

August 2022



# Evaluating and maximizing the impact of PayGo on lives and livelihoods

Final Report



Shell Foundation | 

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# Executive Summary





## PayGo's payment model

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# 80%

of customers would recommend PayGo because it enables small purchases of cooking fuel.

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Almost all customers take advantage of the opportunity to make smaller purchases, and spend, on average, less than

# 100 KES

a day on fuel.

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Most purchases made with PayGo are worth between

# 25 & 50 KES

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# 20%

of customers would not have been able to access LPG without PayGo.

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# LPG vs. other cooking fuels



## Switching to PayGo

- 78% of customers would recommend PayGo.
- When women are in charge of decision-making regarding cooking fuel, households are more likely to use PayGo.
- Most PayGo customers switched due to the flexible payment model.
- The two primary reasons non-customers indicated would make them use PayGo were: (i) an explanation from a PayGo employee at home, and: (ii) easy availability of the product.
- The key reasons (listed in order of prominence) that customers indicated made them switch to PayGo were: (i) the ability to make small payments; (ii) convenience; (iii) overall cost; (iv) security of having cooking fuel, and; (v) health.



## Fuel stacking

- Even when customers are happy with PayGo, fuel stacking is still common practice.
- 43% of PayGo customers practice fuel stacking, compared to 56% of non-customers.
- Fuel stackers are no poorer than single-fuel users, but they are less willing to pay for fuel.
- Fuel stackers are significantly more often female (59%), compared to non-fuel stackers (48%). Additionally, in 70% of fuel stacking households, women are involved in the decision-making of cooking fuel, compared to only 59% of non-fuel stacking households.



## Impact on customers' lives

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Customers believe LPG to be a healthy cooking fuel. Accordingly, significantly fewer PayGo customers use any non-gas cooking fuel compared to non-customers.

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Generally, users incur costs to procure cooking fuel, but PayGo customers pay significantly less in comparison.

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**24%** of customers cook more since switching to PayGo, and feel that cooking is more enjoyable and efficient. 11% of customers indicated that they cook more diversely now.

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**59%** of customers are able to save money on cooking fuel because of PayGo, and are able to redirect funds to where they need them most; a sizeable proportion (49%) is allocated towards savings, investments, and urgent expenses.

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**82%** of customers saved time through PayGo. On average, customers' total time saved is equivalent to a full working day a week. Many customers have used this time to work more, or take care of their households. This effect benefits women disproportionately.

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**95%** of customers are proud to be using PayGo. 49% of respondents indicated that people in their community who use PayGo enjoy greater social recognition. 26% of respondents started using PayGo because someone else in their community was using it. This underscores the social value that PayGo delivers, beyond its economic and health benefits.



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# About PayGo



# About PayGo

Founded in 2015, PayGo is a technology company based in Nairobi. We provide hardware and software solutions to gas distributors and other b2b players, enabling them to serve low-income populations by facilitating their switch to LPG, from charcoal and biomass, to meet their daily cooking needs.

## Markets we serve



Kenya



Democratic Republic of Congo (DRC)



Philippines

## The Product



1

By attaching an LPG meter to a gas cylinder, PayGo is able to measure and regulate the outflow of gas from their cylinders, which are provided to their customers at no initial cost.



2

Customers purchase gas credit using mobile money, and, once inputted, the LPG meter allows the outflow of gas. This enables customers to pay only for what they use, whenever they want to use it.



3

Through real-time monitoring of a household's usage, PayGo is able to anticipate when customers will run out of gas. In response, PayGo replaces customers' cylinders before they ever run out.



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# Background & methodology



# Overview of the engagement

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PayGo Energy provides a pay-as-you-go LPG service to low-income customers in Kenya, the DRC, and the Philippines.

Working with PayGo Energy and the Shell Foundation, and co-funded with UK aid from the UK government, the Busara Center for Behavioral Economics (Busara) conducted a mixed methods study to understand the **impact** of PayGo energy on its customers in Kenya.

In this engagement, we explored a set of hypotheses around impact, including impacts on customers' **financial lives, wellbeing, cooking practices, and household dynamics**. We were particularly interested in impacts experienced by women, and how impacts differ by gender.

To achieve this, we conducted a two-phase study:  
Qualitative interviews with customers and non-customers.  
Quantitative survey which explored themes identified by the qualitative phase.

This presentation shares final insights from both the qualitative and quantitative research.



**Phase 2:**

## Qualitative approach

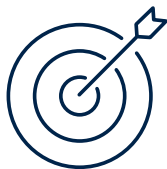
**Qualitative objectives**

To understand the impact PayGo is having on users' lives and livelihoods, and how it could deliver more value to customers, and drive stronger impacts.

**Target population**

We interviewed 15 people across seven segments.

This included a mix of men and women, and those who were mainly responsible for cooking or financial decision-making.

**Methodology**

We conducted extended interviews in-home using ethnographic techniques.

We also asked respondents to complete a pre-interview diary capturing their cooking and financial behaviors.





## Specific areas of questioning

### Access to LPG

Is there a preference for purchasing LPG in smaller amounts?

Do customers transition fully to LPG?

Does usage translate to increased willingness to pay for the LPG?

### Impacts on cooking and diets

Did cooking frequency and intensity change?

Is there diversity in the types of diets prepared?

Other impacts related to cooking with Paygo LPG?

### Impacts on financial, work, and personal lives

Does a pay-as-you-go model free up money for investments?

Have customers realized a time saving?

Have customers changed their daily schedules?

### Impacts on psychological, and social status

Does access to LPG provide a psychological benefit to customers?

For which segment is access to LPG an aspirational benefit?

### Phase 3:

## Quantitative approach



### Qualitative objectives

To understand the impact PayGo is having on users' lives and livelihoods, and how it could deliver more value to customers, and drive stronger impacts.



### Target population

We interviewed **464 customers of PayGo**, and **163 non-customers** from Busara's respondent pool—who were matched in demographic traits to PayGo customers—to generate a representative dataset allowing us to compare the two groups. Interviews were conducted in informal settlements in Nairobi.



### Methodology


The construction of the survey was driven by results from Phase 2, querying demographics, behavior and attitudes towards PayGo and other cooking fuels.



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# Exploring PayGo's payment model

PayGo's central value proposition is the ability of customers to make small purchases and avoid high upfront costs for gas cylinders. In the next section, we explore to what extent customers do in fact prefer, or take advantage of, this payment model.



# 80%

**of customers would recommend PayGo because it enables making small purchases of cooking fuel.**



### The PayGo model suits many customers' financial reality and preference for smaller payments

Many respondents received income in small amounts on a daily or weekly basis, often in irregular amounts.

Many respondents prefer to purchase fuel in small amounts, daily or weekly, as this fits with how they receive income.

Bulky payments can be challenging as most lack savings, and quickly spend what they earn.

As such, even non-users of PayGo often still purchase cooking fuel in small amounts from street vendors.

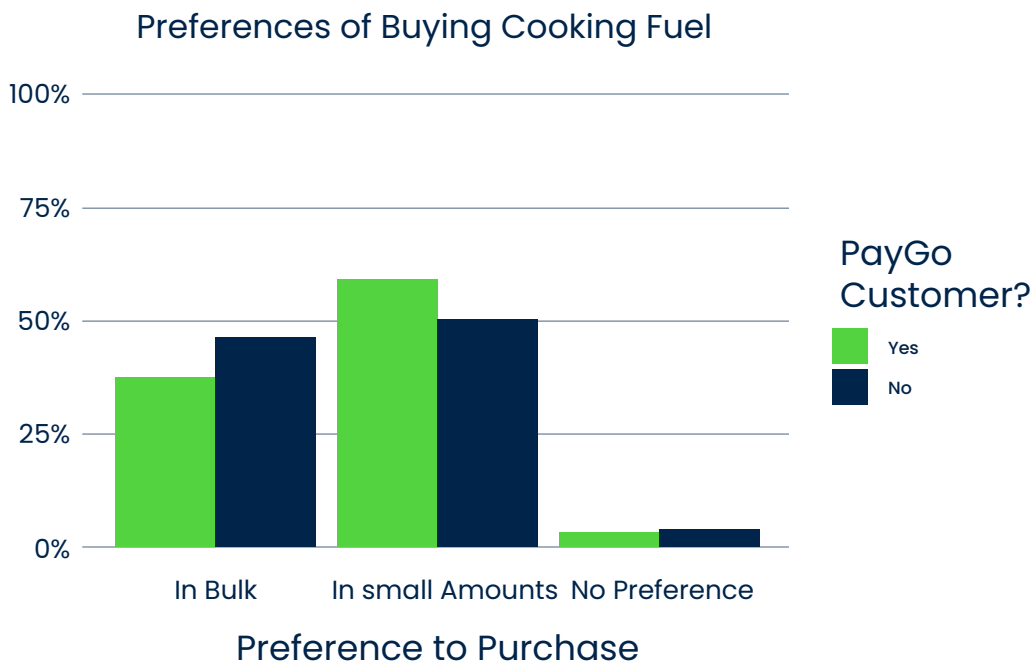


The good thing about it is that you can top up the amount you have, instead of looking for the whole amount to refill. It is like electricity where you just pay for the token.

