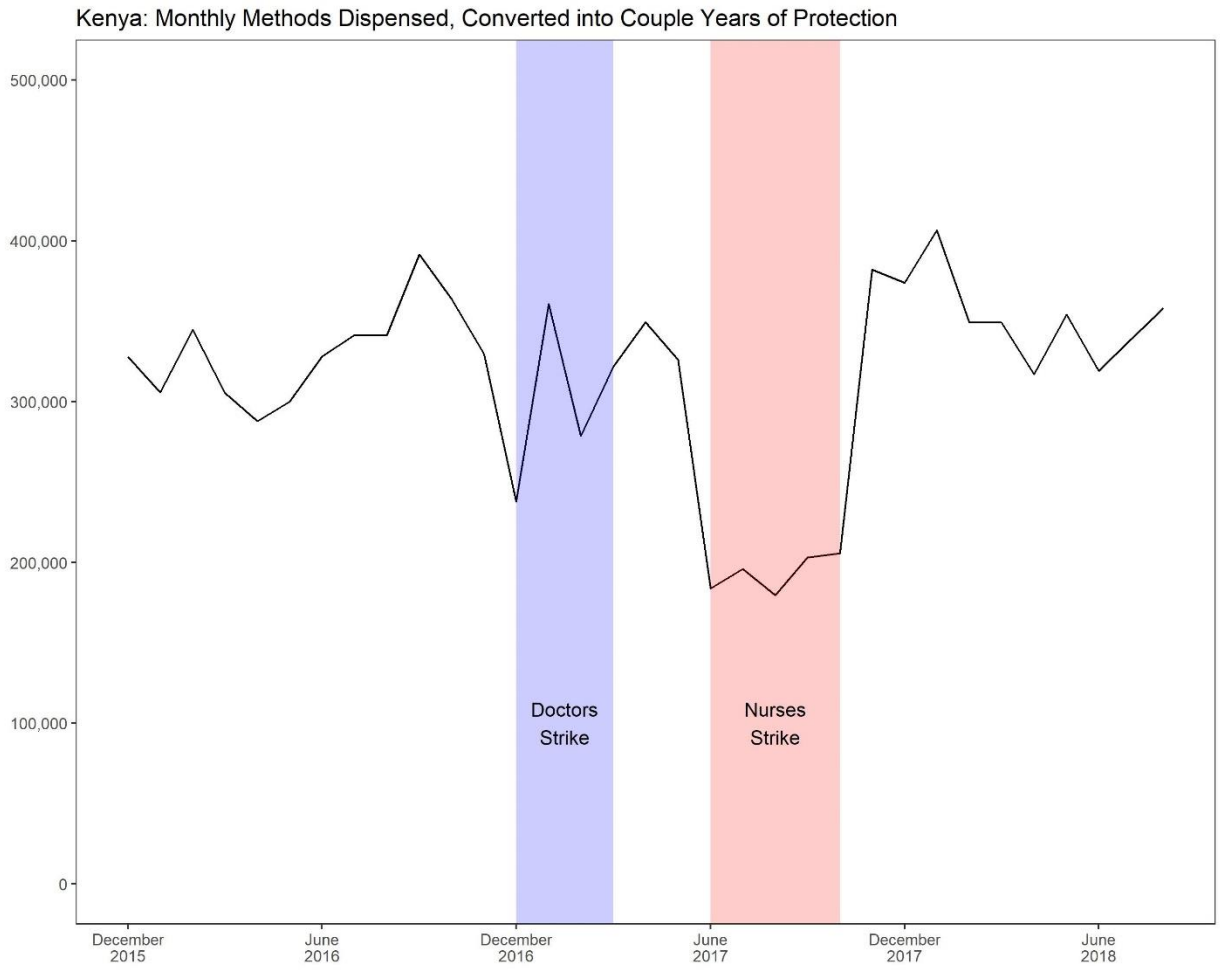
We included data from Performance, Monitoring, and Accountability 2020 (PMA2020), which has conducted national surveys since 2014. Of the seven rounds conducted by PMA2020, this paper will focus on Round 5 (PMA2020 2016), which was conducted in November and December 2016 (the doctors' strike began in December 2016), and Round 6 (PMA2020 2017), which was conducted in November and December 2017 (the nurses' strike ended on November 2, 2017). The microdata for Round 7 (PMA2020 2018), conducted in November and December 2018 was not available as of March 13, 2019, but published results are included to look at the long-term impacts of the strikes.

