Radio's Impact on Preferences for Patronage Benefits

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Abstract

Citizens in developing countries support politicians who provide patronage or clientelist benefits, such as government jobs and gifts at the time of elections. Can access to mass media that broadcasts public interest messages shift citizens' preferences for such benefits? This paper examines the impact of community radio on responses to novel survey vignettes that make an explicit trade-off between political promises of jobs for a few versus public services for all. The impact of community radio is identified through a natural experiment in the media market in northern Benin, which yields exogenous

variation in access across villages. Respondents in villages with greater radio access are less likely to express support for patronage jobs that come at the expense of public health or education. Gift-giving is not necessarily traded off against public services; correspondingly, radio access does not reduce preferences for candidates who give gifts. The pattern of results is consistent with a particular mechanism for radio's impact: increasing citizens' demand for broadly delivered health and education and thereby shaping their preferences for clientelist candidates.

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1. Introduction

In clientelist political systems, politicians disproportionately mobilize electoral support with targeted private benefits, such as government jobs or localized club goods, or gift-giving (vote-buying) at the time of elections.¹ In contrast, they under-invest in public goods, which deliver benefits broadly and are more effective in promoting citizen welfare and development.² Substantial research has therefore focused on the question of why citizens support politicians who rely on clientelist policies that contribute less to citizen welfare than public goods. We contribute a new argument to this research: citizens, especially in poor societies, support clientelist politicians in part because they value broadly delivered public services less than the private and targeted benefits that clientelist politicians offer. To test this argument, we examine the effects of citizen access to a type of mass media that broadcasts messages emphasizing the value of broadly-delivered public services. Citizens with greater media access are less likely to support politicians who promise patronage jobs at the expense of public services.

A recent and growing strand of research evaluates the impact of communication interventions designed to persuade voters to reject clientelist offers.³ However, researchers have not examined the potential impact on clientelism of an older and pervasive communication strategy aimed at increasing citizen demand for broadly delivered public services. Government ministries and international development partners frequently broadcast public interest messages through mass media to increase citizen take-up of public health and education services. In the process, they convey information about the value of these services, which might indirectly reduce citizen support for clientelist benefits by raising their demand for these other services. We employ novel survey vignettes and a natural experiment in media access in Benin to examine whether exposure to educational programming on the importance of health and education can reduce citizen preferences for clientelist benefits.

¹ The term “clientelism” is used here in a general sense, as described by Kitschelt and Wilkinson (2007, pp2)—“clientelist accountability represents a transaction, the direct exchange of a citizen’s vote in return for direct payments or continuing access to employment, goods, and services”. That is, clientelism in the Kitschelt-Wilkinson definition includes both post-election transfer of benefits as well as pre-election buying of votes. Vicente and Wantchekon (2008) distinguish between “clientelism” and “vote buying”, although both involve a *quid pro quo*: the exchange of private favors for political support. Clientelism is defined in their paper as an exchange of votes for favors conditional on being elected (eg. jobs in the public sector), and vote buying as votes for cash before an election. However, they blame both (or each) for reducing political incentives to provide broad public goods. Nichter (2011) defines vote buying strategies as “electoral clientelism” and distinguishes it from “relational clientelism”, in which benefits are provided on a longer term basis (rather than just at election times) in exchange for political support.

² Stokes (2005, 2007) and Vicente and Wantchekon (2008) summarize arguments that clientelism is detrimental to development, both economic and political. Khemani (2013) provides empirical evidence of a trade-off between vote-buying and the delivery of broad public services. Other work has taken clientelist practices, such as vote-buying and targeted benefits to ethnic groups, as bad outcomes in and of themselves and has examined how to reduce their use (Banerjee et al, 2011; Fujiwara and Wantchekon, 2013).

³ For example, Vicente (2010) examines the impact of messages exhorting citizens not to sell their vote for cash at the time of elections. Banerjee et al (2010b) examine the impact of puppet shows designed to persuade citizens to disregard ethnic identity when evaluating political candidates. Other types of voter education campaigns have focused on providing more general information about politician performance or policy choices, which has had impact in reducing clientelist practices (Fujiwara and Wantchekon, 2013; Banerjee et al, 2010c).

We focus on vignettes that posit an explicit trade-off between political promises of jobs for a few versus health or education for all. Wantchekon (2003) and others describe the promise of jobs in the government bureaucracy as the “common currency” of clientelism, since bureaucratic jobs are particularly amenable to the exchange of private benefits for political support.⁴ Government jobs are also a type of clientelist benefit that requires a trade-off with other services that are less amenable to clientelist targeting, such as health and education services. This trade-off is communicated through a budget constraint, making clear to respondents that politicians who allocate resources to government jobs for some can finance fewer inputs into health or education services that have more broadly distributed benefits. Respondents are then asked to choose whether to support a candidate who would allocate resources to jobs for a few rather than to health and education for all.

Consistent with Wantchekon’s prior work in Benin, we find widespread citizen support for clientelist benefits even at the expense of broadly delivered services: a majority of respondents (57 percent) express support for politicians who promise government jobs for a few, at the cost of lower spending on education services for all children. Similarly, 50 percent of respondents express support for jobs for some, at the expense of lower spending on public health services for all. However, exogenous exposure to community radio programming on the importance of education and health significantly attenuates support for candidates that offer patronage jobs. Respondents living in villages with greater access to community radio are more likely to support candidates who invest in health and education relative to government jobs.

Complementary evidence supports a particular mechanism for radio’s impact: that radio increases citizen demand for broadly delivered health and education and thereby shapes preferences for clientelist benefits. First, public interest programming on the community radio stations we examine is explicitly designed by sponsors to increase household demand for health and education services. Prior research documents that households with greater radio access in our study area (northern Benin) actually demand more health and education services: they invest more of their own resources in the acquisition of malaria bed nets and in their children’s education (Keefer and Khemani 2012 and 2014).

Second, radio’s effects are greatest in households that place greater value on information about health and education services. Community radio broadcasts specific information about public health benefits that are targeted to, and especially valuable for, pregnant women and young children. It also broadcasts detailed information about steps households can take to improve their health status and the education of children. We find, correspondingly, that access to community radio has the greatest effect on households with more children: radio persuades these households to shift away from supporting jobs benefits towards public health and education. Households with children are also more likely to be knowledgeable about education and health facts that are broadcast on community radio and to listen to community radio. Households that listen to radio and have more children are more likely to favor the candidates offering health and education benefits.

Third, radio does not reduce preferences for clientelist benefits in other vignettes that do not impose an explicit trade-off with health and education. In these vignettes, focused on gift-giving rather than jobs, respondents are not told that the gift-giving candidate necessarily provides fewer

⁴ In their reviews of the literature, Wantchekon (2003) and Robinson and Verdier (2003) both emphasize that government jobs are seen as a particularly pervasive form of political patronage. Wantchekon (2003) attributes the phrase “common currency” to Clapham (1982). Robinson and Verdier (2003) also provide a formal analysis of why policy instruments of jobs in the public bureaucracy have characteristics suitable to clientelist targeting.

health and education services. If radio effects operated by reducing citizen taste for clientelist practices such as vote-buying, we should observe a negative correlation between radio access and preferences for gift-giving candidates. In fact, we found no indication that the community radio stations we focus on carry any systematic political programming to influence citizen views of clientelist practices such as vote-buying. Consistent with this, radio access does not reduce preferences for gift-giving candidates. We conclude that radio has a negative effect on preferences for clientelist benefits when these are clearly presented as coming at the expense of health and education, and no effect or an ambiguous effect when the trade-off is unclear.

Our data come from a March 2009 survey of over 4,000 households in 210 villages spread across the 32 communes of northern Benin. This part of Benin was identified in Wantchekon's (2003) work as most amenable to clientelist campaign platforms that include promises of jobs, which garnered more votes than broader public interest platforms. Nevertheless, even in this relatively inhospitable terrain, citizen access to radio programming has a significant effect on citizen support for candidates who promise the expansion of public health and education services.

This paper contributes a novel empirical strategy to the identification of the causal effects of media on the preferences of households for clientelist politicians. Media effects are notoriously difficult to identify, since the location and programming of media outlets are typically influenced by the characteristics of the residents of the broadcast area. Community radio stations in Benin are, in principle, no different: specific commune characteristics could determine the commune in which they are located. However, the unique structure of radio markets in the northern region of the country gives rise to substantial intra-commune variation in radio access that is exogenous to village characteristics.

Twenty-one community radio stations serve this region, and all carry similar programming on the value of public health and education services, sponsored by government ministries and foreign donors. The stations are dispersed, rather than concentrated around specific markets or densely populated areas; each is small so that it can be community-owned and managed. Because the signals of these low-powered stations are easily disrupted, even villages located close to each other, and sharing the same economic, geographic, and topographical features, can differ significantly and exogenously in the number of community radio signals (and hence, the amount of programming content) reaching them both from within and outside the commune. We draw our village sample by exploiting this potential for exogenous variation in intra-commune radio access across similarly situated villages.

Our results have implications for the new thrust in international development to use information, transparency, and citizen engagement to promote good governance. They suggest that mass media can play a role in shifting political competition away from clientelist strategies and towards more broad-based public service delivery that is needed for development. Specifically, public interest media programming on the value of health and education can mitigate one type of problem that sustains clientelism: insufficient voter demand for public services relative to their demand for private benefits. It can therefore help to build a constituency for policy promises directed at improving health and education services.

At the same time, however, the media we examine here do not systematically reduce the appeal of vote buying at the time of elections. Furthermore, Keefer and Khemani (2012, 2013) show that access to media, in and of itself, even when that media encourages households to care about health and education, is insufficient to enable citizens to extract greater benefits from government. Together, these results show that the impact of media depends upon programming content and

institutional context, and suggest that the design of related transparency policies is likely to matter in whether it achieves its objectives.

The next section of the paper reviews the literature on citizen support for clientelism and the role of mass media. Section 3 describes the media market in Benin, and the nature of programming content that can plausibly account for our results. Section 4 discusses the empirical strategy to identify radio's impact. Results are presented in Section 5. The discussion in Section 6 reports evidence supporting the mechanisms through which community radio operates: it does not reduce tastes for clientelist appeals; households with children that listen to community radio are also more likely to prefer non-clientelist candidates; and those same households are more likely to know salient education and health facts.

2. Citizen support for clientelism and the role of mass media

A large body of research emphasizes that citizens of developing countries are particularly susceptible to clientelist forms of political mobilization (Stokes, 2005, 2007; Kitschelt and Wilkinson, 2007; Vicente and Wantchekon, 2008). Targeted transfers, from vote-buying to patronage jobs, have been modeled as having a larger effect on political support from poorer groups, for whom the marginal utility of an additional unit of consumption is higher (Dixit and Londregan, 1996).

However, income alone does not explain why the poor are more willing to give up public goods or broadly delivered public services, which also increase their welfare, in exchange for (the possibility) of receiving more private benefits. Several strands of research have theorized that the trade-off between targetable private benefits and broadly delivered public services arises in political strategies because of electoral and political institutions as politicians determine how to allocate resources to win office (Lizzeri and Persico, 2001; Keefer and Vlaicu, 2008; Robinson and Verdier, 2003). In developing country economic and institutional contexts, there is a higher trade-off because politicians are more easily able to win political support through targeted benefits (Stokes, 2007; Kitschelt and Wilkinson, 2007; Baland and Robinson, 2008). Khemani (2013) provides empirical evidence of this trade-off using uniquely suited data from the Philippines. In villages where vote-buying is more widespread in elections, municipal governments deliver fewer public health services, and, health records show that a larger proportion of children are malnourished.

This paper focuses on one reason why the provision of targeted benefits would be more efficacious as a political strategy in developing countries: lower voter demand for public goods because they are ill-informed about the true value of public goods. For example, persuading poor households to take up government-provided anti-malaria bed nets is a substantial challenge in poor countries because these households are less likely to know that they reduce the risk of communicable disease (Cohen and Dupas, 2010; Dupas, 2009; Hoffman, 2009; Mahajan et al, 2009). Furthermore, the poor may be especially likely to value immediate monetary benefits more than health and education (Mullainathan and Shafir, 2013). We build on this literature by examining, for the first time, whether greater access to mass media that carries programming designed to increase demand for health and education reduces citizen support for clientelism.