**Segment 1, Male**

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## Most people indicate that they prefer to buy cooking fuels in small amounts



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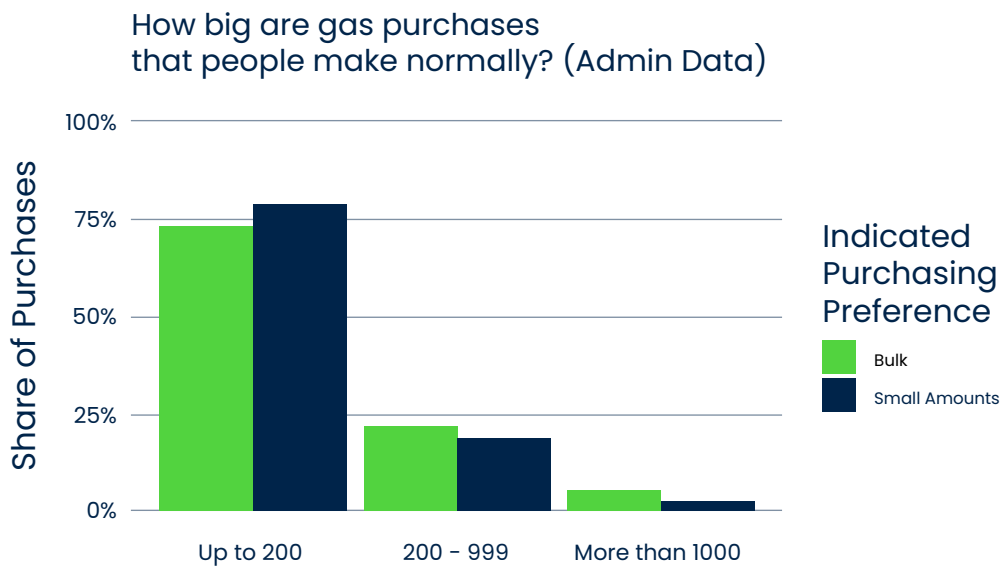
The majority of both PayGo customers and non-customers prefer to buy cooking fuel in small amounts. More than 50% of PayGo customers prefer small purchases.

The majority of both PayGo customers and non-customers prefer to buy cooking fuel in small amounts. More than 50% of PayGo customers prefer small purchases.

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## Actual purchasing behavior reveals a preference for smaller payments across all respondents



# 65.42

**Mean spent daily of those preferring bulk purchases.**

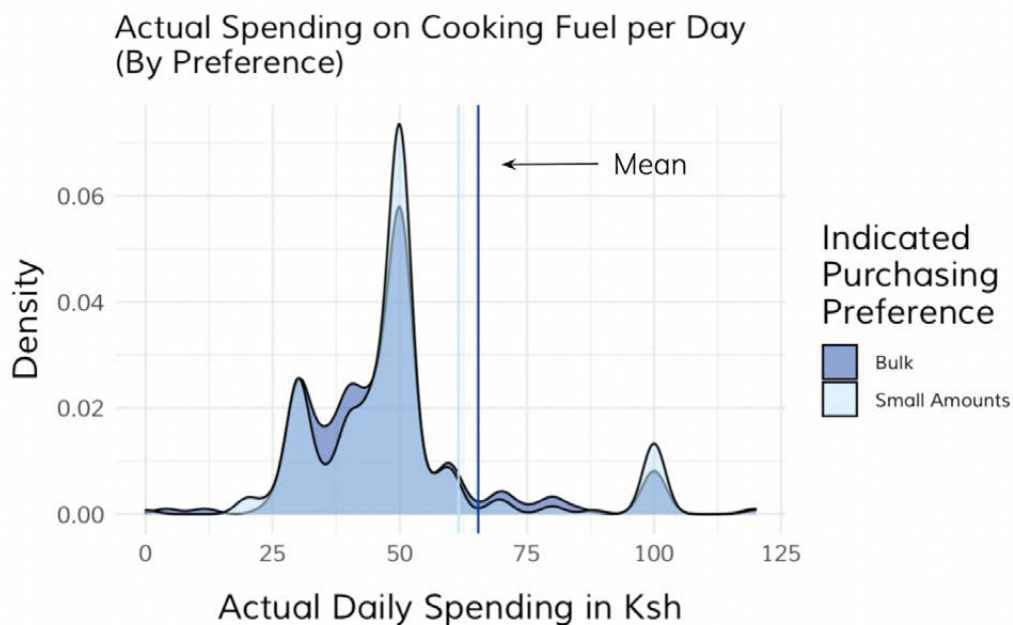
This finding points to a mismatch between actual purchasing behavior, and indicated preferences. It appears as if all respondents have a preference for smaller purchases, mostly around 60 KES a day.

# 61.55

**Mean spent daily of those preferring small purchases.**

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## The Most Common Expenditures per Day are 50, 25 and 100 KES per Day



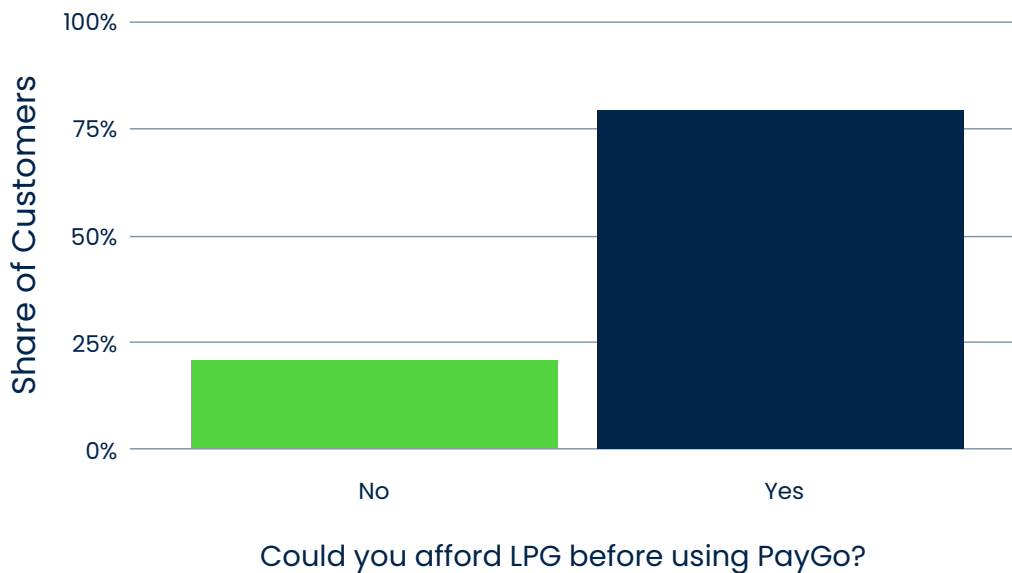
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Actual daily purchasing data indicates that customers take advantage of the opportunity to make small purchases of cooking gas, smoothing their consumption, and affirming

PayGo's business model. Customers appear to mostly purchase between 25 and 50 shillings' worth of gas per day.

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## PayGo's payment model enabled 20% of its customers to access LPG



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25% of customers did not use cooking gas before using PayGo.

82% of these customers indicated that they were unable to afford LPG before. 20% of customers would not have been able to access LPG without PayGo. This is an important finding, showcasing the market that PayGo's payment model is able to capture.

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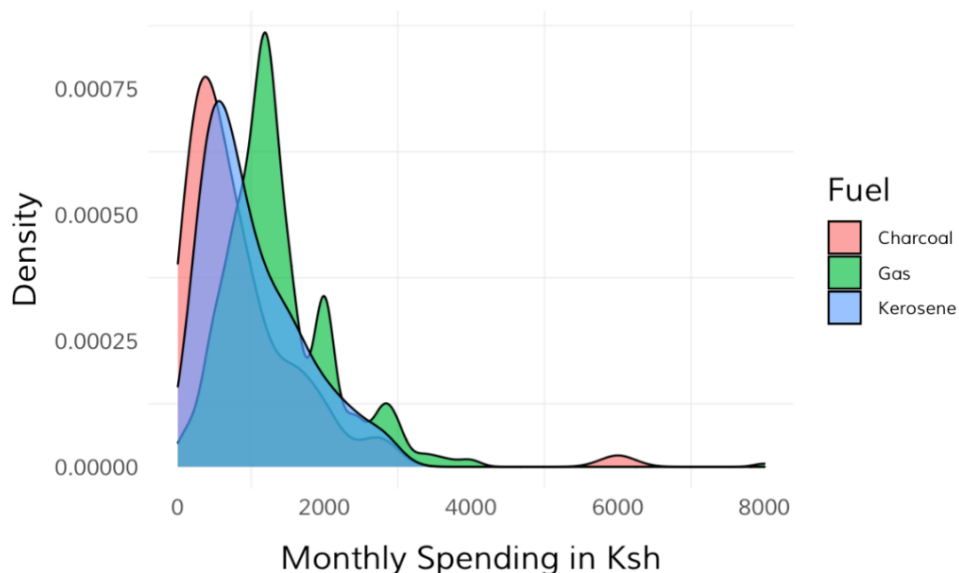
# LPG vs. other cooking fuels

A central interest of this report is how PayGo has changed the relationship of its customers to other sources of cooking fuel; what made people switch, and how did the use of PayGo change household's propensity to fuel stack (i.e. using multiple cooking fuels simultaneously)? The next section explores these topics.



