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Drawing On College Student Attitudes and Behaviors to Instigate Energy Efficiency Improvements in Rental Housing

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Abstract

Improving the energy efficiency of residential rental properties has been a priority of Cornell Cooperative Extension of Tompkins County. However, traditional educational programming has had limited effectiveness due to a split incentive dynamic between landlords and tenants relative to property upgrades. We demonstrate that college students have broad interest in but limited knowledge of energy efficiency and are willing to pay a premium for relevant improvements. Our findings indicate that there is strong potential for Extension professionals to engage off-campus housing offices, students, and landlords in the development of modified leases and to facilitate educational programming that specifically addresses rental housing energy efficiency.

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Introduction

With residential properties accounting for 25% of energy usage in the United States, addressing the energy efficiency of American homes has been a priority of Extension programs nationwide (Laquatra, Pierce, & Helmholdt, 2009). Whereas reducing energy consumption in the residential sector is difficult in general (Swan & Ugursal, 2009), it is a notoriously intractable issue with regard to rental properties due to unique market barriers (Williams, 2008). Williams (2008) identified these barriers as high initial costs and long payback times for energy efficiency improvements and split incentives between landlords and tenants relative to property upgrades. Of these barriers, split incentives—in which the "costs and benefits of investing in energy efficiency are split between" the landlord and the tenant (Williams, 2008, p. 11)—most impede energy efficiency efforts for rental properties. Split incentives can take two forms (Williams, 2008). The first occurs when utilities are paid by the landlord and included in rent. In this situation, there is no financial incentive for the tenant to adopt energy efficient behaviors or use energy efficient appliances because the tenant will

pay the same monthly price regardless of how much energy he or she uses. The second occurs when the tenant pays for utilities. The landlord then has no financial incentive to make energy efficiency upgrades to the property because he or she will not recoup the investment in the form of reduced utility bills. There is evidence, however, that shifting utility costs from the landlord to the tenant can affect energy efficiency. Gillingham, Harding, and Rapson (2012), for instance, found that tenants who pay for heating are 16% more likely to turn down the heat at night compared to households that do not pay directly for heating.

This issue is particularly salient in the City of Ithaca, a small city of 30,000 in Tompkins County in central New York. Ithaca has an unusually high proportion of renters (76.3%) compared to the county as a whole (44.5%) and the state as a whole (46.1%) (U.S. Census Bureau, n.d.). With an extremely low vacancy rate of less than 1% (*2014–2018 City of Ithaca Consolidated Plan*, 2014), there is little room for competition in the Ithaca rental market. Williams (2008) noted that in housing markets such as these, tenants often are forced to accept low-quality housing for a high price; landlords have little incentive to make upgrades to their properties because they know a property will be rented regardless of its condition.

The Energy Corps Program of Cornell Cooperative Extension of Tompkins County has worked for several years to increase the energy efficiency of the residential properties in the county and the city. However, renters attending relevant workshops or outreach events frequently express their inability to make substantial energy improvements to the properties they lease due to the existence of split incentives. Consequently, to date, traditional Extension outreach and education approaches targeting renters have achieved little success.

To develop more effective programming, we devised and administered a self-reporting survey intended to help us better understand behaviors and attitudes relative to energy efficiency among Cornell University students, a group that, in general, has not been receptive to past Extension efforts and is especially affected by rental issues in Ithaca. Because there is insufficient on-campus housing to support the entire student population at Cornell, 49% of undergraduate students (Cornell University Office of the Dean of Students, n.d.) and 80% of graduate students (Cornell University Graduate School, n.d.) rent off-campus private properties from landlords.

Method

Survey Development

We created a survey to distribute to Cornell University students to learn about their knowledge of energy use, attitudes regarding residential energy efficiency, and behaviors undertaken to increase residential energy efficiency and worked through the Cornell Off-Campus Housing Office to distribute the survey. We distributed a pilot version of the survey to 40 students and incorporated their feedback into a revised version of the survey that was reviewed by Extension supervisors and the Cornell Off-Campus Housing Office. After this review, we made final edits to the survey and then obtained exemption from review by the Cornell University Institutional Review Board before distributing the survey broadly.

Data Collection

As an incentive for students to participate, they were entered into a raffle to win one of seven donated gift cards. The Cornell Off-Campus Housing Office distributed a link to the survey in March 2014 via the Cornell email addresses of all students who do not lease on-campus housing. A total of 555 students from a variety of majors completed the survey, which was available for 2 weeks after the initial distribution date. All question responses were optional, and participants were allowed to skip any question they did not wish to answer.