Through a unique field experiment conducted during the 2001 presidential elections in Benin, Wantchekon (2003) provides some of the most definitive evidence of citizen support for clientelist strategies. The experiment randomized citizen exposure to clientelist or programmatic policy platforms; those exposed to the clientelist platform were more likely to vote for clientelist candidates. This effect was strongest for candidates in northern Benin, the region where our study is

located. We extend this work by showing that exogenous exposure to mass media broadcasts touting the value of public services reduces support for clientelist candidates.⁵

A substantial literature examines the effects of media on political participation and competition (see Prat and Strömberg, 2005, for a review, and DellaVigna and Gentzkow, 2009, and Gentzkow et al., 2011 for more recent work). Ferraz and Finan (2008) show that the presence of radio amplifies the electoral effects of the public disclosure of municipal audit reports—incumbent mayors who had greater suspected corrupt activities revealed by the audit were more likely to lose re-election in municipalities with radio. Some work also shows that citizens with greater media access are more informed about government programs and more likely to participate in political processes (e.g., by voting) to hold government accountable for the delivery of program benefits. For example, Prat and Strömberg (2005) show that individuals with better access to commercial television in Sweden not only participated more in elections but also had more political and policy knowledge. Similarly, Snyder and Strömberg (2013) show that where the correspondence between electoral districts and newspaper markets in the United States is low, voters know less about their legislators and legislators appear to work less diligently on behalf of their districts. The analysis here builds on this research by linking media programming to the demands that citizens make of politicians.

A large literature has found that citizens with greater media access receive greater benefits from programs, such as disaster relief or welfare benefits targeted to individual households (e.g., Besley and Burgess 2002, Strömberg 2004). In contrast, looking at broadly delivered health and education services, Keefer and Khemani (2012, 2014) find no evidence that media access enables citizens to extract greater government benefits in these policy contexts. Schools located in villages with greater radio access enjoy no greater government inputs (such as teachers, or books), nor more responsive service providers (lower teacher absenteeism) nor more active PTAs (Keefer and Khemani 2014). Households in villages with better community radio access are less likely to receive free bed nets from the government (Keefer and Khemani, 2012). However, in villages with greater radio access, households were more likely to buy books for their children and to purchase bed nets. The implication of the analysis here, discussed in the conclusion, is that a change in citizen policy preferences brought about by media access need not be – and in northern Benin, is not – sufficient to change political behavior.

A recent strand of literature has focused on purposive information interventions and survey experiments (Banerjee et al, 2010; Humphreys and Weinstein, 2012; Malesky et al, 2012; Banerjee et al, 2013; Chong et al, 2013; Fujiwara and Wantchekon, 2013; Paler, 2013). Fujiwara and Wantchekon (2013) find that exposure to greater policy information through town-hall meetings in Benin has no significant effect on survey responses regarding vote-buying, but a very significant negative effect on a broader index of responses to nine questions related to clientelism (including whether voters believed that the campaign was informative; whether they knew the candidate platform; and whether they discussed politics with those outside their ethnic group). Other work has also found that information provision can reduce vote buying and weaken voter attachment to identity-based

⁵ Wantchekon and Vermeersch (2005) find that respondents who listen to radio, watch television or read newspapers were more likely to have voted for candidates who campaigned on a public policy platform, but not less likely to vote for candidates with clientelist platforms. Our findings are consistent with theirs, but we are able to identify media's impact on the basis of exogenous variation in media access rather than self-reported listening behavior. In addition, because we distinguish across radio types (community, private, religious, public), and have extensive information about radio programming, we can shed light on specific mechanisms of radio impact.

candidates who make clientelist appeals (Banerjee et al, 2010b; Banerjee et al, 2010c). Our work adds to this literature by identifying the effects of mass media, a market institution for information provision, broadcasting programming that was not directly intended to change attitudes towards clientelism.

In sum, prior research on media effects on political attitudes raises three questions that we address here for the first time. First, does media access influence household demand for broad public services compared to targeted benefits? Second, do the effects of radio access depend on the salience of the programming for the audience? Finally, third, does the content or framing of radio programming explain the pattern of its influence? As will be discussed in the following section, we know that community radio in Benin broadcasts significant content on the importance of health and education investments for the well-being of children and families. Furthermore, these programs tend to frame the issues in terms of parental responsibility towards their children, to influence private household behaviors, as opposed to public accountability for the delivery of services. We have no indication that radio programs devote similarly systematic attention to the practices of clientelism, such as gift-giving or vote buying at the time of elections, and their consequences. If content and framing matter, radio should only impact attitudes towards health and education, and through these, indirectly, attitudes towards clientelism, rather than directly reducing voter taste for targeted benefits. Our survey vignettes allow us to distinguish between direct and indirect effects of radio on the support for clientelism.

3. The media market in Benin

Benin is a small country in Francophone West Africa with a land area of approximately 110,000 square kilometers (slightly smaller than the state of Pennsylvania) and a population of about 8,400,000. However, it has several advantages for the study of media effects. By the standards of the region, it has a relatively long (nearly 30 year) history of competitive elections and peaceful turnover of political power, so it is a plausible setting in which to examine competing hypotheses on whether media effects operate through accountability channels. Benin is also known for relatively greater press freedom. According to ratings of *Reporters Without Borders* from 2009, the year of our survey, Benin ranks 72nd in the world, out of 175, in terms of freedom of the press, just behind Brazil (number 71), Botswana, Malawi, Tanzania, Liberia and Togo, but substantially ahead of most other African countries. Furthermore, the media market in Benin is characterized by a vibrant network of local radio stations that several household surveys, including our own, reveal as the preferred media. According to the nationally representative Afrobarometer (2005) survey of Benin, 25 percent of households own televisions. In our sample of 4,200 households from northern Benin, only 8 percent own a television, but 84 percent own radios.

Benin has 77 communes. These are the relevant “market” for potential entrants of local radio stations (Ahokpessi, 2009). Communes serve as the electoral districts from which 83 members of the national assembly are elected through a system of party-list proportional representation. It is also the lowest tier of government, with each commune government consisting of a council of directly elected members who elect a mayor from among their ranks.

During March and April 2009 we collected ownership, licensing, programming and other details on all 68 radio stations operating in Benin. The data revealed little within-commune variation in radio access in the more urbanized and densely settled southern region of the country, where most areas have access to multiple national and commercial radio stations. However, the 32 northern communes of the country exhibit significant intra-commune variation in access to

community radio; this variation is exogenous to village-level characteristics. We therefore study this area, taking advantage of this natural experiment in radio access.⁶

A map of our study area is provided in Appendix 1. To determine radio access, village-level key informants listed which radio stations they were able to receive. In addition, enumerators used their own transistors to verify and expand on this if they received additional signals. The codes of the radio listed as accessible to the village were then matched with the radio survey data to examine the nature of programming available to the village. Table 1 summarizes the number and types of radio stations covering this study area.

Table 1: Access to Radio Stations in North Benin

Type of Radio station:	No. of stations accessible to the region	No. of sampled villages covered (Total=210)	Average Signal Strength	Average number of programs broadcast over previous 3 months	
				Health	Education
Government-owned public	3	200	2667 watts	40	33
Private Non-commercial or Community	21	195	231 watts	138	50.6
Private Commercial	10	49	476 watts	27	21
Religious	2	71	.	36	.

All of the community radio stations list the provision of information on health and education as “very important” to their objectives. The average number of health programs (138) is more than three times as many as public or private commercial radio. The average number of education programs reported by station managers is almost double for community radio compared to public radio, and almost three times that of private commercial radio. Hence, access to more community radio stations is associated with exposure to more programming on the value of health and education services.

The importance of public interest programming for community radios emerges in part because, of the 21 community radio stations to which our village sample has access, 14 are dependent on foreign donors and three on non-governmental organizations for funding; none receive meaningful revenues from advertising. European donors funded community radio across several African countries to promote local development initiatives in remote and rural areas (Gratz, 1999). Donors believed that these small radio stations would communicate public interest messages

⁶ Only the northern commune of Parakou is excluded from our study because it exhibits relatively little within-commune variation in radio access. It is the second largest city of Benin, after the capital, Cotonou, in the south. All other communes in the north are included.

more effectively, with the expectation that community-based station managers could “translate” messages more persuasively, taking into account local cultures and tastes. Subsequently, donors have used these radios as outlets for public interest programming in health and education; donor sponsorships of these programs is a significant source of funding for these stations.

The clientelism vignettes used in the analysis below focus especially on specific government policies to control malaria and to improve schools. This mirrors the content of donor-supplied health and education programming. Attitudes towards clientelism could also be influenced by radio access if community radio broadcast programming aimed at changing listeners’ electoral behavior and political attitudes. We find no evidence of such programming. Neither donors nor radio station managers indicated sponsorship or broadcasting of programming intended to discredit clientelist forms of electoral mobilization. Instead, the key characteristic of community radio programming is its emphasis on health and education.

The Roll Back Malaria program, a very large, multi-donor malaria program in Africa, has used community radio to broadcast information about malaria control policies and to advocate for better public health practices. Such radio broadcasts are a significant part of the strategy to combat malaria. Donor representatives and station managers confirm that they support programming that broadcasts general information about the value of bed nets and sponsor announcements regarding the public distribution of bed nets through health facilities (USAID, 2011; The World Bank, 2006).

Similarly, in the case of education, consultants that work with radio program managers on donor-sponsored education programs describe these as targeted at changing household behaviors towards health and education. For example, the USAID Team Leader for Education and Basic Services writes that education messages in radio programming supported by USAID are intended to “reinforce the value of basic education and the important role of teachers.”⁷ Local USAID consultants and officials in Benin, who specifically work with community radio stations, also indicate that programming content emphasizes the need for parents to monitor classroom attendance and test results; “do’s and don’ts” of school life; the activities of parents’ organizations; the rights and duties of students; and the negative effects of teacher absenteeism. Some of this content (e.g., parental monitoring of student behavior) is directly aimed at persuading parents to pay more attention to and facilitate the academic performance of their children. They also mentioned programming on health (HIV/AIDS information), social issues (gender and equity and avoiding early marriages), and the importance of having birth certificates.⁸

The information in Table 1 summarizes the evidence that community radios broadcast more health and education programming. Tables 2a and 2b more formally establish that, controlling for commune fixed effects, intra-commune variation in village access to community radio is associated with large intra-commune variation in exposure to health and education programming.⁹ The first column of Table 2a shows that additional community radio stations received by a village, over and above the average of the commune, are associated with receiving 129 additional health programs in a

⁷ E-mail correspondence with Cynthia Taha, April 14, 2011.

⁸ E-mail correspondence with Yikee Chu and Milton Amayun, USAID-Benin, and Al Miller, World Education, Benin.

⁹ The dependent variables here are the number of health and education programs that the radio manager reports as being broadcast over the last 3 months prior to the survey. We discuss in Section 4 below how controlling for commune fixed effects allows us to identify the impact of community radio in particular. We cannot similarly identify the effects of other types of radio.

three month period. The second two columns compare the impact of having an additional community radio station to that of an additional radio station of any other type, confirming again that community radio is a particularly special media in this context, in terms of communicating information about health issues.

Table 2a: Community Radio and Village Exposure to Health Programs

Dependent variable: Number of health programs broadcast in the three months prior to the survey	Community radios	Including total number of other radios	Disaggregating by radio type
Community radio received by village (# stations)	129.14*** (43.00)	126.27*** (47.21)	124.66*** (39.67)
All radio received by village (# stations)		2.77 (17.94)	19.26 (0.00)
Public radio received by village (# stations)			-51.28 (52.52)
Commercial radio received by village (# stations)			68.83* (34.61)
Religious radio received by village (# stations)			-63.98 (63.10)
Observations	210	210	210
R ²	0.80	0.80	0.81

Note: OLS with commune fixed effects. Standard errors in parentheses, clustered at commune level. *** Significant at 1% level; ** Significant at 5% level; * Significant at 10% level. Dependent variables is the number of health programs received by a village, over the three months prior to the survey team's visit, as determined by information supplied by the managers of the radio stations whose signals reach the village.