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## What do respondents who use only charcoal, kerosene, or gas pay on average a month for cooking fuel?



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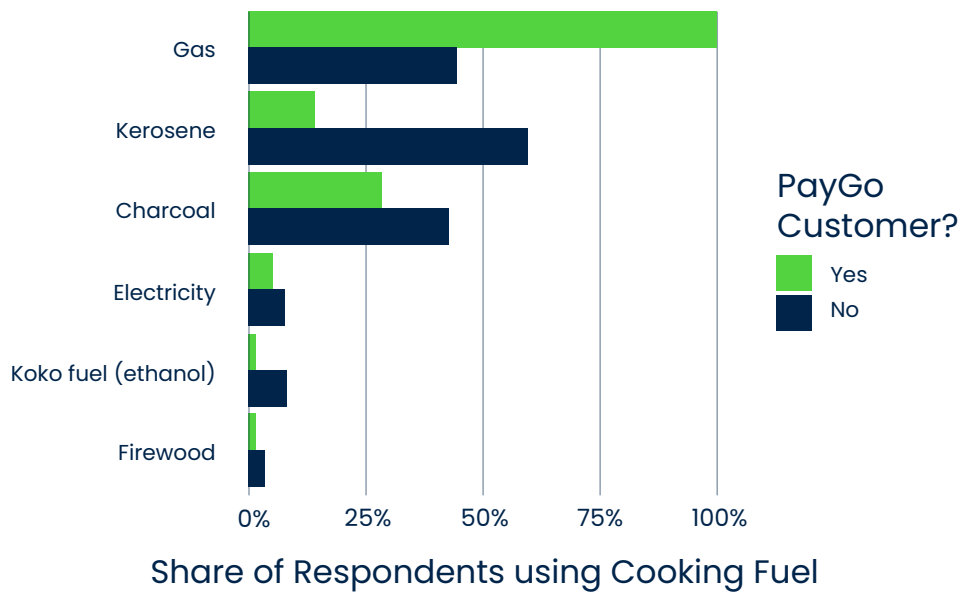
Of the respondents that do not fuel-stack, those using gas paid most on average in a month (1370 KES).

Respondents who only use charcoal spend an average of 865 KES a month.

Respondents who only use kerosene spend an average of 1025 KES a month.

Future investigations should include data on the use of cooking fuel, rather than purely spending, to compute cost of using different cooking fuels.

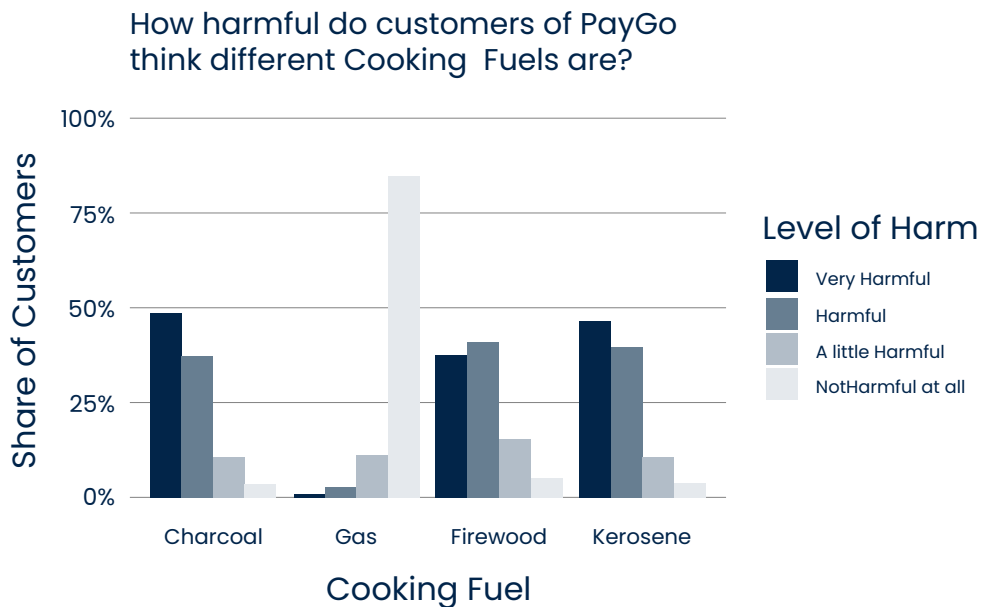
## PayGo customers use non-gas cooking fuels less compared to non-customers



More than 50% of non-customers use kerosene.

PayGo customers use other sources of cooking fuel disproportionately less than non-customers.

## What do respondents who use only charcoal, kerosene, or gas pay on average a month for cooking fuel?



Almost all customers believe all other major cooking fuels are very harmful, or harmful. This finding underlines both the physical benefit of using PayGo, and the motivation for customers to take up, and continue to use, PayGo's services.

Customers also believe, to a significantly greater extent than non-customers, that gas is not harmful at all, indicating the change of attitudes which PayGo might generate. The sampling method of this study does not allow making a causal claim to this.

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# Switching to PayGo





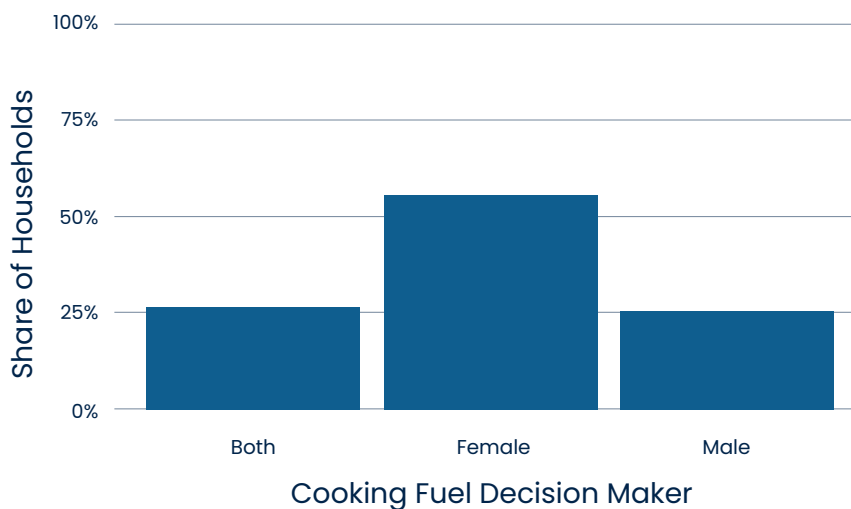
# 78%

## of customers would recommend PayGo.

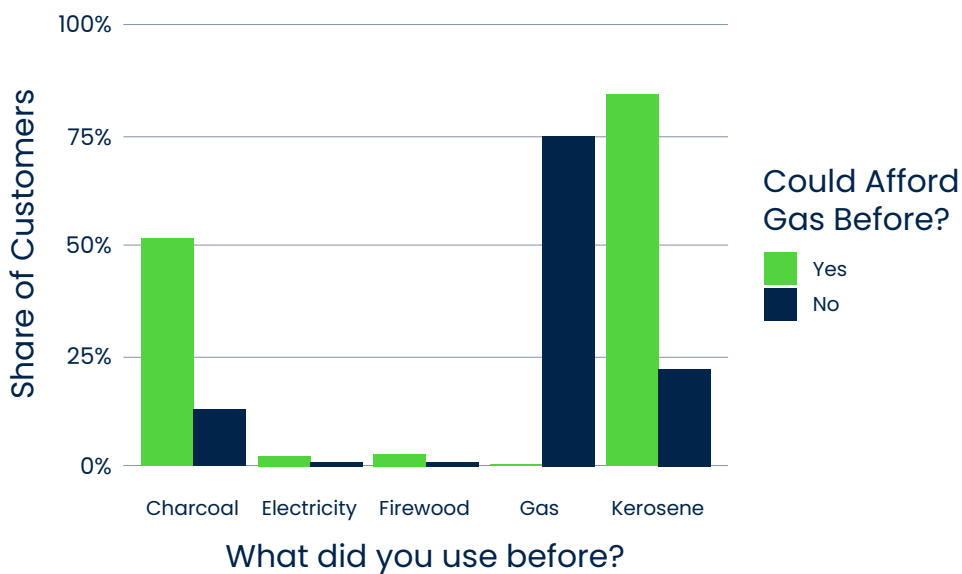


### When women are in charge of cooking fuel decisions households are more likely to be using PayGo

- Women drive the cooking fuel decision-making process across households.
- To acquire customers, women should be the main point of contact.
- Women are significantly more often the main decision-makers for cooking fuels in PayGo households, compared to non-PayGo households. This might indicate that uptake is greater in households where women participate in financial decisions, as similar studies normally find men to be in charge of domestic decision-making. In turn, this might mean that women are the low-hanging fruit, that is, they understand the value of PayGo to a disproportionate extent, and men are harder to sell to (but arguably more relevant as they more often control financial decisions). This is a significant finding, which future research should investigate deeper.