Statistical Analysis

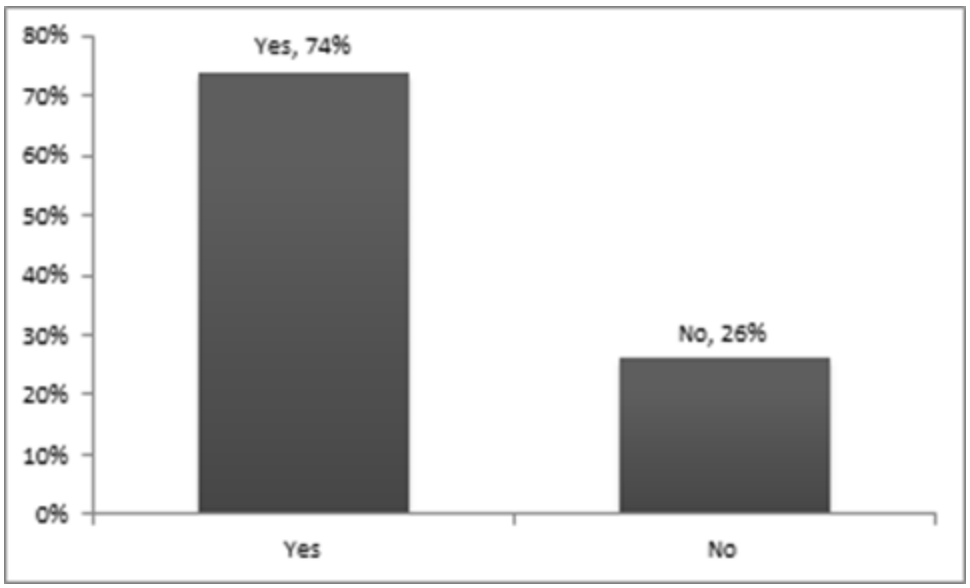
After collecting the data, we used Qualtrics to calculate descriptive statistics and create cross tabulations. In addition, we used Qualtrics to perform a Pearson's chi-square test to reject the null hypothesis of independence among categorical variables and show a relationship at the 5% level of significance ($p < 0.05$).

Findings and Insights

To assess the extent to which the students were attentive to changes in utility bills, we asked whether their payments increased significantly (by $10 or more) during winter. Among students who live off campus and pay for utilities, the majority (74%) reported a significant increase in their utility bills (Figure 1). This finding is significant because students who are aware of increases in utility costs will be more likely to respond to efforts to reduce those costs. Students who are unaware of changes or do not see their bills because their parents pay them will be less interested in changing their behaviors to reduce costs.

Figure 1.

Do Your Utility Bills Increase Significantly ($10+) During the Winter?



Furthermore, a significant relationship ($p = 0.02$) exists between students whose utility bills increase

substantially during winter and students who are willing to pay more for energy efficient housing given that energy efficient housing is associated with lower utility bills (78% of all respondents) (Figure 2). This finding suggests that an untapped market of individuals interested in energy efficiency improvements exists among the student renter population in Ithaca. To quantify the potential size of this market, we asked those surveyed to specify the additional amount of rent they would be willing to pay per month for energy efficient, comfortable housing. More than three-quarters of respondents (78%) indicated that they would be willing to pay a premium on their rent of at least $25 per month for energy efficient housing (Figure 3).

Figure 2.

Would You Be Willing to Pay Higher Rent for More Energy Efficient Housing (Housing Having Energy Efficient Appliances, Lighting, and Heating)?