Villages that receive an additional community radio station also have access to 40 additional education programs over a three month period (the first column in Table 2b). The second column of Table 2b shows that each additional radio station of any kind is associated with approximately 19 additional education programs. Additional *community* radios, however, are associated with 20 *more* education programs than the average additional station. The third column disaggregates radio station types, distinguishing the contribution of community, public, commercial and religious radio stations to education programming. Community radios make, by far, the largest contribution to such programming compared to public and commercial radio. Although religious stations are also more likely to broadcast education programming, this is likely to include more sectarian shows compared to the more secular programming provided by community radio. Public and commercial radios, with less need to raise funds by selling air-time to donors or government ministries, contribute relatively little education programming.

Table 2b: Community Radio and Village Exposure to Education Programs*(Commune fixed effects, commune-clustered robust p-values in parentheses)*

Dependent variable: Education programming	Community radios	Including total number of other radios	Disaggregating by type of radios
Community radio received by village (# stations)	40.46 (0.00)	20.52 (0.04)	38.61 (0.00)
Within-commune community radio received by village (# stations)			
Out-of-commune community radio received by village (# stations)			
All radio received by village (# stations)		19.28 (0.00)	
Public radio received by village (# stations)			0.522 (0.97)
Commercial radio received by village (# stations)			6.438 (0.39)
Religious radio received by village (# stations)			67.08 (0.01)
Observations		210	210
R ²		0.90	0.91

Note: Standard errors clustered at commune level. Each column regresses the number of education or health programs received by a village, as determined by information supplied by the radios that broadcast to the village, on the number of different types of radio stations received by the village. In addition to the radio controls in the table, the regressions control only for commune fixed effects and therefore capture only intra-communal variation in village access to education and health programming.

Despite the fact that individual community radio stations are small (have weak signal strength), collectively they are a significant media alternative for nearly all villages in our sample. At least one community signal is accessible to 93 percent of our sampled villages. In contrast, while private commercial radio stations are generally larger (greater signal strength), they are concentrated in the southern communes of Benin, outside our study area. Only a few villages in our sample (23 percent) are able to access their signals. Government-owned public radio has several relay transmitters and covers most of the villages in our sample (95 percent) with uniform programming.

Survey respondents also report a strong preference for community radio. Of the 3,828 households that listen to some radio, 64 percent report listening to at least one community radio

station and 45 percent report listening to national public radio.¹⁰ Only 13 households report listening to religious radio, and only 176 to private commercial radio (about 4 percent of the sample).¹¹ These listening preferences reflect the availability of stations (as discussed above) and are consistent with what broadcast media experts have contended: poor households in rural Africa prefer to listen to local radio stations because their programming conforms better to household tastes and linguistic preferences than do broadcasts from radios headquartered outside of their region (Buckley et al, 2008).

We have shown that community radio stations carry significantly more health and education programming, and that households listen to them. Why, however, should access to a larger *number* of community radio stations increase exposure to the relevant programming? People listen to one radio station at a time. If they routinely tune into only one station, additional stations would not increase their exposure to educational programming. Alternately, if people switch stations to find their preferred programming, the availability of multiple stations could enable them to *tune out* health and education programming in order to find entertainment programming on other stations. Our survey data support the opposite mechanism, however: households listen to radio precisely to hear news and information about public affairs.

The survey asked respondents to indicate how important it is to them to listen to each of the following types of radio programs: on music, sports, news and public affairs, among other categories. Radio is the only source of information about the outside world for most households. Consistent with this, news and public affairs was the type of programming to which households were most likely to attach the highest level of importance (“very important/I listen a lot every day”): 56 and 48 percent of respondents cite these as very important, compared to 40 percent and 25 percent, respectively, who say the same for music and sports. Furthermore, respondents who indicate that they prefer news and public affairs programming are also significantly more likely to listen to community radio stations.

Given the programming preferences of households, more community radio stations are likely to increase household access to public interest programming. If people strongly prefer a particular type of programming, if different stations (e.g., community radio stations) are more likely to broadcast that programming, and if those stations vary in the exact timing and content of that programming, then more stations give more households the opportunity to listen to the programs that they prefer. That is, at any given time, the likelihood that at least one station is broadcasting the type of public-interest programming that a household in the village finds valuable is higher in villages with access to more community radio stations.

Because of the features of the radio market in Benin, the type of public-interest programming carried and the distribution of consumer preferences for such programming, we examine the impact of variation in the number of community radio stations that reach villages. The next section argues that this variation in access is exogenous to other village characteristics that also matter for our outcomes of interest.

¹⁰ “Listenership” data was gathered by simply asking households to name the station they listen to and then having our investigating team post-code the response for type of radio. We did not directly prompt the household to categorize what *type* of radio they prefer.

¹¹ Even among the 176 that report listening to some private commercial radio, 111 also report listening to at least one other public or community radio station.

4. Identification—the “natural experiment” in north Benin

Media access can inform and persuade individuals both directly, through their own exposure, and indirectly, through social networks and other social institutions. Consequently, the influence of village radio access on household behavior need not depend on whether households themselves listen, nor on the number of households that listen. Effects of radio access could be large if even a few influential households, or opinion leaders, listen, and persuasively transmit the messages within villages. We therefore identify the reduced-form effect of media on human development outcomes at the village level.¹²

However, unobserved factors that influence media programming choices and access may have an independent effect on political attitudes towards clientelist politicians. The location decisions of community radio stations could be based on the policy preferences of the local population, for example, or non-clientelist politicians might promote the introduction of community radio stations. Northern Benin provides a natural experiment in village-level radio access that allows us to use a novel identification strategy to estimate media effects that are unbiased by these unobserved factors.

Important prior research uses geologic features that obstruct radio broadcasts in order to identify the effects of media access (Strömberg 2004, Olken 2009, Yanagizawa 2009, and della Vigna, et al. 2011). However, because the radio stations in question are typically powerful, the geologic features that are needed to obstruct access are often significant. For example, Yanagizawa (2009) examines the effect of “hate radio” on the Rwandan genocide. Rwanda’s elevation varies from 900 to more than 4,000 meters above sea level and is rated by Fearon and Laitin (2003) as 73 percent mountainous, among the most mountainous 5 percent of countries. Such differences may influence the outcomes of interest independently of their effects on radio transmissions.

A key contribution of our analysis is to identify the exogenous effect of radio access on political attitudes without relying on significant geologic features. Benin’s geography is flat and homogeneous. Its highest elevation is 640 meters and Benin is rated by Fearon and Laitin as zero percent mountainous. However, because of the large number of small local radio stations in northern Benin, even these slight variations, which are unlikely to have an independent impact on political attitudes, are enough to create exogenous variation in radio access across villages within the same commune.

The location of a community radio station in one commune rather than another is likely to be endogenous to commune-specific political and economic characteristics that influence political attitudes. Hence, all of our analyses control for commune fixed effects and identify media effects only by exploiting inter-village variation within communes. The identification challenge, therefore, is to show that this intra-commune, inter-village variation in radio access is exogenous to unobserved village characteristics that might also affect political attitudes.

Three characteristics of the radio market support the conclusion that within-commune differences across villages in radio access are exogenous. First, signal weakness means that otherwise insignificant differences across villages in location or geography give rise to significant differences in signal reception. Second, the histories of specific community radio broadcasters indicate that the placement of these was driven by commune-specific factors, not by the

¹² Future research could fruitfully invest in an empirical strategy to disentangle the role of media in inducing persuasion through social networks, from the role of information alone.

characteristics of neighboring communes. Third, there are no measurable observable differences between villages with more and less radio access.

The conclusion that village access to community radio is exogenous is reinforced by the fact that most of the within-commune variation in village access to community radios is driven by differences in their ability to receive the signals of stations *outside* of their commune. It is still possible that community radio stations might have located themselves to reach a specific type of audience that straddles commune boundaries. However, as we discuss below, we sampled villages purposively, picking those that were a similar distance away from main roads, radio towers and commune boundaries. After surveying the sampled villages, we found that they varied significantly in access to out-of-commune stations because of the accidents of where signals from multiple, small radio stations end their reach.

As Table 1 illustrates, although 93 percent of the sampled villages can access signals from at least one local community radio, variation in the number of community radios to which they have access is large, ranging from zero to seven stations. The average number is 2.4; the standard deviation is 1.5, and exposure to a greater number of signals should be correlated with greater exposure to health and education programming on, for example, the value of education and anti-malaria bed nets. In contrast, villages are homogeneous in their access to the relay stations of the national public radio station: all but 20 villages in the sample receive strong signals from one or more relays.

Some of the variation in access is driven by between-commune differences that are unlikely to be exogenous to commune characteristics. For example, donors needed local partners to establish community radio stations. Idiosyncratic conditions affected which communes yielded such partners, and therefore the communes in which radio stations were established.¹³ We control for these unobserved characteristics using commune fixed effects, relying on within-commune variation in radio access to identify the effects of media programming on political attitudes.

Reliance on within-commune variation in access to community radio could fail to identify the effects of radio access if the market consisted of only a few community radio stations to which all villages in communes had similar access. This is not the case: within-commune variation in access is substantial. The average household has access to .63 within-commune community radio stations, with a standard deviation of .51. It has access to 1.78 out-of-commune stations, with a standard deviation of 1.45.

The historical record suggests that the location of these radio stations had little to do with the particular characteristics of commune villages. The stations proliferated in northern Benin when donors supported multiple small stations, spread out across many communes, in order to extend the reach of public interest programming to remote, rural areas. Donors chose to support such small radio stations, believing that community-based station managers could communicate public interest messages more persuasively, taking into account local cultures and tastes. Donors' main criterion

¹³ In a detailed case study of one of these community radios, Radio Tanguieta located in Tanguieta commune in Atacora department, Gratz (1999) reports on the political contestation over the locally-elected committee to oversee the radio and manage its funds. Control of the community radio rested in the hands of local politicians and Gratz indicates concerns about embezzlement and over-spending on salaries of numerous presenters representing different ethnic groups. Community radio projects are subject, then, to the same political risks of local elite capture and clientelist and ethnic politics as community-based projects in other sectors.

was remoteness; they did not anticipate that these stations would later rely on donor-funded health and education programming to sustain themselves.

Because donors preferred many, small, dispersed and remote community radio stations, substantial village-level variation in radio access emerged that is driven purely by accidental features – short distances and small changes in elevation – that are enough to degrade station signals. Consequently, villages that are close to each other and not separated by any remarkable topographical features can nevertheless exhibit significant differences in access. These differences are unlikely to affect political attitudes except through their influence on radio access.

We construct our village sample to reinforce the exogenous variation in radio access, by choosing villages that are closely matched in location and access to infrastructure, but still exhibit post-sampling variation in radio access. The 210 villages in the study were selected from maps showing the location of all villages relative to radio towers and major road networks. Selected villages were equidistant from towers and roads, as well as from commune boundaries, all of which are factors that could yield spurious correlations between radio access and political attitudes.¹⁴ As a consequence, it is not the case that variation is driven by the clustering of some villages in a commune near a neighboring commune with a large number of community radio stations; nor that variation is driven by clustering of some villages around community radios located within the commune.

Several further observations support the argument that variation in village radio access is exogenous. First, access to community radio is uncorrelated with access to other types of radio. The ability of villages to receive signals from other types of radio is a potential summary statistic of a variety of village socio-economic conditions that could also drive a spurious correlation between community radio and political attitudes. However, the number of community radio signals available to a village is uncorrelated with the number of signals received from private commercial, public and religious radio. Second, historical accounts indicate that donors preferred to place community radios in more remote areas, contrary to the usual practice of radio entrepreneurs. Third, we can show that the effects of radio access on political attitudes are driven by community radio rather than access to any other type of radio that may vary with other village characteristics.

Finally, fourth, observable village characteristics and the number of community radio stations to which villages have access are largely uncorrelated, controlling for commune fixed effects. This suggests that unobserved characteristics are also likely to be uncorrelated with the number of stations. Table 3 presents these results.

The first two columns of Table 3 report regressions of the number of community radio stations to which a village has access on all observable village and household characteristics that we use in this analysis. The first column is a multivariate regression that measures the partial correlation of each characteristic, holding the others constant. The second column reports the results of a bivariate regression of each of the characteristics on the number of community radio stations. All regressions control for commune fixed effects and *p*-values are calculated based on village-clustered standard errors. The last column of Table 3 reports the mean of all observable village and

¹⁴ Lacking data on the precise GPS locations of stations and villages, we relied on pictorial maps provided by our local consultants to identify neighboring villages that were located equally distant from radio towers. As we discuss below, we are able to verify post-survey that our sampled villages exhibit no correlation between radio access and observable characteristics of location that could independently impact political attitudes.

household characteristics that we use in this analysis (see the Appendix for a complete summary table).

