

SHARING INFORMATION IN RURAL COMMUNITIES THROUGH VOICE INTERACTION

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Most of the world's poor depend on agriculture

World's extreme poor:
71% of 1.2B are rural

India: 600M agriculture-
dependent lives

Majority smallholders (< 3 acres)

Earning < \$750/yr; Debts > \$300/yr



Agricultural Extension

Dissemination of expert advice and technologies to rural communities

100,000 extension officers in India

Not comprehensive

Not on-demand



Give People A Voice



A Case for Voice Interaction



Why voice?

Works with all phones

Overcomes literacy constraint

Voice preferred to text

[Sherwani, PhD thesis 09]

[Medhi, et. al., CHI 09]

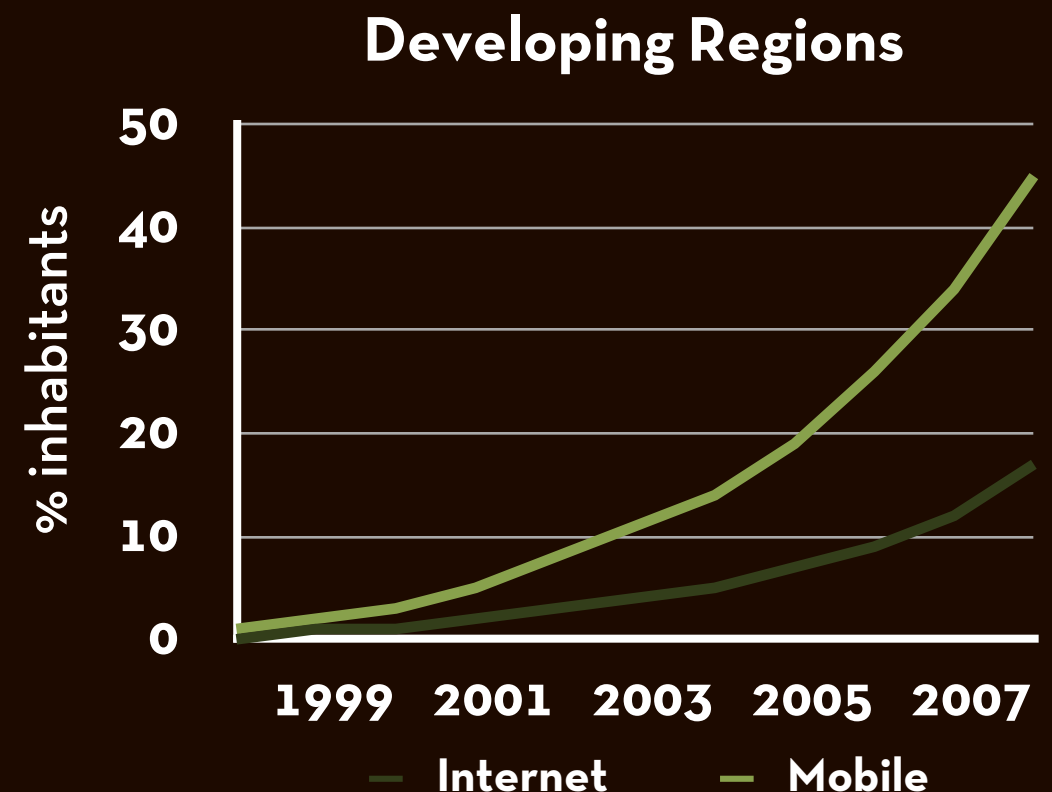
Voice for development

Advancement through Interactive Radio [ICTD 2007]

FreedomFone [ICTD 2009]

HealthLine [ICTD 2007]

IBM VoiceSites [ICTD 2009]



Source: International Telecommunications Union, www.itu.int

Research probe: Aavaaj Otalo

For information access and sharing

Users: low/no education, low literacy,
computer novices

Interactive voice response (IVR) in Gujarati

Dial a number, navigate automated prompts

Record question; listen to posted questions;
answer a question

Listening to questions on AO

AO: <tune> Welcome to Avaaj Otalo!

You can get to the information by saying a single word.

To ask a question, say 'question'.

To listen to announcements, say 'announcements'.

To listen to the radio program, say 'radio'.

User: Question.

AO: Okay, you want to ask a question.

To record a question, say 'record'.

To listen to other farmers' questions and answers, say 'questions'.

User: Questions.

AO: Okay, you'll now hear the most recently posted questions & answers. Here is the first question...