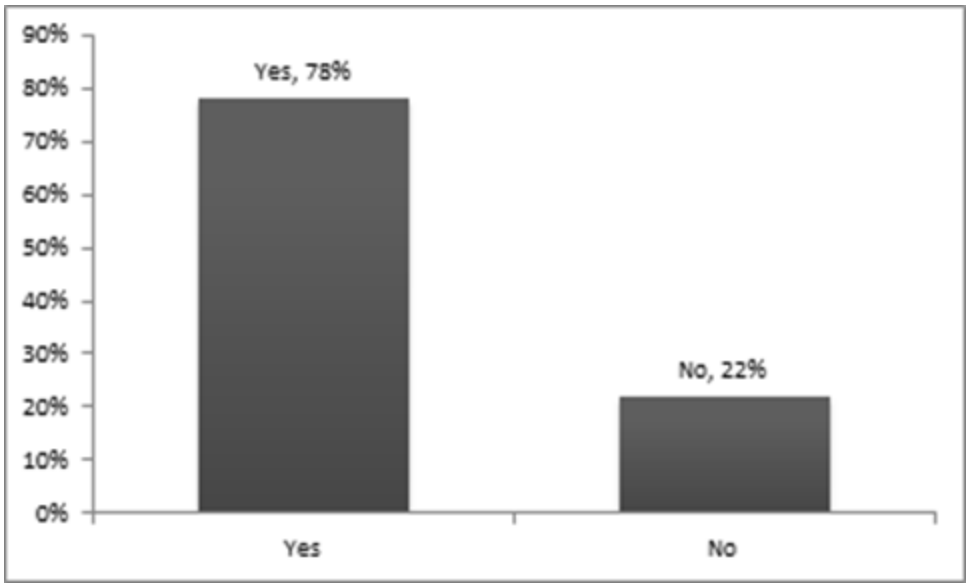


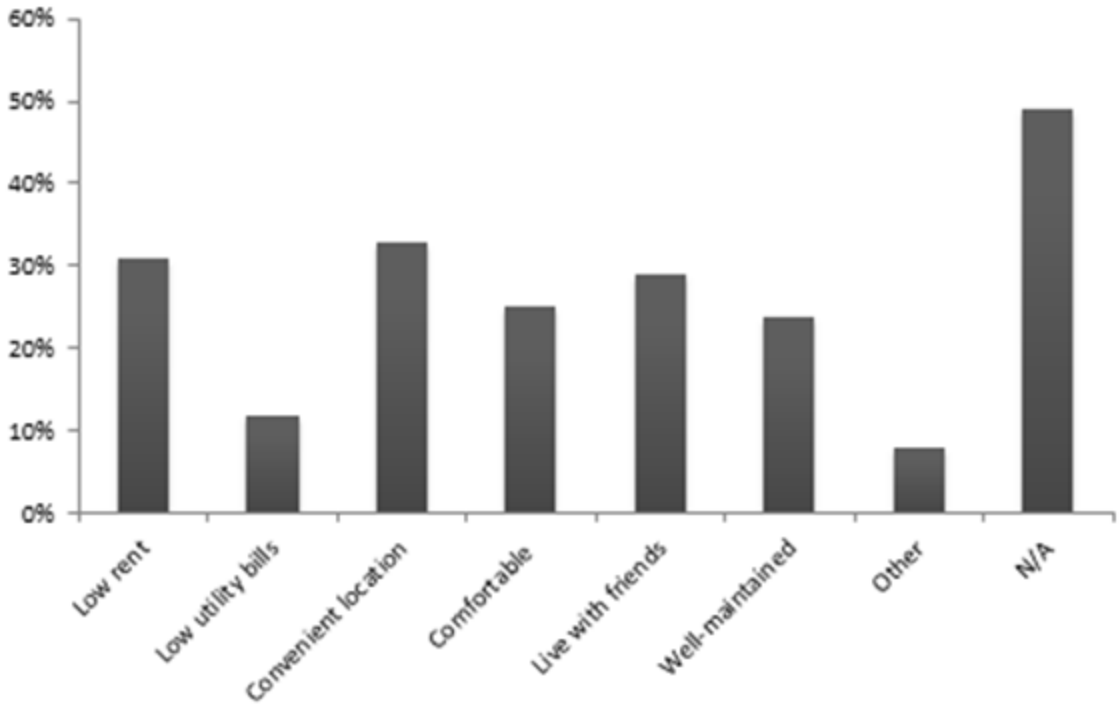
Figure 3.

If You Would Be Willing to Pay Higher Rent for Energy Efficient, Comfortable Housing, How Much More Would You Be Willing to Pay Per Month (Per Person)?