The table reveals no systematic differences between villages with access to more and fewer community radios. With such a large number of characteristics (41), some differences are likely to emerge simply by chance. Consistent with this, in only six of the 41 cases do the multivariate and bivariate regressions both report significant differences between villages with more and less radio access. In villages with more radio access there are fewer Yoruba and more single respondents (though none of the other 12 respondent variables differ with radio access); household heads are younger; and more households report having televisions (again, though, none of the other household variables, from income and housing construction to number of children and number of adults differ significantly). Villages with greater radio access are more likely to have a secondary school (but *less* likely to have a private primary school) and more likely to have a chief with a secondary school education (but *not* more or less likely to have a chief with primary education). As the subsequent analysis shows, the estimated effects of access to community radio remain unchanged by the presence of controls for all of these variables.

The first rows of Table 3 indicate that access to other types of radio is uncorrelated with access to community radio. Access to these other types of radios is likely related to village socio-economic conditions that can yield a spurious correlation between community radio and household political preferences. However, the number of community radio signals available to a village is uncorrelated with the number of signals received from private commercial, public and religious radio stations. This supports our argument that the effects of radio access are driven by particular characteristics of the programming carried on community radio, rather than other village characteristics that vary with general radio access. These results are also consistent with historical accounts that donors preferred to place community radios in more remote areas, contrary to the usual practice of radio entrepreneurs.

Table 3: Correlation of village characteristics with community radio access

Dependent Variable: Number of community radio stations received by village	Multivariate	Bivariate	Sample mean
Public stations received by village	-0.20 (0.36)	-0.12 (0.57)	1.05
Commercial private stations	0.12 (0.26)	0.16 (0.18)	.43
Religious stations	0.21 (0.23)	0.18 (0.26)	.35
Age of respondent	0.001 (0.45)	-0.003 (0.02)	40.1
Gender of respondent	0.03 (0.54)	-0.005 (0.9)	.18
Respondent has elementary education	0.03 (0.45)	0.028 (0.48)	.18
Respondent has secondary education	-0.04 (0.50)	0.015 (0.75)	.11
Respondent has higher education	-0.14 (0.13)	0.08 (0.43)	.01
Respondent is Bariba	0.02 (0.78)	0.08 (0.43)	.32
Respondent is Yoa/Lokpa	-0.28 (0.09)	-0.18 (0.24)	.12
Respondent is Goua/Otamari	0.04 (0.91)	-0.15 (0.61)	.18
Respondent is Yoruba	-0.18 (0.09)	-0.22 (0.06)	.15
Number of adult household members listed	0.002 (0.87)	-0.006 (0.49)	2.99
Number of HH members aged over 60	0.03 (0.43)	-0.06 (0.03)	.14
Number of children listed	0.0003 (0.97)	-0.001 (0.89)	2.63
Number of children listed aged 0 - 5	-0.014 (0.40)	-0.014 (0.39)	.85
Gender of HH Head	-0.07 (0.24)	-0.09 (0.12)	1.06
Age of HH Head	-0.005 (0.06)	-0.003 (0.01)	42.2
Respondent is single	0.08 (0.09)	0.09 (0.05)	.07
Respondent is polygamous	0.08 (0.04)	0.010 (0.81)	.20
Respondent is Muslim	0.05 (0.56)	-0.01 (0.92)	.52
Respondent is Catholic	0.07 (0.28)	0.08 (0.23)	.24

Household income is below 30,000 CFA	-0.0424 (0.20)	-0.06 (0.10)	.39
House walls are brick/semi-rigid	0.0795 (0.05)	0.07 (0.18)	.20
House floor is Cement	-0.0814 (0.09)	-0.02 (0.76)	.29
House has five or more rooms	-0.0536 (0.12)	-0.016 (0.68)	.19
House has a TV	0.0935 (0.10)	0.19 (0.02)	.08
Household member has a mobile phone	0.0324 (0.40)	0.11 (0.02)	.27
Village – Population (thousands)	-.01 (0.77)	.05 (0.24)	2055.91
Village distance to closest urban center	-0.01 (0.02)	-0.01 (0.01)	23.39
Village distance to closest bus/train Stop	-0.003 (0.29)	-0.01 (0.11)	23.31
# of functional private schools in village	-0.46 (0.01)	-0.16 (0.47)	.07
Village Chief has primary education	0.05 (0.75)	0.05 (0.73)	.25
Village Chief has secondary education	0.32 (0.06)	0.29 (0.07)	.20
A paved road is in/serves the village	-0.01 (0.97)	0.33 (0.09)	.1
Village has a secondary school	0.27 (0.09)	0.26 (0.10)	.17
Village has a literacy center	0.02 (0.90)	0.05 (0.76)	.48
Village has a health center or maternity	0.04 (0.77)	0.12 (0.35)	.54
# of potables water sources built in 2007 or 2008	-0.004 (0.86)	-0.01 (0.68)	1.14
Most common language is the same in the village and the commune	0.28 (0.20)	0.25 (0.24)	.85
Probability that two households in the village speak the same language at home	-0.583 (0.12)	-0.31 (0.38)	.75
Observations	3,663	Various	
R-squared	0.78		

Note: OLS with commune fixed effects and village-clustered standard errors (p-values). Standard errors in parentheses, clustered at commune level. The multivariate specification also controls for the fraction of village respondents that come from each of eight ethnic groups, the fraction that is Muslim and the fraction that is Catholic. None of these are significant, either in the multivariate nor bivariate specifications.

Poorer villages could have lower radio access and simultaneously be more likely to support clientelist promises. Income and wealth are not, however, systematically higher or lower in villages

with greater community radio access. Households are less likely to report incomes in the lowest income bracket (less than 30,000 CFA) in villages with access to more community radios, but the relationship is only marginally significant in the bivariate specification and not at all significant in the multivariate.¹⁵ According to the multivariate regressions, homes in villages with greater radio access are more likely to have brick walls, but *less* likely to have cement floors and (not quite significantly) less likely to have five or more rooms. In the bivariate regressions, none of these is related to the number of radio stations. Again, the estimated community radio coefficients are robust, and their magnitude practically invariant, to controlling for these income and wealth variables.

Among the many proxies for village wealth, such as the availability of various facilities and infrastructure—private primary schools, secondary schools, paved roads, potable water sources, literacy center, and health center—only the presence of a secondary school is positively associated with village community radio access.

While donors targeted more remote and rural communes, within communes some villages are more remote and smaller than others, potentially leading to less community radio access and different attitudes towards clientelist politicians. Smaller and more remote villages could be more likely to have fewer accessible radio signals and particular attitudes towards clientelism. The results in Tables 4 and 5 indicate that, in fact, there is no significant correlation between measures of village size and remoteness and their access to community radio signals. The survey has information on village distance from urban centers and to a train or bus stop. The most recent census in Benin, from 2002, has information on village population for nearly all of the villages in the sample. There is no significant correlation between radio access and these measures of size and remoteness. Distance to the nearest urban center is marginally significant, but this is because of a single outlying village that reports a distance that is 50 percent higher than the next most remote village in the sample. Once this outlier is dropped, there is no significant correlation of distance with radio access.

Village ethnic, religious and linguistic characteristics, similarly inferred from the household data, could also influence community radio access and different attitudes towards clientelist politicians. The analysis uses controls for the four largest ethnic groups in the sample and the two religions (Catholic and Islam). There are significantly fewer Yoruba in areas with more community radio according to both the multivariate or bivariate specifications. Controlling for all other correlated, there are also fewer Yoa/Lokpa. It is also possible to compare villages linguistically, looking first at the probability that any two of the village households in the sample speak the same language at home; and, second, at whether the most common language among the sample households in a village is different from the most common language among all the households surveyed in the commune in which that village resides. These linguistic variables are also uncorrelated with radio access.

5. Results: Radio access and citizen support for clientelism

To examine radio's influence on a range of outcomes, including political attitudes, we surveyed 20 randomly selected households in each of 210 villages across northern Benin in March

¹⁵ There are no census or statistically representative data of incomes and poverty rates at the village-level in Benin. The survey offers one proxy for village income, which could be correlated with both radio and bed net access. Sampled households were given a set of different income brackets and selected one to which their household belonged. From a sample of 20 households in each village, we calculated the village-level variable of the share of respondents that reported belonging to the lowest income bracket.

2009.¹⁶ The survey included six vignettes to measure respondent political attitudes; these are all in the Appendix. Two of these vignettes are a particular focus of the analysis here because they are specifically designed to convey an explicit trade-off between allocating public resources towards clientelist benefits versus public services for all.¹⁷ These vignettes (Vignettes 4 and 5 in the Appendix) ask respondents to indicate whether they agree with the group of voters who preferred presidential political candidates who promised jobs for some commune residents or with the group that preferred candidates who promised to spend those same resources instead on education or health to benefit all children in the commune. In the education versus jobs vignette, the candidate promises to purchase books and provide teacher training to all the commune's schools in order to improve student learning. In the health versus jobs vignette, the promise consists of increased health funding to vaccinate and provide mosquito nets to all children in the commune.

These vignettes are designed to measure citizen preferences for the types of benefits that clientelist and non-clientelist candidates might promise with the same public resources. Promises of government jobs are, of course, only one of many possible clientelist strategies of electoral mobilization. However, jobs have been identified as an important and salient form of clientelist mobilization in prior work in Benin around actual election campaigns (Wantchekon, 2003). Jobs also satisfy the criteria of being a targetable benefit that can be offered using the same public resources that could have been alternately allocated to broadly delivered benefits in health and education. That is, vignettes on jobs as a clientelist benefit can be employed to posit a direct trade-off with non-clientelist benefits. Our survey data is consistent with the salience of jobs as the benefit that clientelist politicians may offer: more than 50 percent of our respondents, in the clientelist environment of northern Benin, expressed preference for the jobs candidate even at the expense of health and education.

Radio effects on responses to these vignettes are tested with the following general specification:

$$(1) \text{ Preferences for jobs candidates}_{ijk} = \beta_0 + \beta_1 \text{village access to community radio}_{jk} + \beta_2 \text{village access to community radio}_{jk} * \text{number of children} + \beta_3 \text{number of children} + \mathbf{X}_{ijk}\mathbf{B} + \mathbf{Y}_{jk}\mathbf{\Gamma} + \epsilon_{ij} + \mu_k,$$

where the dependent variable is either response to the question of candidates who promise jobs versus candidates who promise mosquito nets and vaccinations, or jobs candidates versus candidates who promise more school books and teacher training. The units of observation are household i in village j and commune k ; μ_k is a commune fixed effect.

The health and education information broadcast on community radio and the promises of the non-clientelist candidates are particularly salient to households with children. This is straightforward to see in the case of education. Malaria, a focus of health broadcasts, is also a particular concern of households with children: children, along with the elderly, are particularly

¹⁶ The overall research strategy was to exploit the availability of a natural experiment in radio access to test several hypotheses in the literature on media influence. This, however, also means that radio's effect could operate through multiple channels. For example, radio's impact on child literacy (documented in Keefer and Khemani, 2014) could be at least partly attributed to radio-induced greater household investments to improve the health of their children (documented in Keefer and Khemani, 2013). In the next section we discuss the extent to which we can substantiate a particular mechanism for radio's impact on household political attitudes, the subject of the current paper.

¹⁷ In section 6 below we discuss the relative pattern of radio effects on all the vignettes, arguing that the pattern supports a particular mechanism for radio's impact on support for clientelism.

vulnerable to malaria. The primary test of the hypothesis is therefore the sign of β_2 : $\beta_2 < 0$ supports the claim that in households with more children, community radio reduces support for politicians who rely on clientelist promises compared to politicians who promise to deliver health or education services. We also report specifications without the interaction, however.