## Most PayGo customers switched due to the flexible payment model



Interestingly, more than 70% of customers who were able to afford LPG before PayGo already used gas, indicating the desire to switch the payment model, rather than the cooking fuel itself. This has relevant business implications. In the design stage of this study, investigating which strategies are effective to onboard previous gas users, as well as helping more kerosene and charcoal users switch to the use of gas for cooking, are prioritized.

The remaining 30% of customers that did not use gas before using PayGo used mostly kerosene and charcoal, likely granting them a strong improvement in indoor air quality.

## Most PayGo customers switched due to the flexible payment model

Nudge	Share of households
Explanation from a PayGo employee at home	37%
If it was easily available to me	34%
Recommendation from a friend or family member	18%
Being able to try it at a friend's house	8%

## What made customers switch to PayGo?

Reason	Share of households
Small payments	80%
Convenience	65%
Overall cost	35%
Security of having cooking fuel	31%
Health	26%

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# Fuel stacking



## Even when customers are happy with PayGo, fuel stacking is common practice



Fuel stacking is a common practice across all segments, this is driven by cooking practices, habit, and for emergencies.

Most families have a jiko (charcoal stove) for cooking of chapatis, boiling lentils/ legumes, and sometimes when cooking meals for large events.

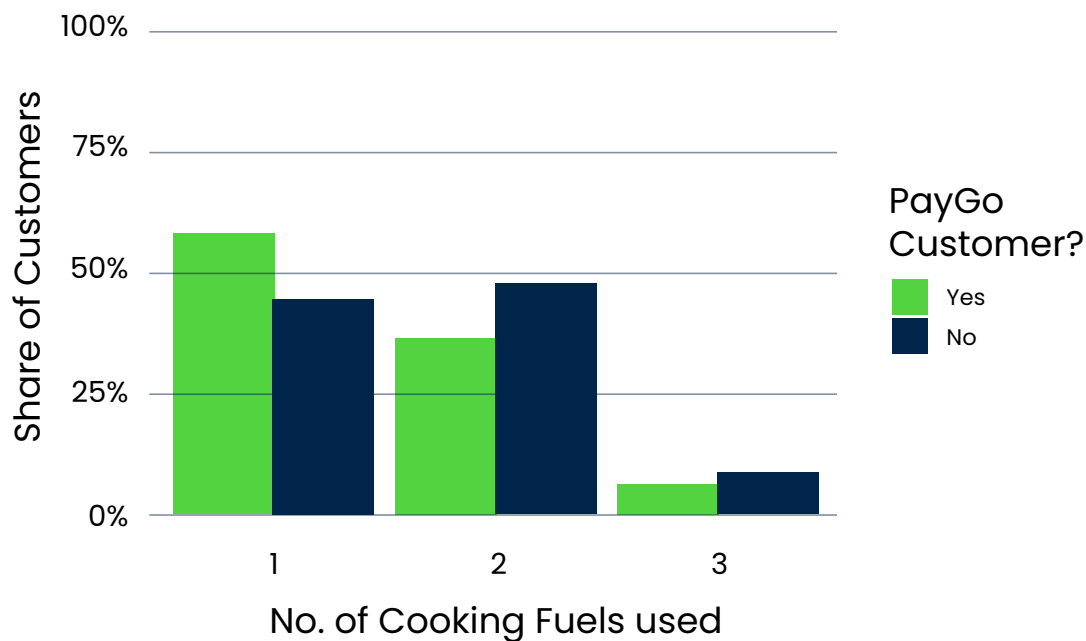
Even those who mostly used PayGo and were committed and happy customers had some form of 'backup' fuel (LPG, kerosene, or charcoal jiko) with the reasoning:

Just incase my PayGo gas runs out.

What if 'something goes wrong with my cylinder'?

What if I have 'no money on phone to top up'?

## 43% of PayGo customers stack fuel compared to 56% of non-customers

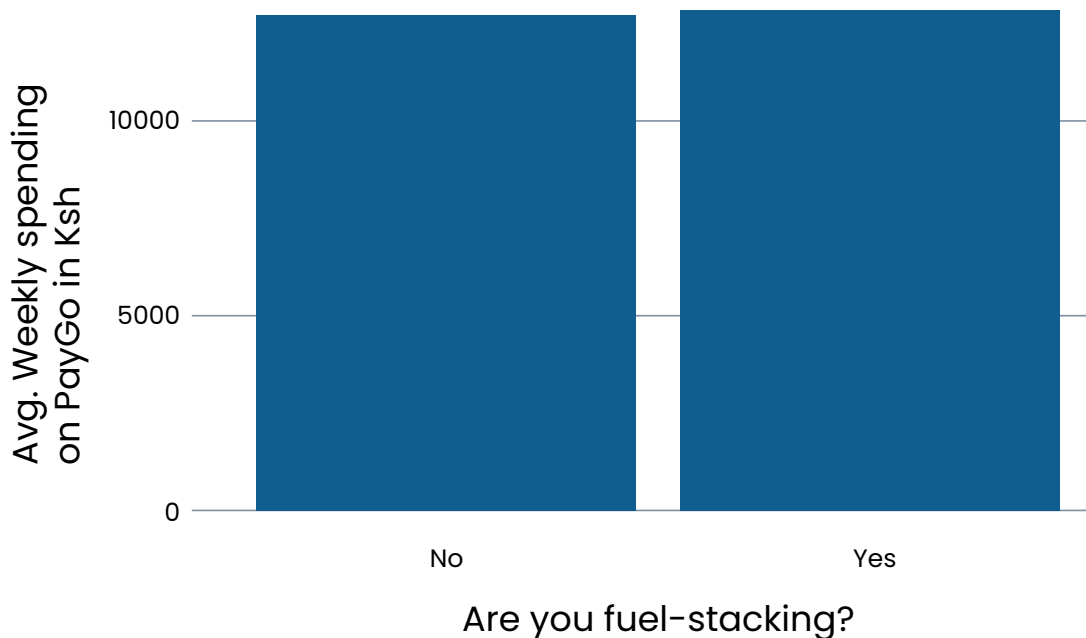


Interestingly, fuel stackers across both groups are significantly less willing to pay more for their cooking fuel (although fuel stackers' income is not significantly different from non-fuel stackers).

However, unexpectedly, willingness to pay is not associated with weekly spending levels on cooking fuel

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## Fuel stackers are no poorer than single-fuel users but they are less willing to pay for fuel

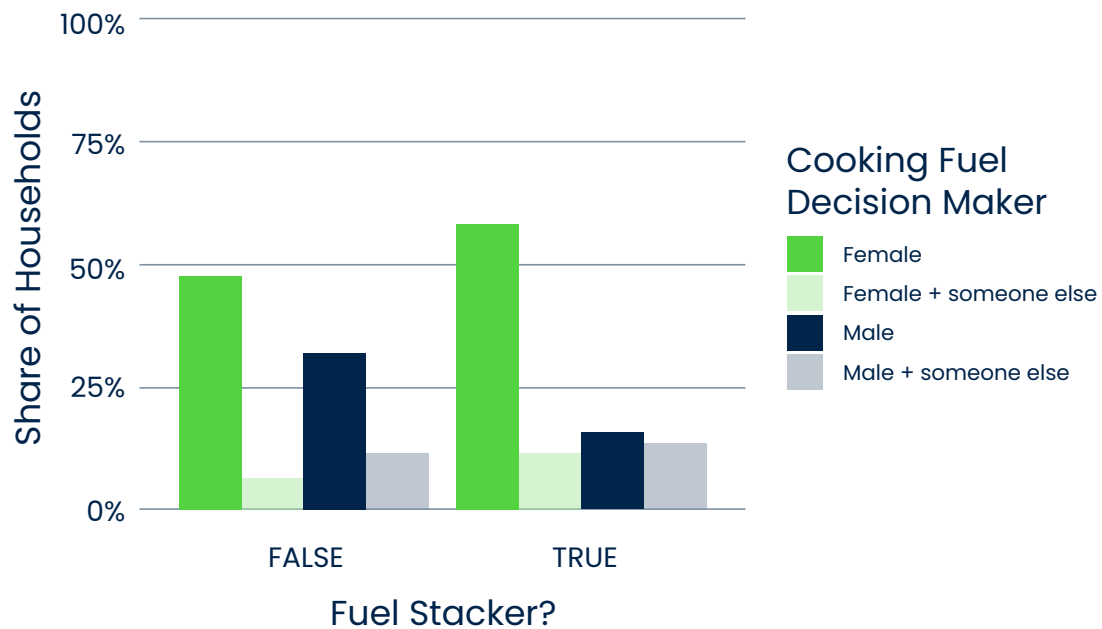


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Fuel stackers are no poorer than non-fuel stackers, but are willing to pay ~7% less than non-fuel stackers. This is an interesting finding, for which future research might want to investigate causes.