Despite being attentive to changes in utility bills and willing to pay for more efficient housing, the students nonetheless viewed low utility bills as one of the lowest priority reasons for renewing a lease, with only 12% of respondents reporting it as a reason for renewal. As seen in Figure 4, the students considered factors such as low rent and convenient location to be more important. This finding indicates that they may lack awareness of how much utilities actually cost. New York State legally entitles potential renters to see 2 years of utility bills upon request before signing a lease that requires the tenant to pay for heating (Mindell & Israel, 2011). However, landlords typically do not make tenants aware of this provision. Tenants therefore are unaware of the potential cost of energy consumption until they have signed a lease and received their first utility bill, making utility costs a nonpriority in the rental process. This circumstance reveals a lack of understanding among students of the resources available to them in making a housing decision rather than disinterest in energy efficiency. Students who are willing to pay for energy efficiency seemingly do not receive the information or have the legal knowledge necessary to make an informed rental decision with respect to energy consumption.

Figure 4.

Why Did You Renew Your Lease? (Choose All That Apply)



Implications and Next Steps

The analysis discussed herein yields important insights that can be integrated into a comprehensive plan to increase energy efficiency for off-campus rental housing that caters to students.

Results of the survey suggest that a significant number of Cornell University students living in off-campus housing care about the energy efficiency of their properties and are willing to pay a premium on their rent to attain that efficiency. Addressing this currently untapped market of individuals interested in and willing to pay for energy efficiency improvements in student rental housing is a potential solution to realigning the costs and benefits associated with the existing split incentive barrier. One approach that could be undertaken in Ithaca is the implementation of modified leasing structures. An example of a modified leasing structure is use of a green lease, a lease addendum whereby a tenant pays extra rent to a landlord under the condition that the rent increase is used to fund energy efficiency upgrades to the property (Williams, 2008). Ideally, such upgrades should equate to lower utility bills, resulting in net economic savings for the tenant at no cost to the landlord (Williams, 2008). In addition, the upgrades resulting from a green lease could increase property values as there is significant evidence that homes certified as energy efficient sell for higher prices than those not certified as such (Bloom, Nobe, & Nobe, 2011; Popescu, Bienert, Schützenhofer, & Boazu, 2012).

To facilitate implementation of energy efficiency improvements, Extension associates can organize and lead meetings with local landlords and tenants to introduce modified leasing structures and other approaches landlords believe to be viable. Interested landlords could begin to upgrade their properties and offer modified leases, for which students should be willing to pay, according to the results of our survey. The implementation of modified leases can be coupled with an educational campaign run by Extension associates. Specific components of such a campaign might include (a) educating landlords about students' willingness to subsidize the cost of upgrades if doing so will

lower their utility costs and make their apartments more comfortable; (b) informing students about how to access information on the expected utility costs of an apartment; (c) promoting modified leases, such as green leases; and (d) educating students about behavior changes that will lower utility costs and make their apartments more comfortable.

Currently, a pilot version of such programming is occurring through a collaboration of Cornell Cooperative Extension of Tompkins County, Ithaca College, local housing company PPM Homes, and New York State Electric and Gas. This coalition, called the South Hill Outreach for Rental Experience, is currently focused on engaging a variety of stakeholders in a mutually beneficial process. Cornell Cooperative Extension of Tompkins County and Ithaca College are introducing educational curricula focused on (a) ways to reduce energy consumption through lifestyle changes and purchasing of energy efficient appliances, (b) strategies for increasing communication among roommates so that all can agree to reduce energy use, and (c) simple building science that can help students understand how a home's design can affect energy waste. PPM Homes is retrofitting its properties and introducing modified leasing structures that reduce rent for students whose energy consumption is less than a given benchmark and increase rent for students whose energy consumption is higher than the benchmark. Given the findings reported here, such programming has the potential to encourage students to factor future energy consumption into their rental decisions and to overcome the previously insurmountable split incentive problem.

Conclusion

We have summarized and analyzed the key findings from a 2014 survey of student attitudes and behaviors regarding energy efficiency in off-campus housing in proximity to Cornell University in Ithaca, NY. In doing so, we have suggested a pathway for forging mutually beneficial relationships between landlords and tenants, whereby landlords can upgrade their properties and tenants can take advantage of energy efficient and comfortable housing. Although our study was conducted solely with Cornell University students, the results underpin an approach that can be taken by many Extension professionals to address energy efficiency, and more specifically the split incentive barrier, related to rental properties in communities with similarly high rental populations and low vacancy rates. Current efforts in Ithaca show that mutually beneficial collaborations among students, landlords, and Extension professionals are viable and have great potential to change the existing market structure and develop a currently untapped market for energy efficient housing.

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