Government Provisions of Family Planning

[1] Community health workers can also distribute family planning

[2] There is one cell of missing data for August 2016, for male condoms. Because this date is before either strike, and not used in calculations, for the purpose of illustration we assume the number of condoms distributed is equal to the average of July 2016 and September 2016.

[3] Emergency contraception and cycle beads are also recorded, and included in our calculations of CYPs, however, given their small numbers are not included in the methods discussion.

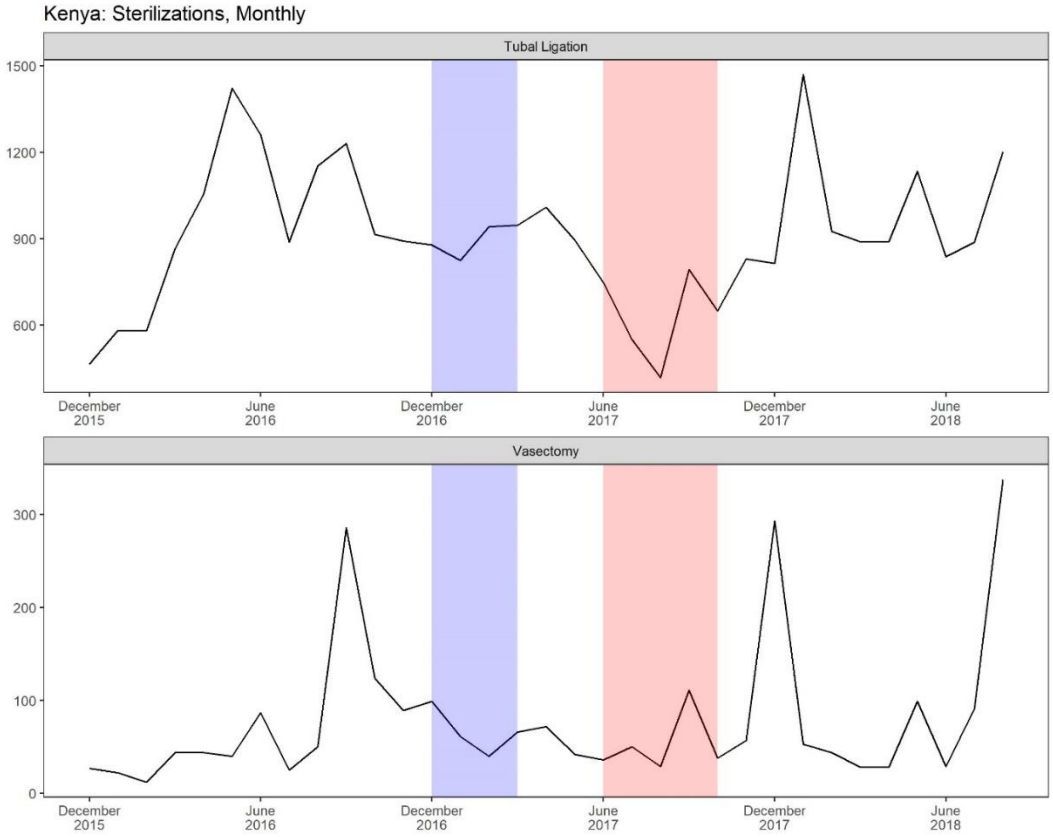


The above graph shows the monthly CYPs distributed by the government from December 2015- August 2018. While there is a decline in services at the beginning of the doctors' strike, the decline is minimal compared to the nurses' strike. On average, during the doctors' strike, CYPs were distributed at 91% of the pre-strike level (comparing to the month before the strike). While there are rises and falls during the strike, the first month is by far the worst, and the second month is actually higher than the month prior to the strike. There is a return to normal in CPY's distributed the month after the doctors' strike, 106% the level of the month before the strike.