Development Support Center

Non-governmental organization for
natural resource management and
agricultural productivity enhancement



Radio





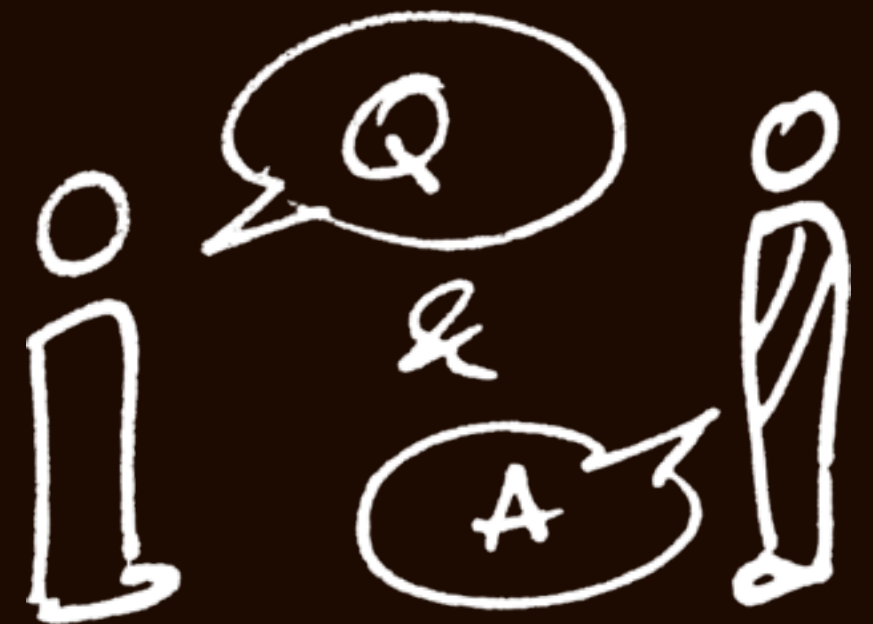
Three features



ANNOUNCEMENTS



RADIO ARCHIVE



QUESTION AND ANSWER

Piloting Aavaaj Otalo

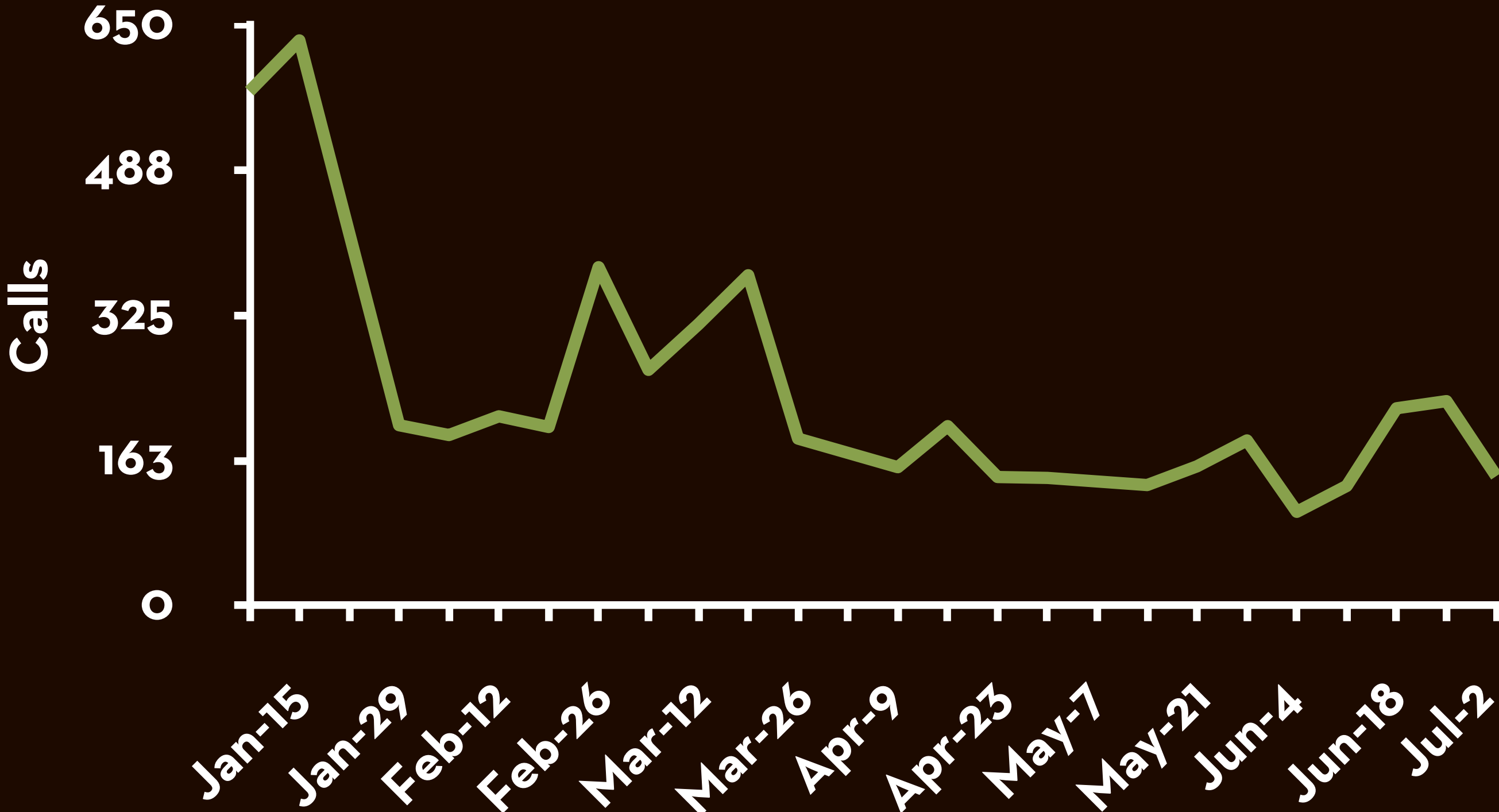
Goals

- Gather feedback about functionality
- Observe usage patterns
- Give DSC administration experience