Willingness to pay was estimated by asking a set of threshold questions indicating at what price increase respondents would lower consumption.

## Do women drive fuel stacking if they are in charge?



Fuel stackers are significantly more often female (59%), compared to non-fuel stackers (48%).


Additionally, in 70% of fuel stacking households, women are involved in decision-making regarding cooking fuel, compared to only 59% of non-fuel stacking households. This might be a potential driver.



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# Exploring the impact of PayGo on customers' lives

PayGo's service has generated an extensive impact on its customers' lives, from financial conditions, work, and personal lives, to cooking, diets, and social status. The following section presents the evidence base generated as part of this project, indicating how PayGo has improved the lives of its customers.



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# Impact on financial lives



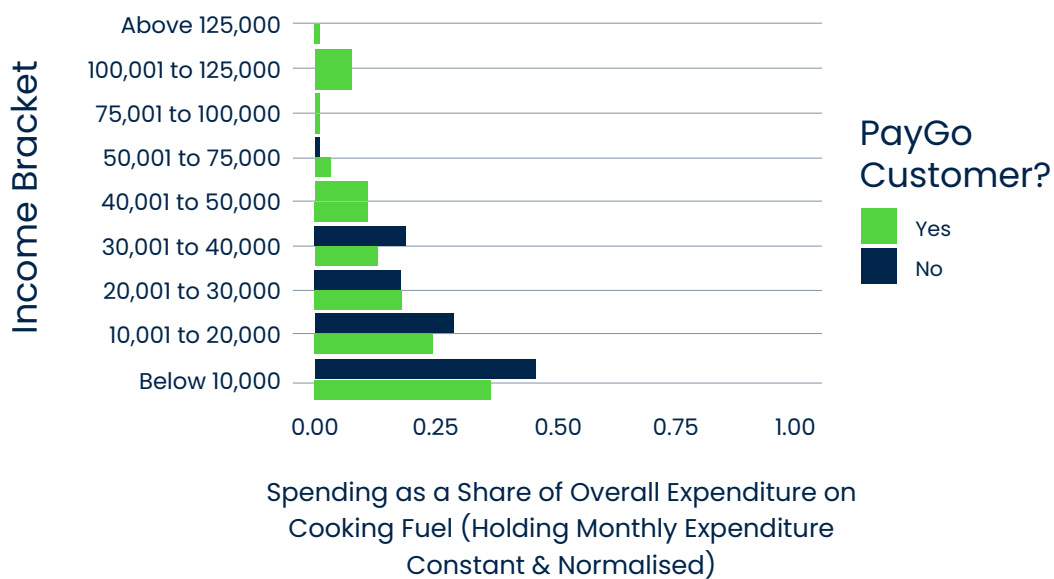
# 59%

**of customers are able to save money on cooking fuel because of PayGo**



## PayGo customers pay less for cooking fuel

Even after controlling for income, PayGo customers pay less for cooking fuel as a share of their monthly expenditure. This is a highly relevant finding, indicating that PayGo helps lift pressure off customers' financial burden.



## PayGo customers with female-headed households spend significantly less on cooking fuel as a share of their income



*A t.test for equality in mean between the share of income spent on cooking fuel of households headed by women relative to households headed by men exhibited a significant difference. P-value = 0.03.*

## PayGo removes financial stress that comes with bulk payments



With 1000 KES I can buy breakfast and lunch, and still pay for PayGo. That is a budget for a whole day, compared to other LPG gas where I can refill with the same 1000 KES, but I won't be able to buy food.

**Segment 1, Male**

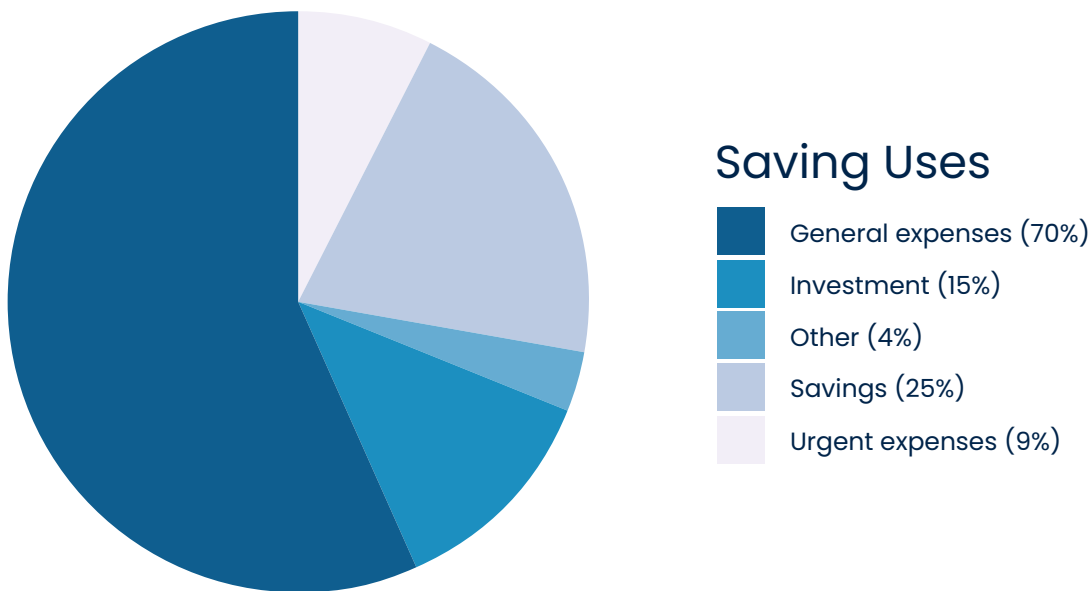


It helps me a lot. Because I can get that thousand (income) and top up 150 KES, which I know will take me for three days. We rarely cook lunch here. The rest I can pay for tuition and other things. I can also buy sugar and flour, and pay for PayGo. It has helped me and it is helping me. I can't deny that.

**Segment 2, Female**

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## Customers are able to redirect funds to where they need them most



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The majority of the savings customers make from using PayGo go to their general or urgent expenses.

However, a sizable proportion (40%) goes towards savings and investments. Future research may test interventions to increase the share of savings used for investment and savings.

## Customers are now able to invest in their future and improve their lives



You see, with 1500 KES when using the other gas, you will have to use the whole amount to refill. But when you are using PayGo, you can use 500 KES to top up, and deposit the remaining 1000 KES into the savings group.

**Segment 2, Male**

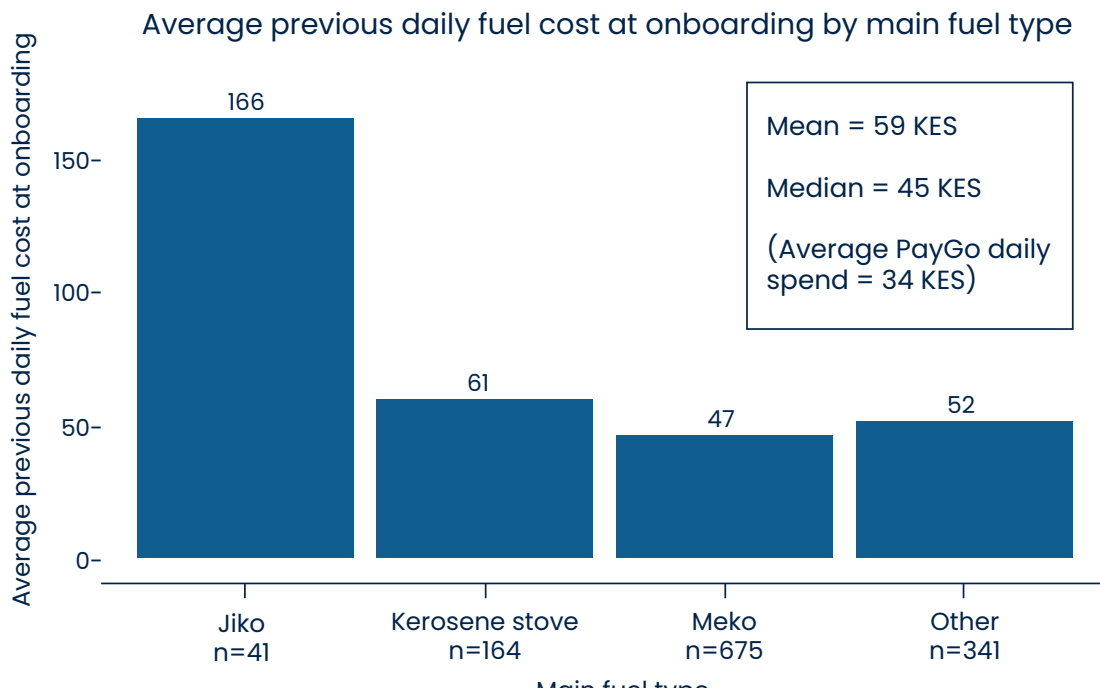


I can say that I bought this cupboard when I started using PayGo. I also had a smaller TV before I started using PayGo. A lot of things have changed.