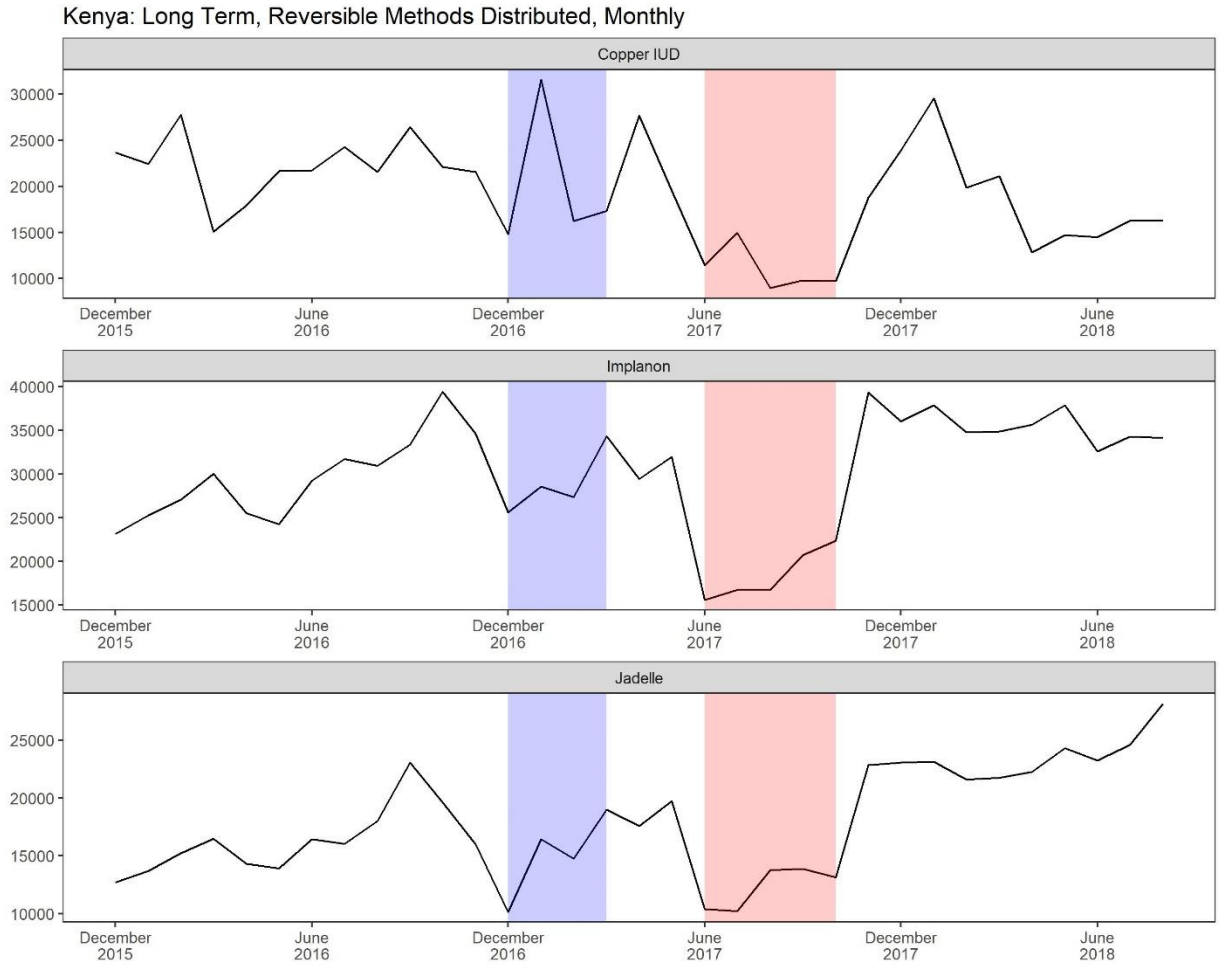
The nurses' strike dealt a harder blow to the family planning field than the doctors'. The average distribution of CYPs was only 59% of the distribution the month before the strike. The trend throughout the nurses' strike was more flat than the doctor's strike. After the strike, CYP distribution recovered immediately to 117% of the pre-strike CYPs. For five months following the end of the nurses' strike, monthly CYP distribution was higher than the month before the strike.

The next three graphics look at individual method distribution. Since sterilizations are the only methods which must be preformed by doctors, we would expect the drop for tubal ligations and vasectomies to be larger during the doctor's strike than nurses strike. For tubal ligation there is no change, on average, during the doctors' strike compared to the month prior, though there is a 13% increase the month after the strike ended. During the nurses' strike, tubal ligations were at 70% of their pre-strike level, and did not completely rebound the month after the strike ended (at 93% of pre-strike surgeries). This finding shows

that while doctors preform the tubal ligation, nurses are necessary for the procedure as well. Vasectomy numbers are very low in Kenya, generally less than 100 per month in government facilities. There was a small decline during the doctors' strike, but an increase during the nurses' strike.