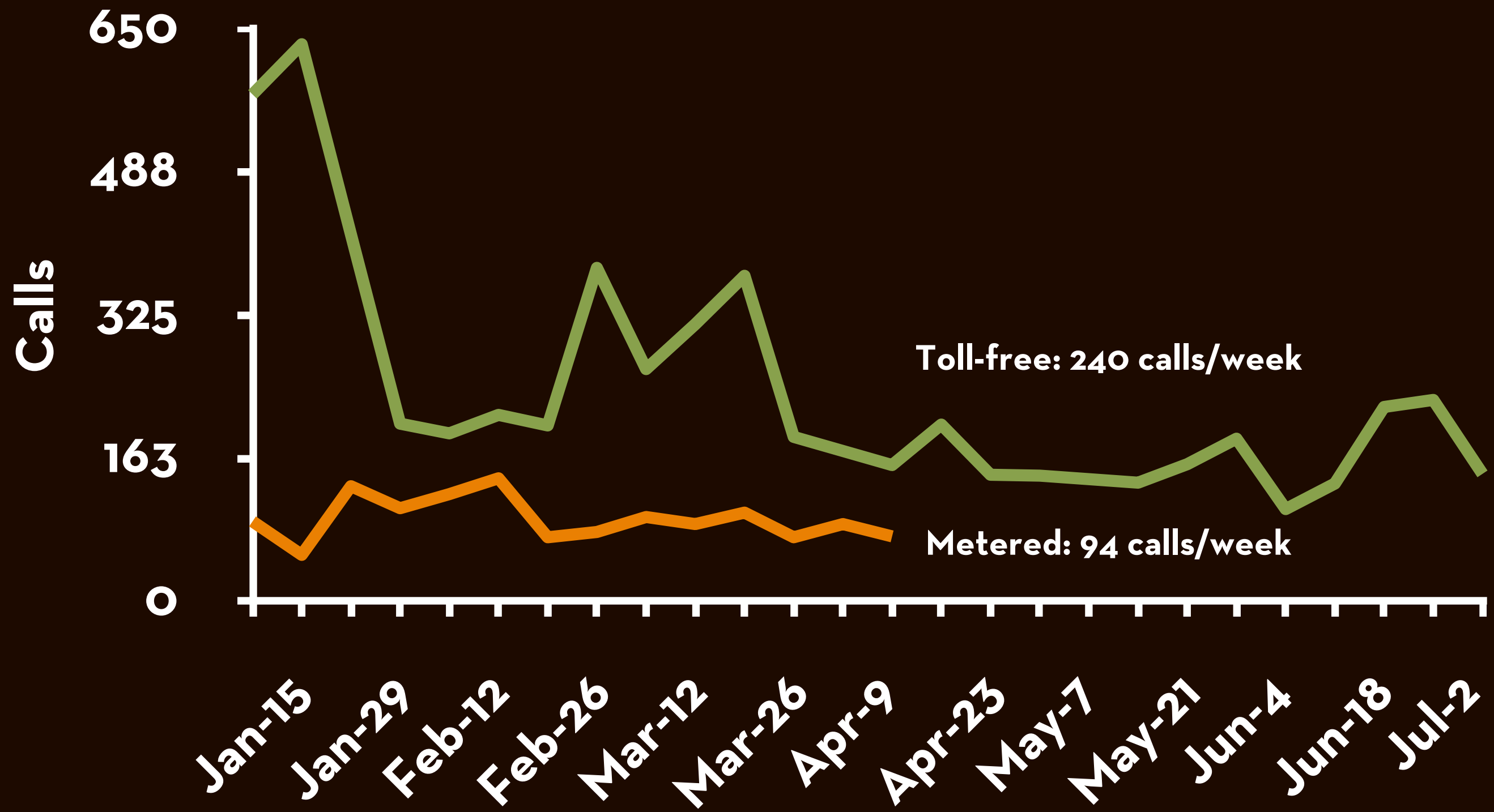
Participants

- 63 males (all but 2 were farmers)
- Across 4 geographic regions of Gujarat
- Native Gujarati speakers