In addition to commune fixed effects, the control variables include a large number of household characteristics that might affect the political attitudes of respondents, including the number of private commercial, public and religious radio stations to which villages have access. Estimates also control for the number of children in the household and the number of children five years of age or younger, and the number of adults and the number of adults over 60, since political attitudes and the demand for health and education services change with age and dependents; respondent education, since better-educated households are more likely to understand the value of health practices and education than less well-educated households; a number of dichotomous ethnic and religion variables, in case access to clientelist benefits and knowledge of the value of health and education vary systematically across ethnic or religious groups; a variety of measures of household income (quality of housing construction, cash income levels reported by the household and ownership of mobile phones or a television), since poorer households may be more likely to be targeted with clientelist benefits and to under-value health and education services; the marital status of the household head, and the gender and age of both the respondent and household head. The television and mobile phone variables also serve to control for alternative sources of information that might be available to the household.

The specifications also control for village characteristics $\mathbf{Y}_{jk}$ that might exert an independent influence on political preferences: controls for remoteness (whether the village is in an urban area; village proximity to the nearest town; and whether the village has a bus stop); for the education of the village chief; and for the education and public health facilities available in the village.

Tables 4 and 5 each report six estimates of equation (1). Table 4 focuses on the jobs versus health comparison, and Table 5 on jobs versus education. In each table, the first three columns examine the general effect of residing in villages with greater community radio access. The second three regressions estimate whether community radio's effect varies across households with different numbers of children.

Table 4: Radio's Impact on Citizen Support for Jobs versus Public Health

	No Radio X Children interaction			Radio X Children interaction		
	Bivariate	Radio controls	All controls	Bivariate	Radio controls	All controls
Number of stations:						
Public		-0.0489 (0.20)	-0.051 (0.19)		-0.051 (0.18)	-0.052 (0.19)
Private commercial		0.0165 (0.45)	0.034 (0.09)		0.017 (0.44)	0.033 (0.09)
Religious		0.0582 (0.11)	0.050 (0.19)		0.0570 (0.12)	0.049 (0.20)
Private non-commercial (community)	-0.0288 (0.02)	-0.0326 (0.01)	-0.0276 (0.04)	-0.007 (0.63)	-0.011 (0.44)	-0.006 (0.71)
Private non-commercial X number of children				-0.008 (0.01)	-0.008 (0.01)	-0.008 (0.01)
Number of children in household			0.007 (0.19)	.015 (.08)	.015 (.07)	.026 (0.004)
Number of children aged 0 – 5			-0.024 (0.02)			-0.023 (0.02)
Respondent has secondary education			0.049 (0.10)			0.49 (0.10)
Respondent Yoruba			.098 (0.01)			.094 (.01)
Number of adults older than 60			-0.039 (0.09)			-0.041 (0.08)
Respondent Catholic			-.078 (.02)			-.076 (.02)
Household income below 30,000 CFA			0.144 (0.00)			0.144 (0.00)
Dwelling characteristics						
Wall - Brick/Semi-rigid			-0.119 (0.00)			-0.12 (0.00)
Floor – Cement			0.068 (0.00)			0.069 (0.00)
Rooms - Five or more			-0.027 (0.29)			-0.0270 (0.29)

Distance to closest urban center			0.000 (0.87)			0.000 (0.87)
Distance to closest bus/train stop			0.00135 (0.03)			0.0012 (0.04)
Village chief has secondary education			-0.053 (0.06)			-0.057 (0.04)
Most common language same in village and commune			0.041 (0.18)			0.039 (0.21)
Observations	4,079	4,079	3,556	4,079	4,072	3,556
R-squared	0.11	0.11	0.17	0.11	0.12	0.17

Note: All specifications estimated with ordinary least squares, with commune fixed effects. Robust p -values, with standard errors clustered at the village level, reported in parentheses. Coefficient estimates of the following controls are insignificant and not reported: ethnic dummies (Bariba, Yoa/Lokpa, Ditamari); gender and ages of household head and respondent; whether respondent has completed elementary, secondary or higher education; religion and marital status of respondent; number of adults in the household; whether the household has a mobile phone or TV; whether the village chief has a primary education; the population of the village; whether the village has a secondary school, literacy center or health or maternity center; presence of a paved road; number of functional private schools; the number of potable water sources; the probability any two households speak the same language at home.

Table 4 shows a highly robust negative effect of access to private non-commercial or community radio on citizen preferences for jobs compared to public health benefits. The coefficient on community radio is stable across the first three specifications, ranging from no controls at all to 41 controls. This supports our claim of exogeneity and that unobserved factors are unlikely to be spuriously driving the results we report. Fifty percent of all respondents prefer the jobs candidate. However, each additional community radio station reduces the fraction of respondents who prefer the “jobs” politician by 2.8 to 4 percentage points.¹⁸

Table 5 shows that community radio has a similar negative effect on jobs when compared to public education, but this is robust only for respondents that live in households with children. In the first three regressions in Table 5 on jobs versus public education, the effects of community radio access on preferences for the jobs candidate are negative, but noisily estimated and insignificant at standard confidence levels. However, the second three regressions show this is because of highly heterogeneous effects of radio across households with and without children. An interaction term of radio with number of children is added to the final three specifications of the table, and has a large and significant negative coefficient. A one standard deviation increase in the interaction term (7.2) yields a 3.5 percentage point reduction among households with children in their support for the politician who promises jobs relative to education inputs.

In each table, the first column offers the cleanest test of the hypothesis that access to community radio programming reduces preferences for targeted jobs over broadly delivered health and education benefits. This first specification controls only for community radio access and commune fixed effects, which, as argued in section 4, allows us to identify the effect of community radio because of the characteristics of radio markets in Benin and our tailored village sampling

¹⁸ Going from the minimum (zero) to the maximum (seven) community radios therefore implies a reduction in support for clientelist politicians by at least 25 percent. A one standard deviation increase in radio access - 1.5 stations - implies a 4.5 to six percent reduction.

strategy. Adding other covariates introduces the possibility of bias because these other covariates are likely correlated with other unobserved factors that matter for political attitudes. Nevertheless, in the second and third specifications, we progressively add additional controls to demonstrate the robustness of the central result of the effect of community radio as estimated in the first column. The second specification controls for household access to the broadcasts of other types of radio stations. The third specification accounts for the entire, extensive battery of controls described above.

Results in the third and sixth specifications, with the full battery of controls, allow us to consider other covariates of preferences for clientelist versus non-clientelist benefits and provide a yardstick with which to compare the impact of community radio access. The covariates of perhaps greatest interest relate to income, given the emphasis on poverty in discussions of clientelism. Consistent with most analyses of clientelism, poorer households are more likely to prefer the jobs candidates. Households that report cash incomes in the lowest range (under 30,000 CFA) are 12 percent more likely to support the jobs candidate over the health candidate compared to other households. Each additional young child in a household (five years old or younger) is associated with a 2.5 percent reduction in support for the jobs candidate, an effect of approximately the same magnitude as community radio.

Table 5: Radio's Impact on Citizen Support for Jobs versus Education

	No Radio	X Children interaction		Radio X Children interaction		
	Bivariate	Radio controls	All controls	Bivariate	Radio controls	All controls
Number of stations						
Public		-0.0334 (0.42)	-0.070 (0.12)		-0.035 (0.39)	-0.070 (0.11)
Private commercial		-0.00202 (0.92)	0.012 (0.59)		-0.002 (0.92)	-0.012 (0.59)
Religious		0.0368 (0.33)	0.035 (0.43)		0.036 (0.34)	0.034 (0.44)
Private non-commercial (community)	-0.016 (0.18)	-0.018 (0.14)	-0.014 (0.28)	0.001 (0.09)	-0.0001 (0.99)	0.003 (0.85)
Private non-commercial X number of children				-0.006 (0.03)	-0.006 (0.02)	-0.006 (0.04)
Number of children in household			0.002 (.73)	.010 (0.20)		.016 (0.05)
Number of children aged 0 – 5			-0.007 (0.47)			-.007 (.48)
Respondent has secondary education			0.064 (0.04)			0.064 (0.04)
Respondent Yoruba			-0.31 (0.80)			-.015 (0.71)
Number of adult household members listed			0.016 (0.03)			0.015 (0.03)
Respondent single			-0.075 (0.04)			-0.078 (0.04)
Respondent Catholic			-0.070 (0.04)			-0.069 (0.05)
Income is below 30K			0.15 (0.00)			0.15 (0.00)
Dwelling characteristics						
Wall - Brick/Semi-rigid			0.002 (0.92)			0.0003 (0.99)
Floor – Cement			0.037 (0.11)			0.039 (0.10)
Rooms - Five or more			-0.048 (0.07)			-0.048 (0.07)

Distance to closest urban center			0.001			0.001
- Urban set to 0			(0.07)			(0.07)
Distance to closest bus/train stop			.001			.001
			(0.31)			(0.34)
Village chief has secondary education			-.036			-0.039
			(0.33)			(0.29)
Most common language is the same in the village and the commune			-0.084			-0.080
			(0.24)			(0.27)
Observations	4,088	4,088	3,565	4,088	4,088	3,565
R-squared	0.08	0.09	0.12	0.09	0.09	0.12

Note: All specifications estimated with ordinary least squares, with commune fixed effects. Robust *p*-values, with standard errors clustered at the village level, reported in parentheses. Coefficient estimates of the following controls are insignificant and not reported: ethnic dummies (Bariba, Yoa/Lokpa, Ditamari); gender and ages of household head and respondent; whether respondent has completed elementary, secondary or higher education; religion and marital status of respondent; number of adults in the household; whether the household has a mobile phone or TV; whether the village chief has a primary education; the population of the village; whether the village has a secondary school, literacy center or health or maternity center; presence of a paved road; number of functional private schools; the number of potable water sources; the probability any two households speak the same language at home.

Results on other covariates are also consistent with what is known about clientelism, and about education institutions in Benin. Catholic schools are common in Benin (for example, the Catholic diocese of Natitingou in northwest Benin, part of our study area, has 45 schools). Though Catholic and Muslim respondents are no different from others in their preferences over health versus jobs candidates (these variables are insignificant in Table 4), between 6 and 7 percent fewer Catholic respondents preferred the jobs candidate to the education candidate.

Another noteworthy covariate of preferences for jobs, found in both the health and education vignettes, concerns household visits made by health workers. These are an important element of government and donor strategies to control malaria, and in general for public health outreach, in Benin and elsewhere and could have an important effect on household information about and valuation of public services. Our survey therefore asked households whether they were recently visited by a health worker. In fact, adding this control to the third and sixth specifications of Tables 4 and 5 leaves the estimated coefficients on the community radio variable or the interaction with number of children unchanged (results not reported). However, these visits are significantly associated with reduced preferences for jobs compared to health or education. For example, the fraction of households that express support for the jobs benefit over education is almost ten percentage points lower among households that have received a visit from a health worker.

This is a striking association, consistent with the idea that households that have received such a visit are more likely to value political promises to improve public services. While it is not possible to make causal inferences about this variable – visits by health workers could be endogenous to the political attitudes of households and their demand for health and education– the association points to an area of future research. The fact that households receive a visit may give them greater information about the value of public health, and greater confidence in the ability of politicians to implement promises to improve health delivery, thereby increasing the credibility of such promises.

The results in Tables 4 and 5 are strong evidence that access to a type of media that is known to carry programming aimed at increasing the demand for particular health and education services leads respondents to prefer politicians who promise to improve these particular services relative to politicians who promise to provide patronage jobs. There is no association between access to other types of radio, that do not carry the same level of public interest programming as do community radio, and citizen preferences for targeted jobs relative to health and education. In the following section we provide evidence that radio access has these effects because it increases the demand for broadly delivered public services, not because it reduces the taste for clientelist benefits.

6. Mechanisms of Radio Impact

The findings in Tables 4 and 5 raise two questions about the mechanisms through which community radio exerts an effect on preferences for clientelist politicians. The first is whether the effects of community radio emerge because its programming reduces citizen preferences for clientelist promises or rather, as we contend, community radio programming increases preferences for public services that clientelist politicians under-provide. The evidence reported in the previous section cannot isolate radio's effects on attitudes to clientelism, *per se* because it is designed to compare clientelist benefits to non-clientelist ones. We employ another vignette suited to measuring citizen attitudes to clientelism alone: vote buying, for which the trade-off with non-clientelist benefits are far from clear.

The second is whether the mechanism of radio's impact is indeed through households listening to, and being influenced by, the programming carried on it. We show that those who actually listen to community radio have different preferences than those who do not; and those with better access to community radio are more knowledgeable about the health and education issues that are the subject of community radio broadcasts.