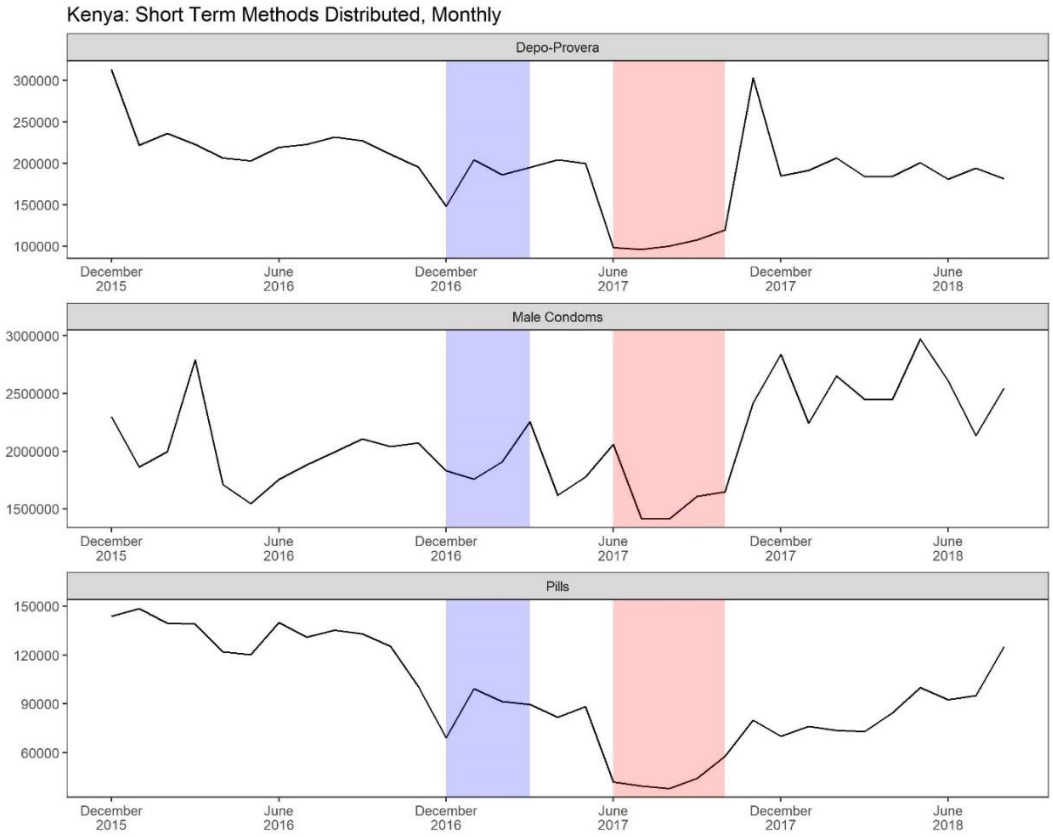
Looking at long term, reversible methods, during the doctors' strike distribution was at 93% (Copper IUD), 84% (Implanon), 94% (Jadelle) of pre-strike levels. Numbers were much lower during the nurses' strike- 56%, 58%, and 62% respectively of pre-strike levels. We also see larger increases in use immediately after the nurses strikes for both types of implants- 123% and 116% of pre-strike insertions. Both types of implants saw higher numbers of insertions in all months of data following the nurses strike than the month before the strike. Cooper IUDs were slightly lower one month after the strike than the month before the strike, but at 2 months post-strike were 122% of pre-strike levels.



For short term methods, Depo-Provera was administed at 94% of pre-strike levels during the doctors'. During the nurses strike, however, provisions declined to only 52% of pre-strike levels. We see a major surge immediately after the strike ends- with 152% of pre-strike levels in Novermber 2017, as the strike lasted twice as long as Depo-Provera's three month effectiveness. We also see small echo effects 3 and 6 months later as many of this cohort of women return for new shots.