- Age 18 - 60 (median: 29)
- 80% no more than high school education
- No experience with computers or IVRs

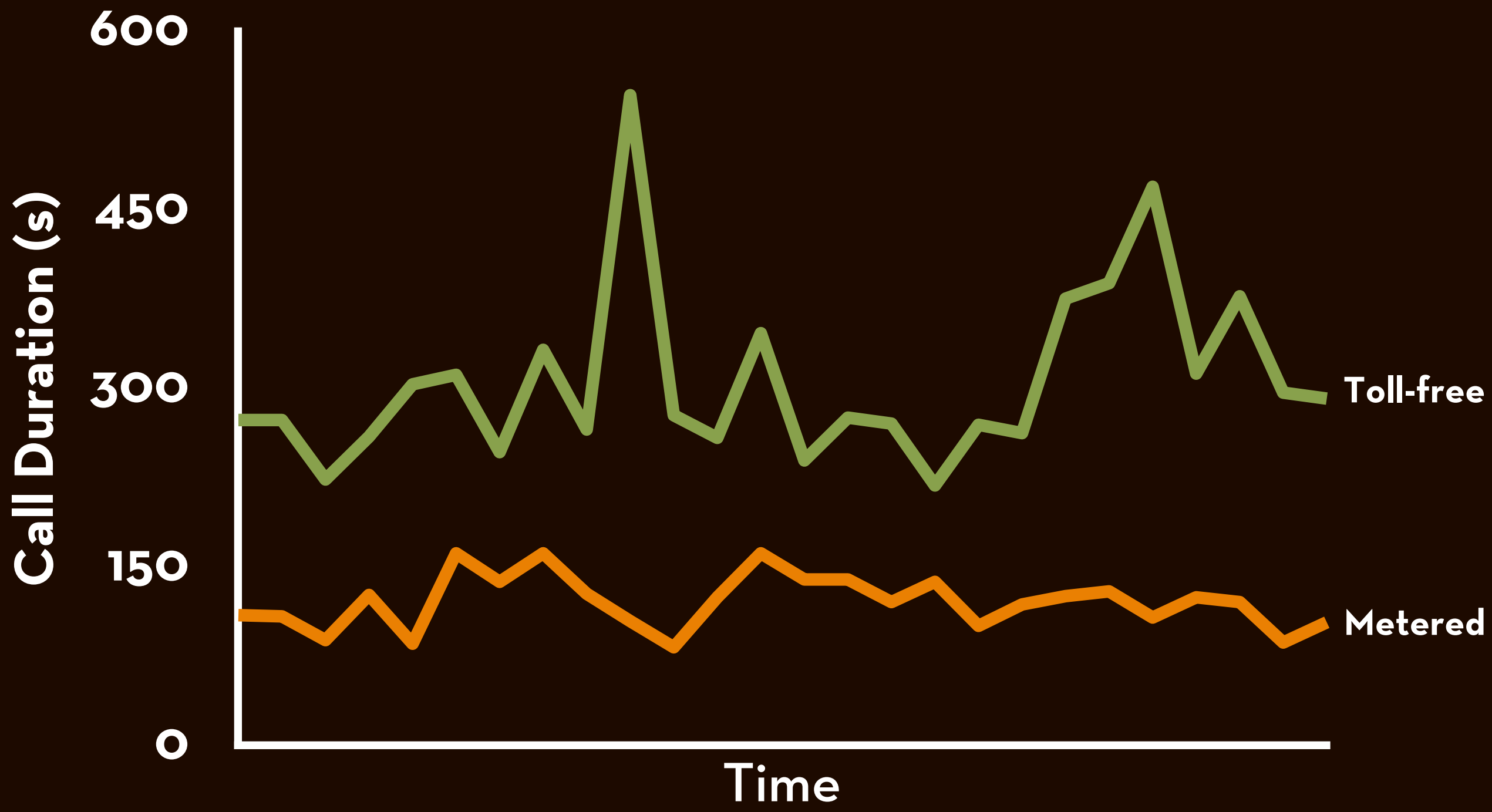
Pilot (63 farmers)