**Segment 5, Female**



## Customers using charcoal before using PayGo experienced the greatest drop in expenditure on fuel



Across fuel types, customers of have experienced a drop in expenditure after starting to use PayGo's service.

Customers who used jiko prior to PayGo experienced the most drastic drop of 80%.

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## Customers who prior to using PayGo were unable to afford LPG now save money

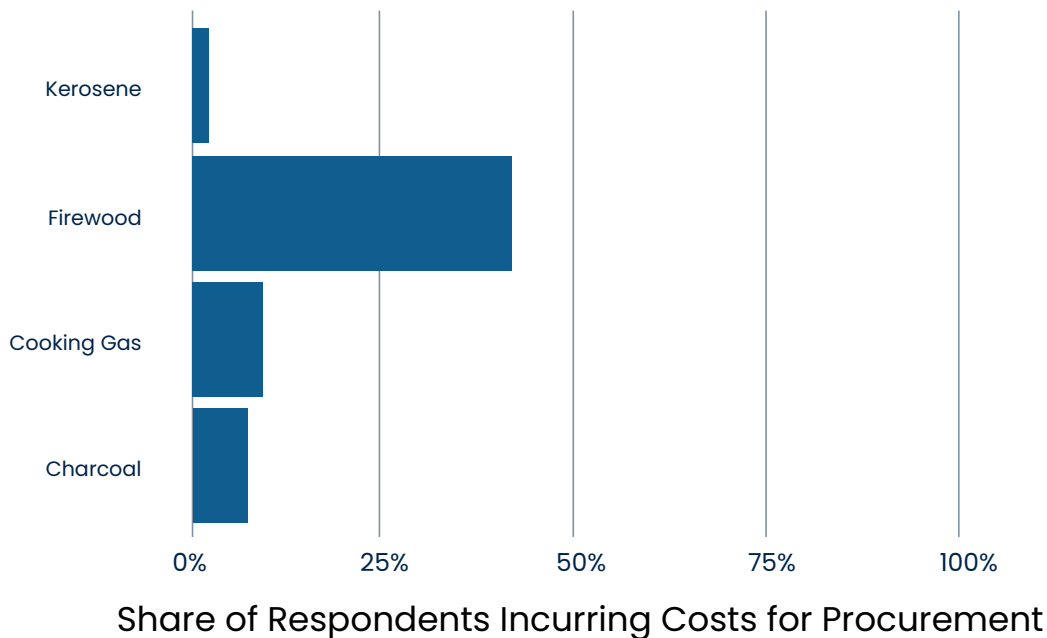


Customers who were previously unable to afford LPG **saved money significantly more often (82%)** using PayGo, than those who already had access to LPG (52%) before switching to PayGo .



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## Generally, few respondents incur costs to procure cooking fuel

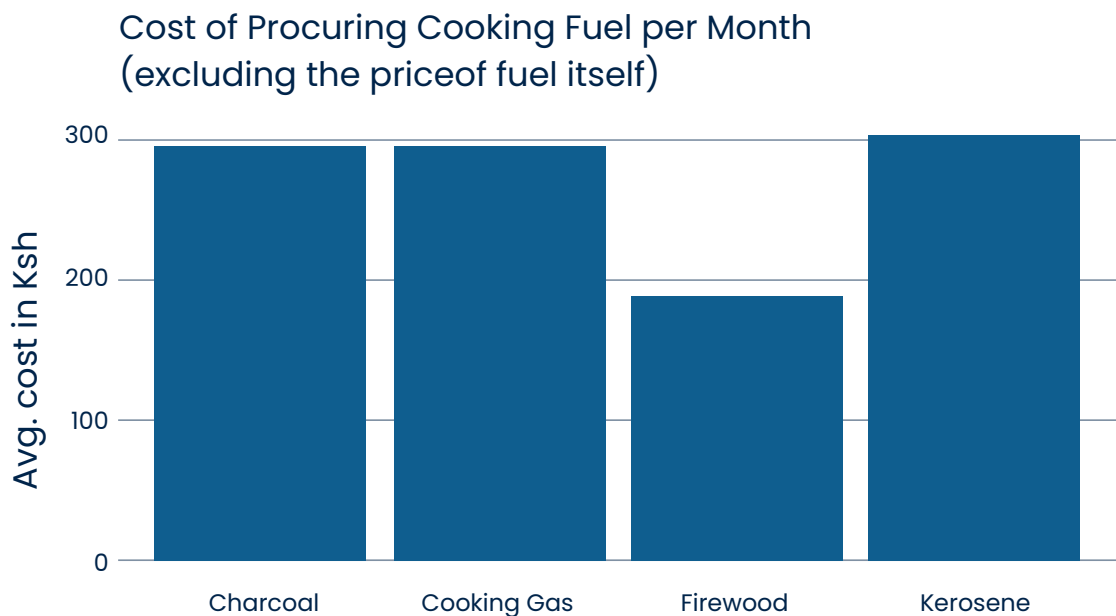


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Although a large share of PayGo customers incur costs for procuring firewood, only 1% of customers actually use firewood.

Customers incur costs for procuring cooking gas significantly less often than non-customers, leading to the assumption that PayGo helps ease procurement costs for customers.

## PayGo customers pay less to procure cooking fuel



Although PayGo customers pay significantly less to procure cooking gas and firewood, they pay more than 2.5 times the amount to procure charcoal (30% of PayGo customers use charcoal).

Firewood is generally the least financially cost intensive resource to procure as a cooking fuel. It is, however, likely the most time intensive.

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# Impact on work and personal lives



# 82%

## of customers saved time through PayGo



### This time saving is driven by the convenience of PayGo

**The double burner provided by PayGo increases cooking efficiency**



The double burner is very efficient. We can cook many things quickly.

**Segment 4, female**

**There is no need to go out to procure fuel**



I used to have to take a bike to go and get gas from the street vendor, so it was more expensive and time-consuming.

**Segment 4, Male**

**Cooking is not as likely to be interrupted by running out of fuel**



"Carrying the cylinder, more so at night, to go and refill could be a challenge, but with PayGo, I can top up 50 shillings and continue with my cooking."

**Segment 5, Female**

**New cylinders are provided quickly by PayGo**

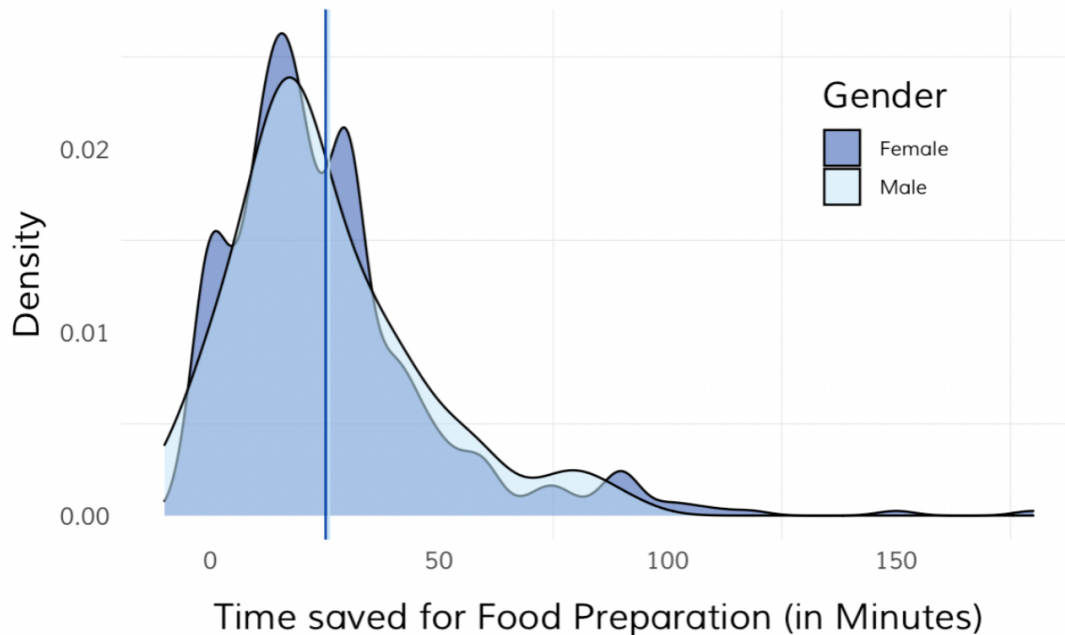


When the cylinder ran out, the PayGo people came very quickly to replace it.