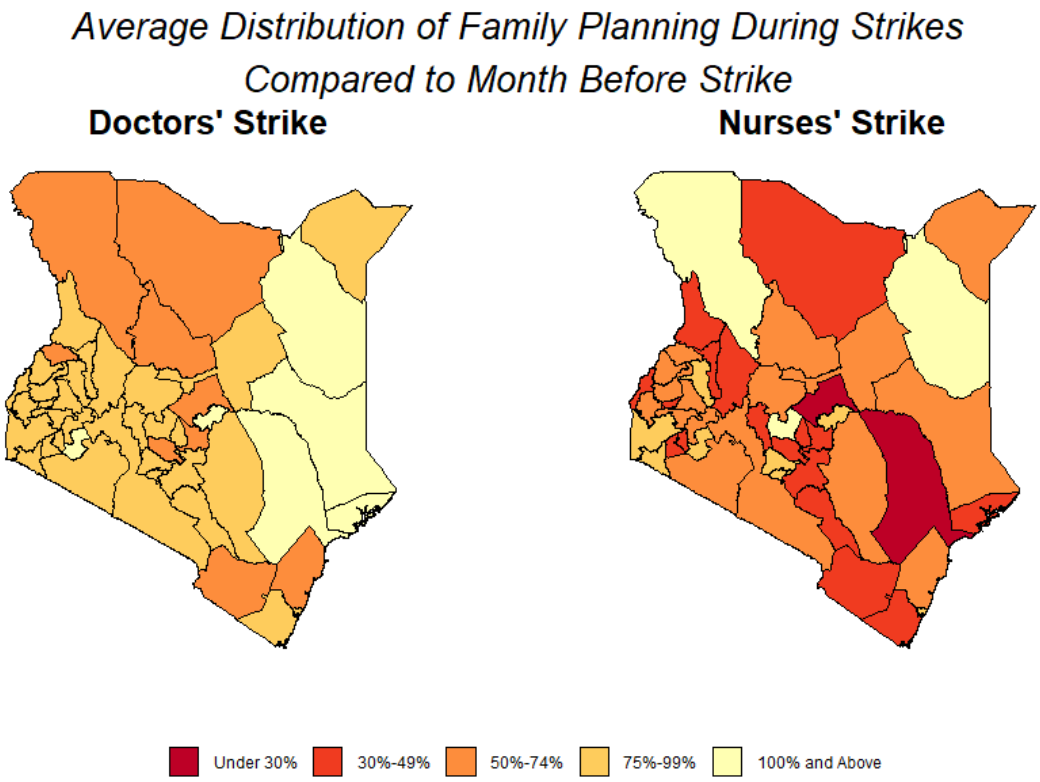
Male condom distribution experienced minimal declines during both the doctors's and nurses' strikes- both were higher than 90% of pre-strike levels.

Pills, which have been declining in distribution for several years, minimally declined during the doctor's strike, 81% of pre-strike levels, but had the largest decline of any method during the nurses strike- 50% of pre-strike level.



While the levels of decline in individual methods varied, overall, the proportion of CYPs coming from permanent, long acting reversible methods, and short-term methods stayed relatively stable across the 33 months of this analysis- permanent methods accounted for less than 2-3% of CYPs, long acting, reversible methods accounted 71-77% of CYPs, and short-term methods accounted for 20-27%.

The maps below show the subnational variation in CYP declines for the doctors' and nurses' strikes for the 47 Kenyan counties. The maximum decline during the doctors' strike was in Meru County, where only 59% of pre-strike CYPs were distributed. Seven counties experienced no decline during the doctor's strike. The darker colors of the map for the nurses' strike highlight the worse blow to family planning during this strike. The county with the worst distribution was Tana River County, which only distributed 14% of pre-strike CYPs. Only 3 counties maintained pre-strike levels on average. In 43 out of 47 counties, declines were worse during the nurses' strike than the doctors' strike.