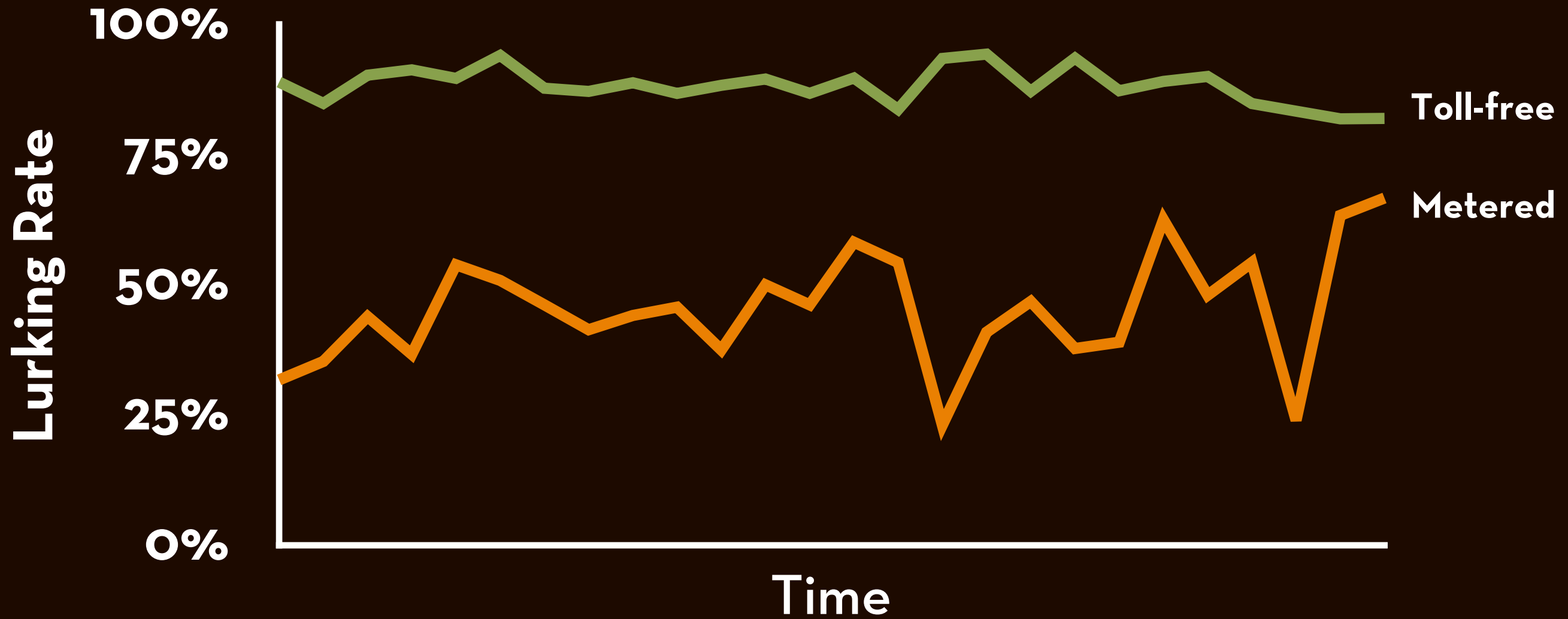
Pilot (63 farmers) v. 2011 (488 farmers)



Lower call duration by 60%



Forum browsing and peer responding hit hardest



Nearly 0% of responses from farmers

What to do about metering?

Easy! Make it cheap (or free) to access

but...

not practical for constrained budgets

What “freebie” encourages usage *and* social interaction?