Community radio access does not directly reduce preferences for clientelist politicians

Greater access to community radio broadcasts could change household preferences for clientelist politicians by directly reducing household tastes for clientelist benefits; by changing other household characteristics – for example, by encouraging households to obtain more education – that could in turn influence attitudes towards clientelist political promises; or by increasing household demand for health and education. We cannot distinguish between the latter two mechanisms, because we know that radio in Benin indeed causes households to invest more in the health and education of their members (Keefer and Khemani, 2013, 2014). However, evidence presented in this section is inconsistent with the first mechanism, that community radio programming directly reduces citizen preferences for clientelist transfers.

We do this by exploiting another vignette (Vignette 3b in the Appendix), which was designed to elicit citizen preferences for a classic form of clientelism: gift-giving or vote-buying at the time of elections. Gift-giving in elections is highly salient in Benin. The 2005 Afrobarometer survey surveyed 1,200 respondents in Benin; 46 percent of them said that politicians always make gifts during campaigns; 84 percent said they often or always make gifts. In this vignette, both politicians promise general improvements in health and education services in the commune, not the concrete promises in the jobs vignettes, of providing malaria bed nets and textbooks to children throughout the commune. Only one makes gifts prior to the election. Hence, the gifts vignette imposes no trade-off between the clientelist inducement and health or education.

The absence of a necessary trade-off between gifts and services reflects what we know about respondents' likely experience with election gift-giving. The financing of gift-giving by political

candidates at the time of elections is obscure to citizens, especially where there are no clear or effective laws that regulate campaign finance, as in Benin. Campaign finance for vote-buying does not necessarily come out of public budgets, unlike spending on government jobs. There is also little information available about whether, or even why gift-giving around elections should influence the subsequent delivery of health and education services by the candidates that win elections.¹⁹ Respondents therefore have no external reason to believe that vote-buying before the election *necessarily* implies fewer resources for health and education after the election.

If the earlier results from the jobs vignettes were the result of radio programming aimed at directly reducing citizen preferences for clientelist benefits, radio access should unambiguously reduce citizen preferences for gift-giving. In our investigations into the programming content of community radio in Benin, we found no indication that it included messages directly related to vote-buying at least at the time of our survey in 2009. In this case, if radio programming only influences clientelist benefits indirectly, by increasing citizen demand for non-clientelist benefits, the effects on preferences for gift-giving candidates are ambiguous. In particular, in the absence of a tradeoff, the effects of radio access depend on household perceptions of how gift-giving candidates influence their access to health and education services. As survey questions make clear, those perceptions are heterogeneous and largely unobserved.

For example, from Keefer and Khemani (2012, 2014), we know that in villages with greater radio-induced demand for health and education, there was little change in the government provision of these services and a significant effect on household efforts to acquire these services with their own resources. These households may be more skeptical about the likelihood that general promises about improving health and education will translate into more services, and have a greater demand for gifts to fund the private acquisition of these services.

The survey offers some evidence that respondents associate gift-giving candidates with a variety of other characteristics of both candidates and the political environment; these imply an ambiguous relationship with service delivery. Although in the vignette the gift-giving candidate appears to offer more to citizens (by giving gifts in addition to making the same promises to improve services), fewer than half – 44 percent – of respondents expressed preference for this candidate. The survey tries to elicit two respondent opinions about gift-giving candidates, asking whether they believed that gift-giving candidates would be more or less likely to be corrupt and more or less likely to keep their service delivery promises. Seventy percent of respondents believe that gift-giving candidates are likely to be more corrupt. However, half of these – 35 percent of respondents – also believe that gift-giving candidates would be as or more effective than the policy-alone candidates in delivering health and education services.

¹⁹ Theoretical research is ambiguous about the consequences of vote buying for service delivery. Hanusch and Keefer (2013) embed vote-buying in a dynamic, probabilistic voting model. They show, first, that politicians tend to buy votes from individuals who, in the absence of vote-buying, would not otherwise receive transfers from government: these individuals unambiguously gain from vote-buying. Second, though, in their model, politicians do not finance vote-buying by reducing spending on public goods, but by raising revenues. There is little empirical evidence on the consequences of vote buying for public service delivery. Khemani (2003) is the first to show a direct trade-off between vote buying and public health service delivery using uniquely suited data from the Philippines to test for such correlation.

Table 6: Estimated effects of community radio access on household attitudes towards gift-giving politicians

	No Radio X Children interaction			Radio X Children interaction		
	Bivariate	Radio Controls	All controls	Bivariate	Radio controls	All controls
Number of radio stations						
Public stations		0.025 (0.33)	0.026 (0.39)		0.025 (0.32)	0.026 (0.38)
Private commercial stations		0.029 (0.18)	0.019 (0.37)		0.028 (0.18)	0.019 (0.37)
Religious stations		-0.037 (0.32)	-0.031 (0.45)		-0.036 (0.34)	-0.030 (0.46)
Private non-commercial (community)	-0.002 (0.83)	-0.003 (0.78)	-0.0004 (0.97)	-0.018 (0.15)	-0.019 (0.14)	-0.014 (0.28)
Private non-commercial X number of children				0.006 (0.03)	0.006 (0.03)	0.005 (0.05)
Number of children listed			-0.010 (0.07)	-0.020 (0.01)	-0.020 (0.01)	-0.022 (0.01)
Number of children listed aged 0 - 5			-0.013 (0.21)			-0.013 (0.21)
Secondary Education - Respondent			-0.083 (0.00)			-0.083 (0.00)
Is Yoruba - Respondent			0.015 (0.69)			0.0172 (0.65)
Number of HH members aged over 60			-0.0002 (1.00)			0.001 (0.97)
Catholic Religion - Respondent			-0.007 (0.82)			-0.008 (0.79)
Household income below 30,000 CFA			-0.076 (0.00)			-0.077 (0.00)
Dwelling characteristics						
Wall - Brick/Semi-rigid			-0.121 (0.00)			-0.120 (0.00)
Floor - Cement			-0.044 (0.05)			-0.045 (0.04)
Rooms - Five or more			0.032 (0.28)			0.032 (0.27)
Distance to closest urban			-0.0003			-0.0003

center - Urban set to 0			(0.63)			(0.63)
Distance to closest Bus/Train Stop			-0.0003 (0.63)			-0.0003 (0.67)
Village Chief with Secondary Education			.0001 (1.00)			0.003 (0.93)
Literacy Center Dummy			0.048 (0.09)			0.048 (0.08)
most common language L1 is the same in the village and the commune			0.014 (0.68)			0.016 (0.64)
Observations	4,194	4,194	3,658	4,194	4,194	3,658
R-squared	0.14	0.14	0.17	0.14	0.14	0.17

Note: All specifications estimated with ordinary least squares, with commune fixed effects. Robust p -values, with standard errors clustered at the village level, reported in parentheses. Coefficient estimates of the following controls are significant and not reported: respondents with higher education and Bariba and households with more adults and mobile phones, are less likely to prefer the gifts candidate and households in villages with chiefs with a primary education are more likely; insignificant and not reported: ethnic dummies (Bariba, Yoa/Lokpa, Ditamari); gender and ages of household head and respondent; whether respondent has completed elementary or higher education; religion and marital status of respondent; number of adults in the household; whether the household has a mobile phone or TV; whether the village chief has a primary education; the population of the village; whether the village has a secondary school, literacy center or health or maternity center; presence of a paved road; number of functional private schools; the number of potable water sources; the probability any two households speak the same language at home.

To examine radio's effects on citizen attitudes to gift-giving candidates, we estimate

$$(2) \quad \text{Preferences for gifts candidates}_{ijk} = \beta_0 + \beta_1 \text{village access to community radio}_{jk} + \beta_2 \text{village access to community radio}_{jk} * \text{number of children} + \beta_3 \text{number of children} + \mathbf{X}_{ijk}\mathbf{B} + \mathbf{Y}_{jk}\mathbf{\Gamma} + \epsilon_{ij} + \mu_k,$$

using the same controls as in Tables 4 and 5, but where the dependent variable is the answer to the gift-giving vignette: whether respondents agree with the group that prefers the candidate who makes gifts or with the group that prefers the candidate that does not. The results are reported in Table 6.

The first three columns of Table 6 confirm that community radio access has no direct effect on preferences for gift-giving candidates. The interaction terms in the second three columns indicate, though, that radio *increases* the likelihood of support for the gift-giving candidate among households with more children. In the absence of radio, these households, with more children, are less likely to support gift-giving candidates; radio's impact is therefore to reduce their distaste for gift-giving politicians. Given ambiguous priors about the effects of radio on preferences for gift-giving candidates in the absence of a tradeoff with services, this is a surprising result. It is consistent, though, with the earlier conjecture. Households with greater radio access are more likely to invest their private resources into the health and education of their children; they are not more likely to receive greater public benefits (Keefer and Khemani, 2012, 2014). These households may therefore be more inclined to prefer politicians who provide gifts, which allow them to procure health and education services privately, knowing that they do not receive other benefits that they demand, in health and education, from the public system.

We find the same results in examining another vignette (3A in the Appendix), this time contrasting two candidates, one who made general promises of improving health and education, but made no gifts, and another who offered gifts but made no promises. Again, there is no necessary trade-off in this vignette between gift-giving and health and education: respondents are not told that the gift-giving candidate will not provide health and education services. Once again, radio access has no significant overall effect on support for the gifts-no-promises candidate in the specification without any interaction, but households with children and greater access to radio are more likely to prefer the gift-giving candidates (results available on request). We find, then, across two gift-giving vignettes, a consistent effect of radio on households with children – those for whom radio programming on health and education are most salient: while they are generally more likely to reject gift-giving candidates, the presence of radio increases the appeal of gifts. However, when clientelist benefits come with a trade-off, as in the jobs vignettes, they are significantly more likely to prefer the health and education candidates.²⁰ The contrasting results of community radio's impact across vignettes is consistent with the importance of particular radio content--on the value of health and education--that shapes responses depending on what the vignette content conveys about political actions towards health and education.

The different results of radio's impact across vignettes defends against concerns that radio's impact is not driven by effects on household demand for services, but rather by influencing social desirability bias – the norms that govern responses to sensitive questions. For example, if access to radio programming on health and education merely increases respondent reluctance to confess a lack of support for health and education candidates, we would not observe *oppositely*-signed impacts of radio on expressed preferences for gift-giving versus patronage jobs among households with children.

It is possible, as well, that the different results for the jobs and gift vignettes arise because the benefit of a job is valued or viewed differently by citizens than the benefits of immediate cash or gifts delivered during elections. This is unlikely to be a concern, since our analysis is not focused on differences in the levels of preferences, but rather with the impact of radio on changing preferences. Consequently, even if it is the case that citizens value the high probability of receiving small gifts more than the small probability of receiving jobs, the differential effects of radio across the two is still consistent with the effects of radio on the demand for services.

In future research, the effects of access to media promoting health and education services can be tested on preferences for a targeted cash scheme (such as a poverty alleviation transfer), rather than jobs, in the trade-off vignettes. Such vignettes are inappropriate in the Beninese context, however, because they have no salience among respondents. The country has essentially no transfer payments, apart from pensions for civil servants, and therefore no cash schemes that could be subject to clientelist targeting. Such a vignette would therefore raise general concerns about interpretation, given that the situation has no relationship to respondents' actual experience.

²⁰ The remaining two vignettes listed in the Appendix, but not discussed in the main paper, are not germane to the discussion here. Vignette 2 asks respondents whether they pay more attention to the ethnicity of candidates or candidates' service delivery promises. Radio access reduces attention to ethnicity. Vignette 1 asks respondents to contrast candidates who promise to spend more to improve the quantity of services with one who promises to spend more improving the quality of services. Radio access has no effect on these responses.

Overall, the pattern of results suggests that household responses to these vignettes are shaped by what they learn from radio programming about the importance of health and education. We provide more direct evidence of this in the sections below.

Those who listen to community radio are less likely to prefer clientelist candidates

A second question about mechanisms is whether respondents who report *listening* to community radio are also less likely to prefer clientelist politicians. The data allow us to document a strong association, if not a causal relationship, between listening and candidate preferences.