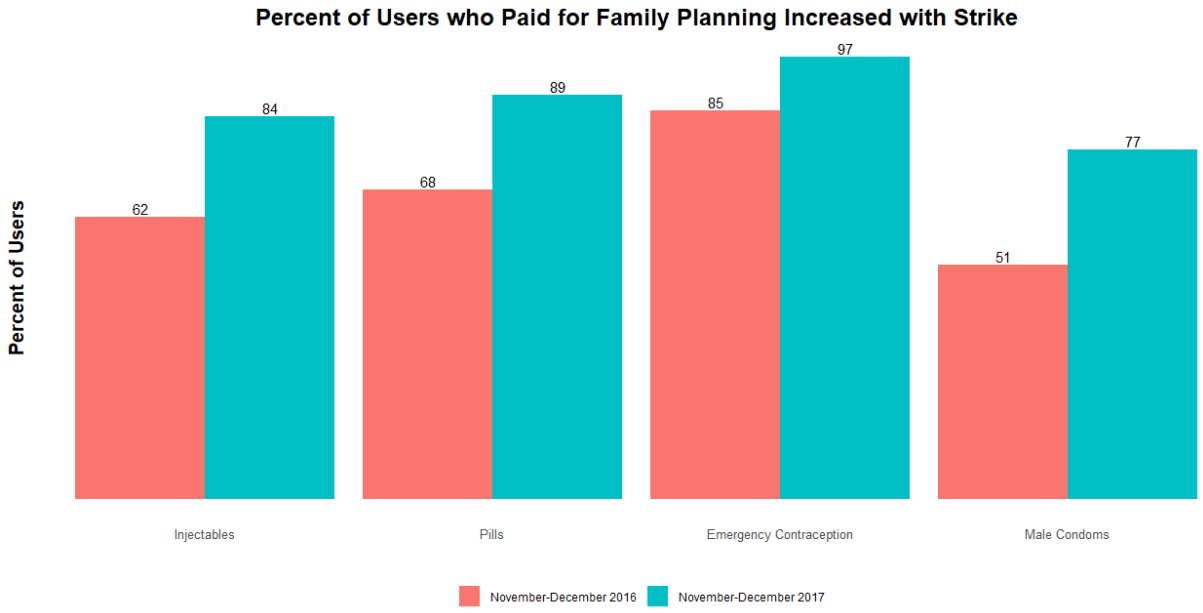


The government data illustrates in many ways the larger impact of the nurses' strike on family planning distribution than the doctors' strike. The remainder of this paper will look at some of the potential impacts of the strikes on women in Kenya.