Condition	Description
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FREE CALL	Call into system for free
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FREE RECORD	Record question, comment, or other feedback for free
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FREE RATE	Rate a message for free
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Hypotheses

CALL will lead to more usage

RECORD will lead to more usage and contribution.

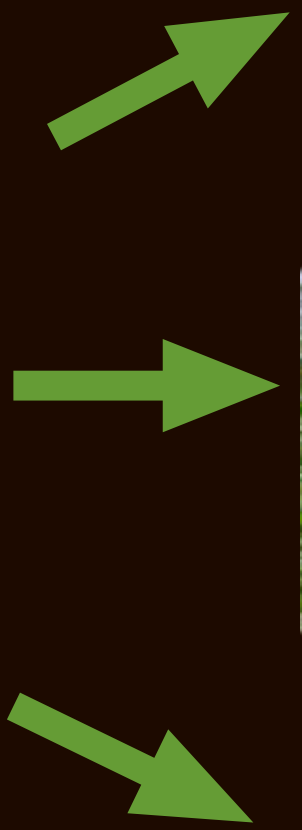
Measures

Number of calls

Number of message posts

Interviews

Free access through broadcast calls



Greetings! Here's today's information of the day



<Spotlighted info>



Your feedback is very important to us...



Please hold to be connected to AO...

Please record a question, comment, or feedback...

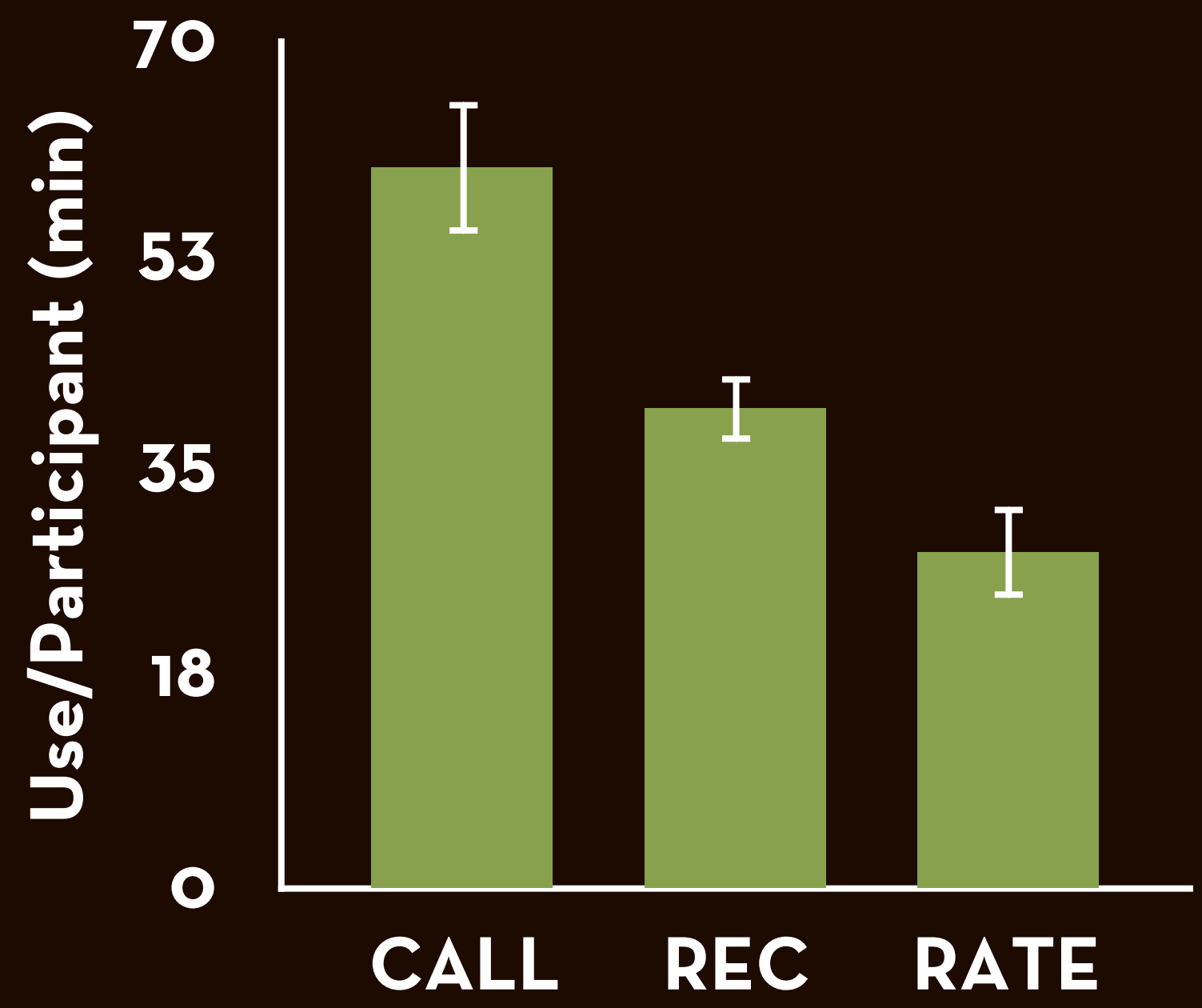
Please rate this message according to this scale...