In particular, the survey asked household respondents to list the radio stations to which they listen. We post-coded the response to match the reported radio station to the type of station (community, public, private commercial, or religious) and created an indicator variable for whether the respondent reported listening to a community radio station. We can therefore estimate:

$$(3) \quad \text{Preferences for clientelist candidates}_{ijk} = \beta_0 + \beta_1 \text{HHs listen to community radio}_{jk} + \beta_2 \text{HHs listen to community radio}_{jk} * \text{number of children} + \beta_3 \text{number of children} + \mathbf{X}_{ijk}\mathbf{B} + \mathbf{Y}_{jk}\mathbf{\Gamma} + \mu_k + \epsilon_{ijk}.$$

We use estimates of equation (3) to examine whether there is an association between the component of household listening behavior that can be explained by radio access and preferences for clientelist candidates. To do this, we instrument household listening with the four radio access variables – the number of community, public, religious and private radio stations that are received by the household’s village – and we instrument the interaction term (household listening * number of children) with the corresponding access variable (number of community radios * number of children).

Table 7: Households with children that listen to community radio are less likely to prefer clientelist candidates

Dependent variable:	Jobs versus Health Candidate		Jobs versus Education Candidate	
	Radio controls only	All controls	Radio controls only	All controls
Household listens to community radio	0.00229 (1.00)	-0.359 (1.00)	0.240 (0.57)	-0.172 (0.72)
HH listens to community radio X number of children	-0.125 (0.04)	-0.106 (0.06)	-0.0965 (0.05)	-0.0769 (0.08)
Number of children listed	0.0798 (0.05)	0.0794 (0.03)	0.0601 (0.06)	0.0543 (0.07)
Observations	4,079	3,556	4,088	3,565
R-squared	-0.04	-0.15	0.04	0.00

Note: All specifications estimated with two stage least squares, with commune fixed effects, instrumenting for household listenership. Robust *p*-values, with standard errors clustered at the village level, reported in parentheses. Coefficient estimates of the following controls are insignificant and not reported: ethnic dummies (Bariba, Yoa/Lokpa, Ditamari); gender and ages of household head and respondent; whether respondent has completed elementary, secondary or higher education; religion and marital status of respondent; number of adults in the household; whether the household has a mobile phone or TV; whether the village chief has a primary education; the population of the village; whether the village has a secondary school, literacy center or health or maternity center; presence of a paved road; number of functional private schools; the number of potable water sources; the probability any two households speak the same language at home.

The use of radio access instruments for listening removes the bias introduced by household characteristics that influence both whether they listen to radio and their political preferences. Nevertheless we cannot make causal inferences about the effects on political preferences of listening to community radio. On the one hand, access to non-community radios is endogenous, but must be taken into account given its effects on listening patterns. On the other hand, village exposure to community radio is not excludable from the second stage regression, since it should also influence households indirectly, through social networks, and not only through its direct effects on household listening.

Table 7 reports the results of the estimation of equation (3). As before, since we are again concerned with the effects of radio broadcasts that are particularly salient to households with children, we focus on the interaction of listening and number of children. Two specifications are explored for each of the two vignettes, jobs versus health candidates and jobs versus education candidate. One includes only the radio controls and the number of children. The other includes all controls, as in the full specifications in Tables 4 and 5. In all four cases, households with children that report listening to community radio, instrumented with the interaction of number of community radios and number of children, are significantly less likely to support the jobs candidate.

The interaction of children and number of community radio stations has a positive and significant coefficient in the first stage regressions, consistent with the argument that community radio is more salient in households with children. In contrast, access to community radio has an insignificant effect in the first stage regression on whether households without children report listening to community radio. Correspondingly, Table 7 results summarizing the second stage results indicate that the component of listening associated with access to radio has no effect in households with no children.

Access to community radio improves household knowledge of health and education issues

Additional evidence of radio's direct impact on households comes from survey data that households in villages with greater access to community radio are also more knowledgeable about salient health and education issues. Community radio programming sponsored by donors and government ministries informs households about government efforts to provide households with health or education services and urges households to improve their health and education practices, advising on the proper responses to common diseases, particularly malaria, or on the oversight of their children's educational progress.

The survey asked respondents to answer numerous questions regarding their knowledge of various health and education issues. Some of these dealt with national policies (what is the government's target number of health centers per commune?); others with issues of immediate relevance to the household (what is the appropriate treatment for diarrhea in children?). The effects of radio access on responses to these knowledge questions offer some insight into the direct effects of radio access on households.

As with listening, these effects are not straightforward to extract. First, radio access should increase knowledge about information actually broadcast by the community radio stations, but an exhaustive account of the information broadcast by the community radio stations in Benin is unavailable. Second, households retain information that is most salient to them; accurate tests therefore require identifying which information is salient for which households. Third, households for which information is most salient – those which use health and education services the most – can increase their knowledge of health and education issues simply through their interaction with service providers. Failure to correctly match information actually broadcast by radio stations to

households for which it is most salient, and to account for alternative modes of information acquisition, generates counteracting influences against finding radio effects on knowledge.

Nevertheless, although the survey was not designed to disentangle these issues, the pattern of results is consistent with access to community radio broadcasts leading to an increase in respondent knowledge of information that community radios are most likely to broadcast. Tables 8 and 9 present the results of regressions that examine respondent knowledge of seven facts in each of the health and education areas. The specifications mirror those in the full specifications in Tables 4 and 5 (all 41 control variables). In addition, the specifications in Tables 8 and 9 control for whether households had received a visit from a health worker. These visits are potentially key sources of health and education information for households. Our core results in Tables 4 and 5 are robust to controlling for health worker visits; similarly, all of the results reported in Tables 8 and 9 are robust to excluding health worker visits.

Table 8 reviews the effects of radio access on respondent knowledge of seven health facts: that oral rehydration salts are the appropriate treatment for children's diarrhea; who appoints the members of the commune health center management committees (COGECs); government policies on fee-setting by health centers; government distribution of free bed nets; rate of child mortality in Benin; the number of health centers in the respondent's commune; and the government's target number of health centers in a commune.

In five of the seven cases, radio access significantly improves the knowledge of households with children. This is expected in the case of diarrhea treatment and free bed nets, the primary beneficiaries of which are children. It is plausible in the case of fee-setting at health centers, since center fees are more salient for households with children to the extent that they make more intensive use of the centers. We cannot explain the significant, child-contingent effect of radio access on government management of the health sector (the target number of health centers in a commune and the manner in which COGEC members are appointed). Radio has no effect on knowledge of the number of health centers in the commune.

Child mortality is of interest generally as an indicator of a country's level of development, not only to households with children. Radio access correspondingly improves knowledge of the range of child mortality, independent of the number of children (the radio coefficient is significant even if one drops the interaction term). This piece of evidence is particularly supportive of community radio being the mechanism through which households acquire public health information, because there are unlikely to be other systematic sources of such specific information. Concomitantly, no other covariates are significantly correlated with knowledge of child mortality rates, other than village access to community radio. Table 9 repeats the exercise for education knowledge: whether respondents know that the government must provide textbooks; that schools are not allowed to charge fees; the government policy on class size; that the school-leaving exam became harder to pass in recent times; the communal and national pass rates for CEP, the school-leaving exam; and whether there is a literacy center in the commune. In four of the seven cases, households with children and more radio access were significantly more knowledgeable: the government policies on textbooks and class sizes; the increasing difficulty of the school-leaving exam; and the national pass rate for the CEP. Each of these is highly salient for households with children, referring as they do either to policies with large effects on household budgets, or to key benchmarks by which they can judge the performance and education of their own children. We would expect that households with children would also be more likely to know about the school fees policy, but this interaction term is not significant.

The correlations of knowledge with health worker visits across the two tables are also notable. First, the radio coefficients are nearly unchanged when controlling for health worker visits, despite the often large associations of those visits with knowledge. This supports our claim that radio plays a significant direct role on knowledge and behavior.²¹ Second, a growing body of research finds that labor-intensive interventions (household and village visits) have significant effects on knowledge and behavior. Our results do not test this proposition (health worker visits are certainly endogenous), but the associations we document are nevertheless useful illustrations of the possible relative impacts of radio and health worker visits, pointing the way to future research. Health worker visits are more often significant in 10 of 14 cases. However, household knowledge of diarrhea treatments is significantly associated with radio access, but not with health worker visits. Although health workers are familiar with fee-setting policies of the government, households that have received a health worker visit are *less* likely to know those policies; households with children are *more* likely to know the policy as their radio access increases.

²¹ We have tested whether village radio access has an impact on the likelihood of receiving health worker visits and find that it does not.

Table 8: Radio access and Health Knowledge

Respondent knows:	Oral Rehydration Salts are correct treatment for diarrhea	Who appoints members of Health Center Mgt. Committees (COGECs)	Government policy on fee-setting by health facilities	Government distributes free bed nets	Child mortality between 13 – 18 per 100 births	Number of health centers in commune	Government targets at least one health center per arrondissement
Number of private non-commercial stations	-0.011 (0.51)	-0.003 (0.82)	0.004 (0.80)	-0.005 (0.46)	0.027 (0.01)	-0.001 (0.93)	-0.022 (0.28)
Number of children listed	0.009 (0.29)	0.0084 (0.23)	0.008 (0.43)	-0.025 (0.00)	0.009 (0.15)	0.003 (0.61)	0.004 (0.65)
Radio X children	0.005 (0.04)	0.004 (0.08)	0.007 (0.02)	0.004 (0.00)	-0.002 (0.34)	-0.0006 (0.75)	0.006 (0.04)
Health Worker visit for malaria discussion	0.020 (0.32)	0.178 (0.00)	-0.042 (0.07)	-.002 (0.85)	0.001 (0.95)	0.050 (0.00)	0.064 (0.01)
Percent correct	.48 (open)	.25 (2 possible answers)	.59 (5 possible answers)	.93 (open)	.15 (5 possible answers)	.15 (open)	.46 (3 possible answers)
Observations	3,663	3,649	3,663	3,663	3,621	3,663	3,637
R-squared	0.19	0.22	0.09	0.06	0.07	0.12	0.10

Note: Ordinary least squares with commune fixed effects. P-values based on village-level clustered standard errors reported in parentheses. Regressions include all controls found in the full specifications of tables 4 and 5, plus whether household was visited by a health worker. Percent correct refers to fraction of respondents who answered the question correctly; the number of possible answers is indicated in parentheses (“open” means that the question was open-ended and no answers were prompted).

Table 9: Radio access and Education Knowledge

Respondent knows:	Government must provide textbooks	Schools are not allowed to charge fees	Government policy is 40-50 students/class	School-leaving exam (CEP) harder to pass in last 3 years	Commune pass rate for CEP	National pass rate for CEP	Literacy center in commune?
Number of private non-comm. stations	-0.011 (0.49)	-0.009 (0.48)	-0.034 (0.04)	-0.022 (0.14)	0.002 (0.89)	-0.020 (0.14)	0.01 (0.41)
Number of children listed	-0.005 (0.55)	0.007 (0.40)	-0.002 (0.81)	-0.005 (0.60)	0.002 (0.81)	-0.011 (0.13)	-0.01 (0.15)
Radio X children	0.006 (0.04)	-0.0003 (0.88)	0.005 (0.05)	0.005 (0.06)	0.001 (0.68)	0.006 (0.01)	0.003 (0.27)
Health Worker visit for malaria discussion	0.015 (0.54)	0.053 (0.02)	0.10 (0.00)	0.058 (0.02)	0.067 (0.001)	0.051 (0.02)	0.067 (0.00)
Percent correct	.66 (Yes/No)	.78 (Yes/No)	.52 (5 possible answers)	.47 (3 possible answers)	.27 (4 possible answers)	.25 (4 possible answers)	.77 (Yes/No)
Observations	3,573	3,650	3,663	3,663	4,200	3,578	3,640
R-squared	0.13	0.13	0.17	0.09	0.07	0.10	0.11

Note: Ordinary least squares with commune fixed effects. P-values based on village-level clustered standard errors reported in parentheses. Regressions include all controls found in the full specifications of tables 4 and 5, plus whether household was visited by a health worker. Percent correct refers to fraction of respondents who answered the question correctly; the number of possible answers is indicated in parentheses (“open” means that the question was open-ended and no answers were prompted).