**Segment 2, Male**

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## PayGo customers save on average 25 minutes per day (half a working day per week) on food preparation



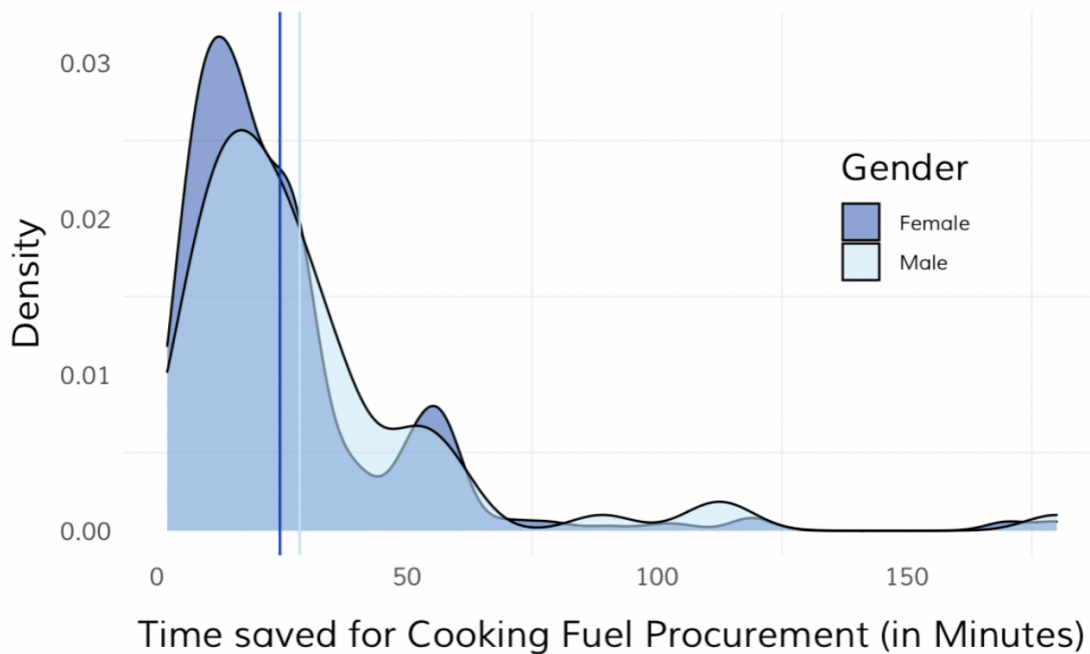
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Men and women save similar amounts of time on food preparation on a daily basis by using PayGo. However, in 81% of surveyed households, women are the ones cooking. Accordingly, the overall time saving is much greater for women across households.

58% of customers save more than 20 minutes every day.

6% of customers save more than one hour every day.

## Customers save on average 30 minutes per day on procurement of cooking fuel



On average, customers save 30 minutes every day on procurement of cooking fuel, which amounts to savings of at least 3.5 hours per week.

47% of customers save more than 20 minutes every day.

4% of customers save more than one hour every day, that is, a full working day per week.

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## Customers who prior to using PayGo were unable to afford LPG, save time through PayGo more often



Customers who were previously unable to afford LPG **did not save time significantly more often on procuring cooking fuel.**



Customers who were previously unable to afford LPG **saved significantly more time preparing food**, compared to those that could access LPG before PayGo. They saved 40 minutes a day, on average (almost double).



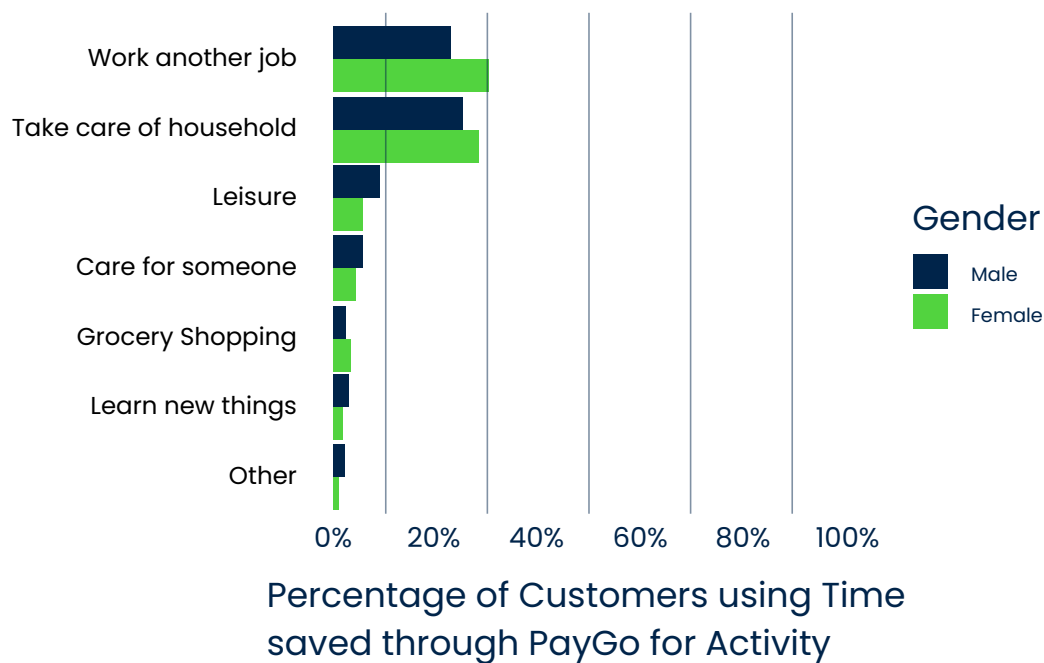
**This means,  
on average,  
customers' total  
time saved is  
equivalent to a  
full working day  
a week.\***

**\*That's seven hours a week!**



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## This time saving has allowed customers to work more



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Customers have realized various forms of time savings, which have freed up their daily schedules to attend to personal and business matters.

A large share of customers use the extra free time to work more, or to take care of their household.

## As women tend to be the ones cooking, they have benefited more from time savings

### Reducing burden of cooking, and increasing time for rest



I don't have to wake my wife up as early in the morning to start the jiko; she can get more rest.

**Segment 5, Male**

### More time for work, and caring responsibilities



It is saving me so much time cooking and in purchasing fuel. I now have more time to tend to my sick mother, and to work at my vegetable stall.

**Segment 2, Female**



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# Impact on people's cooking and diets



# 24%

## of customers cook more since switching to PayGo



### Customers feel that cooking is more enjoyable and efficient with PayGo

In the qualitative phase, the majority of Paygo users talked about less time spent cooking due to efficiency, and the two-burner stove. Some respondents mentioned that the two-burners enable them to cook different foods simultaneously, that one does not have to finish cooking one dish before preparing another.

They also mentioned that cooking is a more enjoyable experience with PayGo LPG. You can cook without background concerns such as 'my neighbour knows I'm cooking because of the smoke', and 'what if I run out of gas?'

“

When you are using a stove, everyone will know you are using the stove because of the smoke. When I am cooking with PayGo you will not know I am cooking unless I bring the food here. It is so silent. The sufurias are clean. You don't struggle when you wash them.

**Segment 3, Male**

“

By the time you realize it is over, they have realized and brought another cylinder. Also, when you are cooking, it is easy. Even when you are late, a child can't go to school without taking tea.