Broadcast calls made



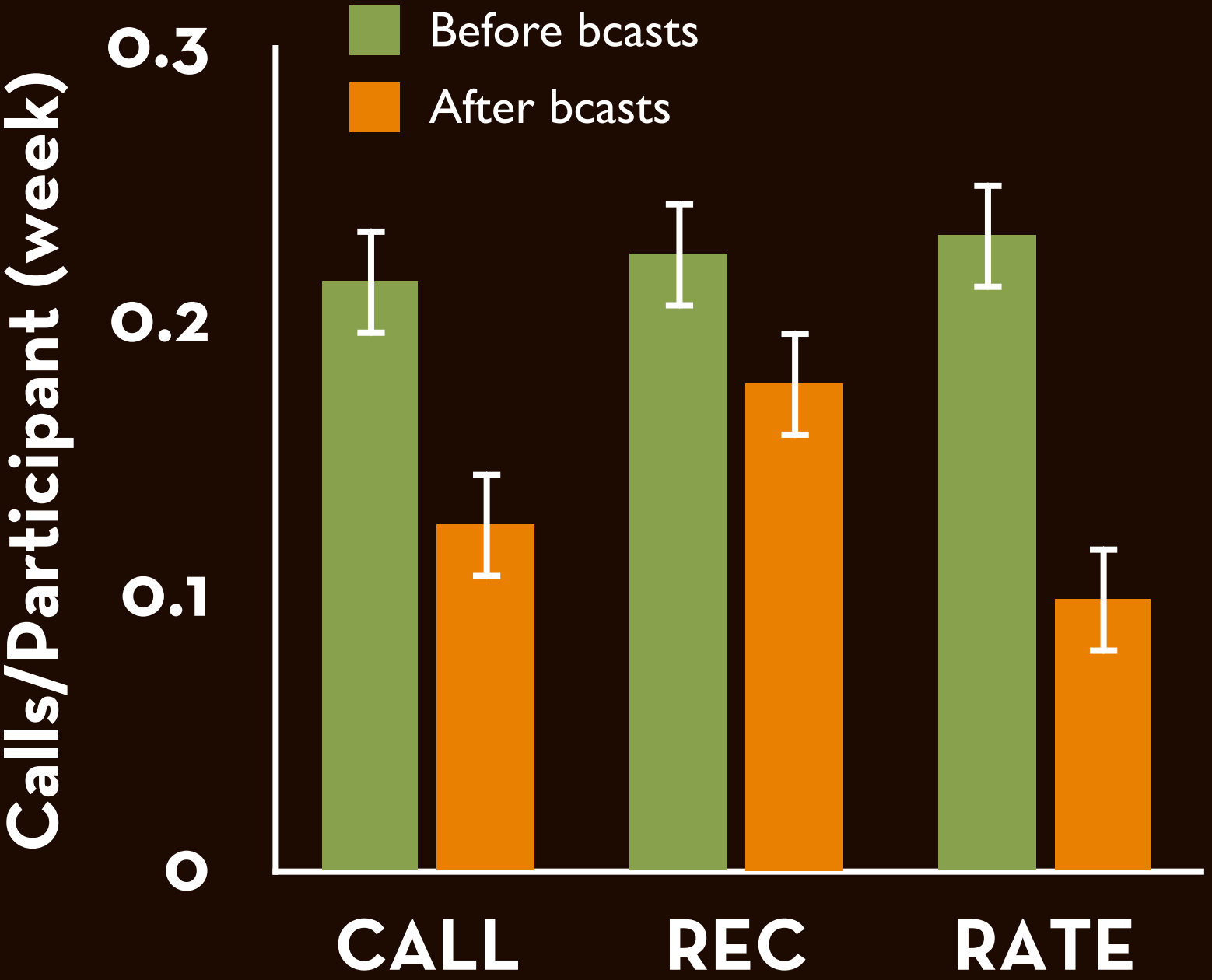
Condition	N	Pickups/ Attempts	Actions
FREE CALL	138	993/1400	271
FREE REC	137	990/1489	65
FREE RATE	138	933/1382	303