7. Conclusion: Implications for the real electoral choices of households

We present evidence that access to radio programming meant to increase household demand for particular health and education services can indirectly reduce citizen support for clientelism. Radio's effect arises precisely because of its effects on the demand for broadly delivered public services; radio access has no direct effect on preferences for gift-giving at the time of elections, and even slightly increases demand for gift-giving candidates among households with children. Overall, across all vignettes, the households for which the radio-provided information and policy choices are most salient, those with children, are most strongly influenced by community radio access.

What are the implications of this evidence, on responses to survey vignettes, for real political behavior of citizens and incentives of political candidates? Keefer and Khemani (2012, 2014) already identify real effects of community radio access on non-political variables. They show that households with greater community radio access are more likely to make costly decisions to purchase anti-malaria bed nets and to invest in their children's education than households with less access. This points to real effects of radio access that could extend to political behavior.

However, the significant effects we identify on political preferences are insufficient to change actual political incentives. The evidence in Keefer and Khemani (2012, 2014) reveals no significant effect of citizens' media access on political accountability for delivering greater education or health benefits. In fact, this divergence between effects on preferences and on actual political behavior is not surprising.

First, the magnitude of the preference effect matters. Although the media effects on preferences for broad public services that we document are large, the underlying preferences for targeted transfers that deliver private benefits, such as those delivered through vote-buying, are also large and remain large even after the preference shifts induced by media. Whether media-induced preference shifts must reach a certain threshold before they trigger a political response, and what that threshold is, remain topics for future research.

Second, the environment for political competition matters. Single politicians and parties organized around clientelist principles cannot easily shift their mobilization strategies from clientelism to the promise of public policies with broader benefits. Politicians with a comparative advantage in clientelist appeals may be reluctant to cooperate with the new party program and leaders of such parties may find it too costly, electorally, to exclude such politicians from the party (for a broader discussion, see Keefer 2013). Citizens who have little confidence that individual politicians can shift the clientelist equilibrium and deliver more services gain little by rejecting gift-giving candidates. These difficulties are particularly pronounced in Benin, where parties are numerous (over 100 competed in the 2007 elections), usually short-lived, and organized around individual politicians rather than around policy platforms.

However, even if media programming is insufficient to trigger fundamental shifts in strategies of electoral mobilization, the results here support the use of media programming as part of a larger strategy to increase politician accountability for the quality of public good provision in countries. This adds to the tools identified in recent research. Fujiwara and Wantchekon (2009), for example, examine the effects of town-hall interventions in which village residents meet with political candidates to deliberate over policy responses to problems they confront. Control villages hosted the usual political meetings emphasizing clientelist campaign promises. They find that these interventions can reduce support for clientelism and enable candidates to break political strongholds. The findings here are consistent and complementary, showing that media-transmitted

information, in and of itself and in the absence of deliberation, can also shift the policy preferences of voters. However, we are able to distinguish clientelist strategies – not only gift-giving at election time, but also the promise of jobs afterwards – and show that the effects of information campaigns may differ significantly depending on the particular clientelist benefits that politicians use to mobilize support.

These results point to the information value of media and the effect of media-transmitted information on attitudes towards clientelist promises. However, they also underline the importance of content and framing. The health and education programming that community radio stations broadcast is intended to change household behavior regarding the consumption of health and education services. It correspondingly increases the relative value that households place on political promises to improve these services. However, community radio broadcasts do not emphasize the importance of holding elected officials accountable for health and education services, nor exhort listeners to support non-clientelist candidates. Consequently, radio access does not affect the government supply of health and education inputs (Keefer and Khemani 2012, 2014) nor does it reduce citizen support for politicians who provide gifts.

The analysis here, along with Keefer and Khemani (2012, 2014) also contributes to a better understanding of community radio. These have been a particular focus of donors, since they are organized to serve the public interest of and support collective action in the communities in which they are based (Fraser and Restrepo-Estrada, 2002; Buckley, et al. 2008). In sub-Saharan Africa, governments and international donors use community radio networks to convey general public-interest information on the value of health and education to remote, rural and poor areas, such as northern Benin (Buckley et al, 2008). However, the effects of community radio have not been rigorously tested. The estimations below provide such a test and identify positive effects on one aspect of democratization, the degree to which citizens might support candidates who promise to improve public services.

For policy makers and donors, the results suggest an additional role for media interventions. Not only can they change household behavior with respect to the purchase of important health and education services, they can also affect political preferences, shifting them towards politicians who promise to pursue these services and away from politicians who rely on the promise of patronage. Given recent empirical findings (Khemani, 2013) of the significant trade-off between vote buying and the delivery of pro-poor public health services, with consequences for final welfare outcomes such as child health, this role of media may be particularly important in changing political incentives to deliver services to the poor. However, the particular content and intensity of media campaigns to sufficiently increase voter preferences for public goods relative to clientelist transfers, and the institutional conditions under which they can ultimately shift political behavior, remain important questions for future research.

Appendix. Survey Vignettes on Political Attitudes

Question 19. We would like to get your point of view on the different candidates' positions. To do so, you will choose what type of voter you are or what type of candidate you prefer.

Vignette 1: In Benin, two political leaders develop their platforms and strategies to compete during the next presidential elections. Both think your commune is very important for the elections. The two candidates make the following promises.

Presidential Candidate 1: Promises to assign more teachers and health workers to your commune

Presidential Candidate 2: Promises to improve the quality of existing teachers and health workers in your commune through more training, better monitoring and better supervision.

V1.1 According to you, which candidate is better able to entirely respect his promise?

V1.2 Which candidate would you vote for?

V1.3 According to you, which candidate would win more votes in your commune?

Answers: 1 = Candidate 1; 2 = Candidate 2; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 98 to missing).

Vignette 2: As a prelude to the municipal elections of mayors and city councilors, in a commune in Benin, we discussed with two groups of voters. Based on the information gathered by each group, which group of voters do you in agree with?

1 (0 in regression analysis) = The voters in Group 1 said they would first consider the ethnicity of the candidates and, only after that, evaluate which candidate is more apt to bring more public investments in the commune.

2 (1 in regression analysis) = The voters in Group 2 said they would first evaluate the candidates' ability to bring more public investments in the commune and, only after that, consider their ethnicity.

98 (missing in regression analysis) = Don't Know.

Vignette 3A: We discussed with two groups of voters about the person they would vote for during the next municipal elections. One of the candidates (Candidate 1) did not give them any gift but promised them to improve the education and the health of the commune's populations. The other candidate (Candidate 2) gave them gifts but did not make any promise.

The voters in Group 1 said they would vote for the candidate who made gifts.

The voters in Group 2 said they would vote for the candidate who promised to improve education and health in the commune.

V3.A.1: Which group of voters do you agree with?

V3.A.2: According to you, which group will win more votes in your commune?

Answers: 1 = Candidate 1; 2 = Candidate 2; 3 = Neither; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 3 and 98 to missing).

Vignette 3B: We discussed with two groups of voters from your commune which candidate they would vote for during the next municipal elections. The two candidates (Candidate 1 and Candidate 2) promised to improve education and health for the commune's populations. Moreover, Candidate 1 gave them gifts but Candidate 2 did not.

The voters in Group 1 said they would vote for the candidate who made gifts.

The voters in Group 2 said they would vote for the candidate who did not make gifts.

V3.A.1: Which group of voters do you agree with?

V3.A.2: According to you, which group will win more votes in your commune?

Answers: 1 = Candidate 1; 2 = Candidate 2; 3 = Neither; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 3 and 98 to missing).

V3.A.3: According to you, which candidate is the most corrupt?

V3.A.4: According to you, which candidate will keep his promises regarding the improvement of education and health care?

Answers: 1 = Candidate 1; 2 = Candidate 2; 3 = Neither; 4 = Both; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 3, 4 and 98 to missing).

Vignette 4: In Benin, a political leader considers running for president and is consulting with his advisors to choose his priorities if elected president. Your commune is very important to him and he considers different options for offering advantages to the commune. He cannot do both options due to the country's tight budget.

Option 1. Give public employment to some of the commune's residents.

Option 2. Give more books and training to the teachers of all the commune's schools so that children can learn better.

After carefully thinking, he decides to promise more jobs (Option 1) instead of more books and training (Option 2).

V4.1: If that candidate were running today, would you vote for him?

V4.2: Do you think the leader made the right choice to increase his chance of winning these elections?

V4.3: Do you think the choice he made was the right policy for the commune?

Answers: 1 = Candidate 1; 2 = Candidate 2; 3 = Neither; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 3 and 98 to missing).

Vignette 5: In Benin, a political leader considers running for president and is consulting with his advisors to choose his priorities if elected president. Your commune is very important to him and he considers different options for offering advantages to the commune. He cannot do both options due to the country's tight budget.

Option 1: Give public employment to some of the commune's residents.

Option 2: Increase funding for health so that all the children in the commune are vaccinated and have a mosquito net.

After carefully thinking, he decides to promise more jobs (Option 1) instead of more vaccinations and mosquito nets (Option 2).

V5.1: If that candidate were running today, would you vote for him?

V5.2: Do you think the leader made the right choice to increase his chances of winning these elections?

V5.3: Do you think the choice he made was the right policy for the commune?

Answers: 1 = Candidate 1; 2 = Candidate 2; 3 = Neither; 98 = Don't know
(In the regressions, 1 is set to 0; 2 to 1; and 3 and 98 to missing).

Table Appendix
Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Prefers jobs over education candidate	4088	.57	.49	0	1 (Yes)
Prefers jobs over health candidate	4079	.50	.50	0	1 (Yes)
Prefer policy plus gift over policy candidate	4194	.44	.50	0	1 (Yes)
Number of non-commercial private (community) radio stations received	4200	2.41	1.50	0	7
Number of public radio stations received	4200	1.05	.37	0	2
Number of private commercial radios	4200	.43	.99	0	6
Number of religious radios	4200	.35	.50	0	2
Age of respondent	4179	40.06	13.36	17	90
Respondent female?	4200	.1778571	.38	0	1 (Yes)
Respondent has elementary education?	4197	.1786991	.38	0	1 (Yes)
Respondent has secondary education?	4197	.11	.31	0	1 (Yes)
Respondent has higher education?	4197	.01	.12	0	1 (Yes)
Respondent is Bariba	4197	.32	.47	0	1 (Yes)
Respondent is Yoa/Lokpa	4197	.12	.33	0	1 (Yes)
Respondent is Ditamari	4197	.18	.38	0	1 (Yes)
Respondent is Yoruba	4197	.15	.36	0	1 (Yes)
Number of adults living in home	4200	2.99	1.61	0	15
Number of adults over 60 living in home	4200	.14	.40	0	3
Number of children living in home	4200	2.63	2.07	0	14
Number of children, 0 – 5, living in home	4200	.85	1.02	0	8
Gender of household head (1 = male)	4149	1.06	.24	1	2

Age of household head	4138	42.17	13.13	18	90
Respondent single	4195	.07	.26	0	1 (Yes)
Respondent polygamous	4195	.20	.40	0	1 (Yes)
Respondent Muslim	4198	.52	.50	0	1 (Yes)
Respondent Catholic	4198	.24	.43	0	1 (Yes)
Household income < 30,000 CFA Francs	4074	.39	.49	0	1 (Yes)
House has brick walls	4175	.20	.40	0	1 (Yes)
House has cement floors	4172	.29	.45	0	1 (Yes)
House has more than 5 rooms	4120	.19	.39	0	1 (Yes)
House has a television	4200	.08	.27	0	1 (Yes)
House has a mobile phone	4200	.27	.44	0	1 (Yes)
Population of the village	4120	2055.91	1386.06	115	8205
Distance from nearest urban center	4160	23.39	18.71	0	145
Distance from nearest bus/train stop	4120	23.31	29.31	0	150
Village has a functional private school	4180	.07	.26	0	1 (Yes)
Village chief has primary education	4200	.25	.43	0	1 (Yes)
Village chief has secondary education	4200	.20	.40	0	1 (Yes)
Village has a paved road	4200	.1	.30	0	1 (Yes)
Village has a secondary school	4200	.17	.38	0	1 (Yes)
Village has a literacy center	4180	.48	.50	0	1 (Yes)
Village has a health center	4200	.54	.50	0	1 (Yes)
Village has a potable water source	4200	1.14	2.32	0	17
Most common language in village is also most common in commune	4200	.85	.35	0	1 (Yes)
Probability two households in village speak the same language at home	4200	.75	.23	.27	1

Appendix: Map of study area in North Benin

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