**Segment 6, Female**

## PayGo has affected the diversity of meals of 13% of customers

# 11%

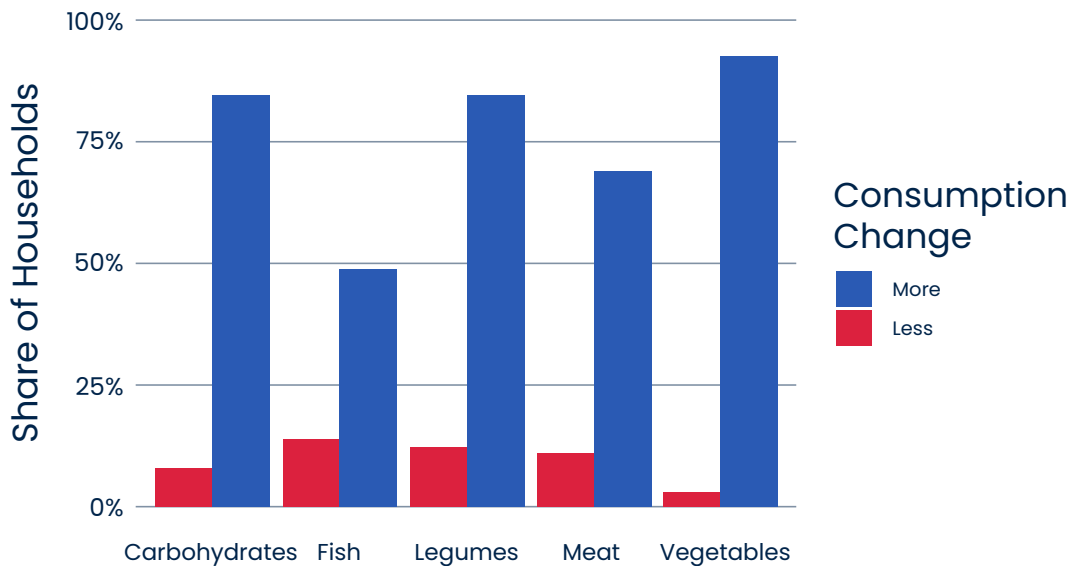
indicated they cook more, or much more, diversely now.

# 2%

indicated they were cooking more simple meals now.



## Customers whose diet has changed through PayGo now eat more food overall

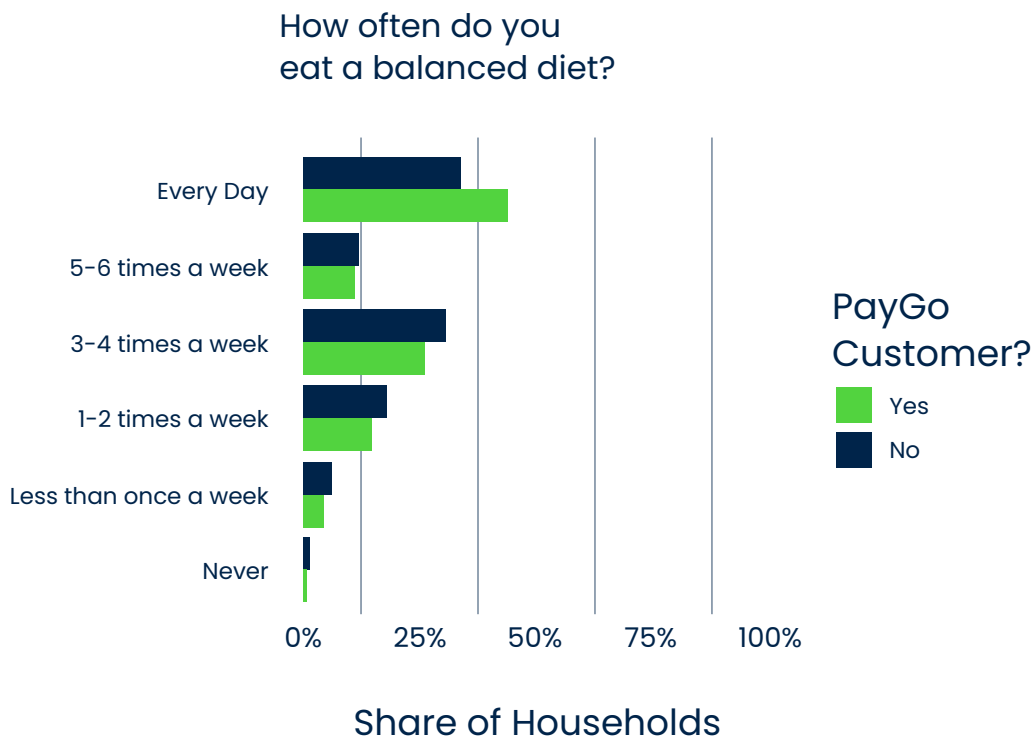


Most customers who indicated a change in diet also indicated an increase in their food intake across several categories, particularly vegetables, carbohydrates, and legumes.

It is likely that PayGo has helped increase overall food intake in these households.

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## PayGo customers report eating healthier more often than non-customers



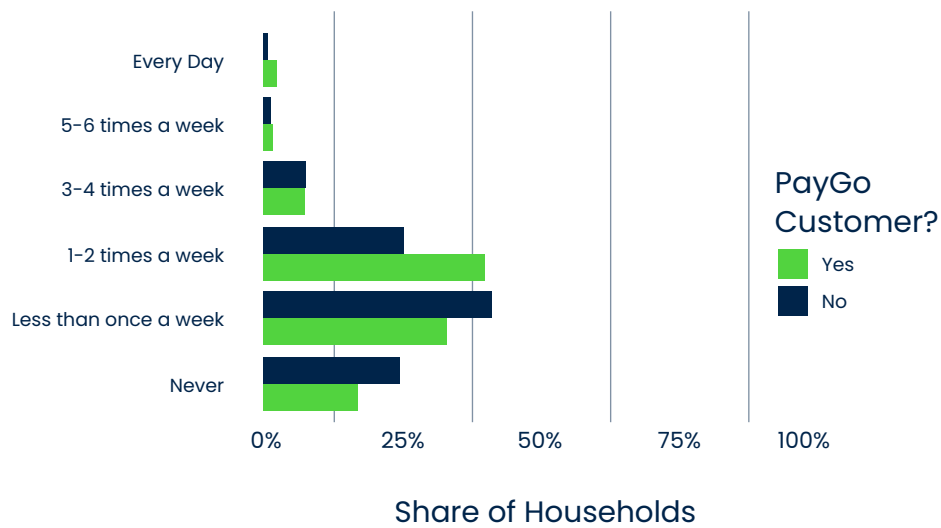
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Almost half of PayGo customers eat a healthy diet every day of the week.

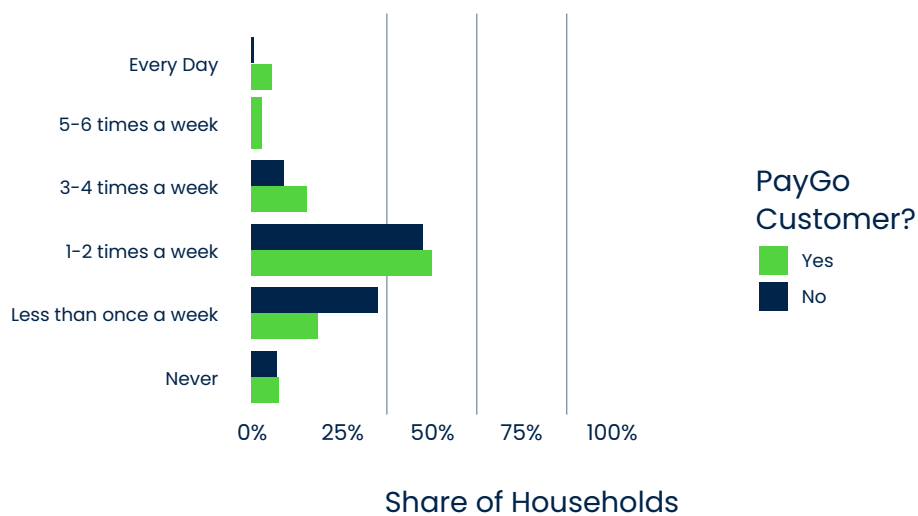
This leads the assumption that PayGo helps households improve health conditions in more ways than purely by reducing indoor air pollution.

## PayGo customers eat fish and meat more often than non-customers

Fish - Frequency of Consumption



Fish - Frequency of Consumption





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Impact on  
people's  
psychological  
and social  
status



# 95%

of customers are proud to be using PayGo

Customers feel they get more positive social recognition by being associated with PayGo



It looks good in the house because with the stove, you cannot even place it on the table, and if you do, you will have to hide it when a visitor pops in. So it looks good in the house.

**Segment 5, Male**



Even the neighbors feel that you are on another level. Maybe that you have money, and you don't even have it.

**Segment 4, Male**



I have earned more respect. Before, visitors could see my house in smoke but right now, I can use PayGo in the house with the visitors.

**Segment 5, Male**

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# 95%

**of respondents indicated that people in their community who use Paygo enjoy greater social recognition.**

# 26%

**of respondents started using Paygo because someone else in their community was using it.**

**40% of customers were able to fulfill aspirations due to PayGo**

16%

were able to increase the amount of savings.

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9%

were able to work more.

---

22%

were able to cook more.

---

9%

started or extended their business.

---

5%

were able to lead a more healthy life now.





**Contact us for more information**

[jonathan.karl@busaracenter.org](mailto:jonathan.karl@busaracenter.org)

[www.busaracenter.org](http://www.busaracenter.org)