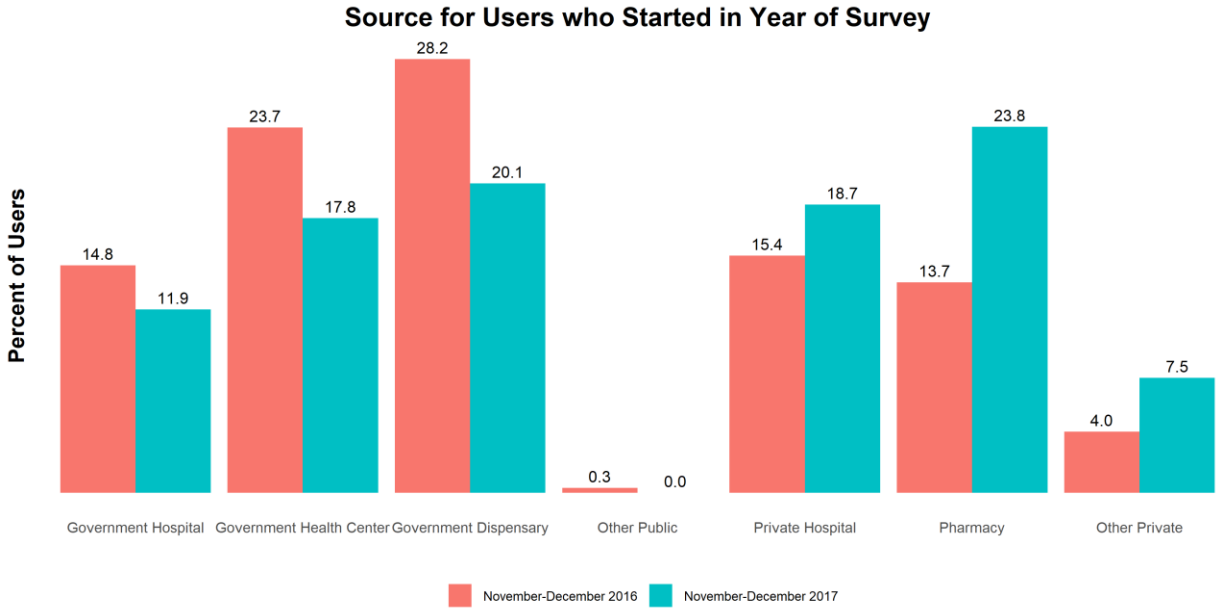
Survey Data from PMA2020

Comparing surveys right before the doctor's strike and right after the nurses' strike, we see changes in the percent of women who paid for family planning and the source of family planning. The figure below shows the percent of women who are using a method who paid for that method[4]. Users of injectables, pills, emergency contraception, and male condoms all were more likely to report paying for a method in 2017 than in 2016. The largest increase was in payment for condoms, which increased by 26 percentage points.

[4] In Round 5, the question asked if they paid for the method in the last 12 months. In Round 6 the question asked if they paid for the method the last time they received it. To make the questions more comparable, we limit methods to short term methods.



We also find that women are receiving their methods from different locations in the two rounds. Of women who started a method within the calendar year, in the 2016 survey, 67% of women received their method from a public source, this declined to 50% in 2017. We see the largest declines in government dispensaries, and the largest increases in pharmacies.



PMA2020 shows slight declines in mCPR for married and all women between 2016 and 2017, with recovery in 2018. However, all changes are within the confidence intervals of 2016 mCPR estimate.

Survey Date	Married Women mCPR	All Women mCPR
November-December 2016 (Before Strikes)	59.9	44.2

November-December 2017 (Immediately After Strikes)	59.0	43.7
November-December 2018 (One Year After Strikes)	60.7	44.6

Discussion

Supply side shocks can negatively impact family planning commodity distribution, but the impacts are not long lasting- almost ever method was distributed at pre-strike levels immediately following the end of both strikes.

While both the doctors' and nurses' strikes led to declines in family planning commodity distribution in 2017, the data illustrates that nurses have a much larger impact on a successful family planning program. Even for sterilizations, which are the only methods that mandate doctors' participation, declines were greater during the nurses' strike. This finding echoes the 1997 nurses strike, where doctors said they were effectively on strike as well, because of the fundamental role nurses play in patient care[5].

Though services declined, they did not disappear, highlighting the important role that community health workers play in the public family planning sector. Additionally, private organizations increased distribution of family planning, though one consequence of this is more women had to pay out of pocket for methods. The PMA2020 surveys show a dip in mCPR, but not a statistically significant decline. The population level mCPR may not reflect the decline in CYP distribution because of the already high use of long-term methods in Kenya, and the shift to private facilities for short term methods. When we look at mCPR by wealth quintile, between the 2016 and 2017 surveys, declines occurred in the 2nd lowest and middle quintiles, which may reflect the inability to pay for private facilities among these groups. As with Coughtrey-Davenport's conclusion that some women delivered babies at home because of the decrease in public services and the costs of private services, it is also likely that some women were unable to access family planning.

For several years, short term methods such as pills and injectables have been declining in popularity in Kenya. After the nurses' strike, there was a large and sustained increase in implant insertions. While women may choose these methods for the same reason they are popular around the world- high level of effectiveness, long lasting efficacy, and convenience of not having to return to health care providers every one or three months as with short term methods- following the strike some women may also see benefits in not having to rely on health care providers to several years. According to the PMA2020 surveys, implant use increased from 30% of in-union users in 2015, to 35% in 2017, to 38% in 2018. One worry with an increase in long-term methods, but perpetual strikes is that women may not be able to have their implants or IUDs removed at their preferred time.

The PMA2020 surveys do not show an increase in the percent of women currently pregnant, nor the percent of those pregnancies that were mistimed or unwanted. The main negative effect of the strike appears to be an increase in out of pocket costs to women.

Conclusion

The two health care worker strikes of 2017 highlight the importance of nurses' in the family planning field. The recent (and potentially ongoing) 2019 nurses' strike in Kenya has the potential to change the field of nursing in the country, if the government's plan to hire nurses only on contract basis comes to

[5] Lancet 1997 ADD IN FULL CITATION

fruition. While all methods experienced declines, government distribution did not disappear, due to the continued work of community health workers.

The main impact of the strikes appears to be increases in out of pocket costs for women. If insecurity continues, we would expect to see more women continue to switch from short term methods (such as injectables) to long term methods (such as implants).

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