Time on the system varied between conditions...



all pairs $p < .05$ using t-tests

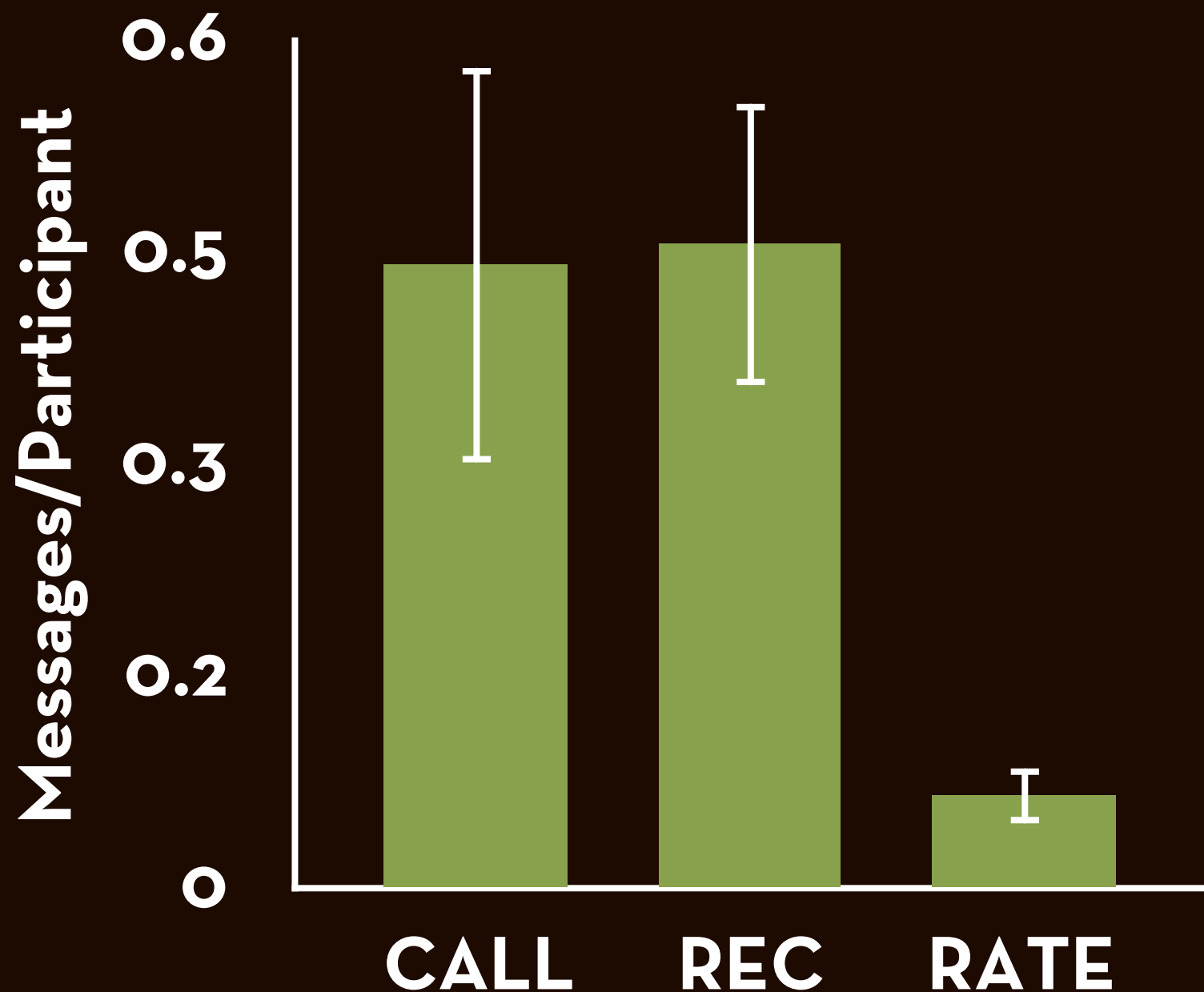
...but less unsubsidized calling



“I used to call before but I don’t call now as I have started to get calls from AO.”

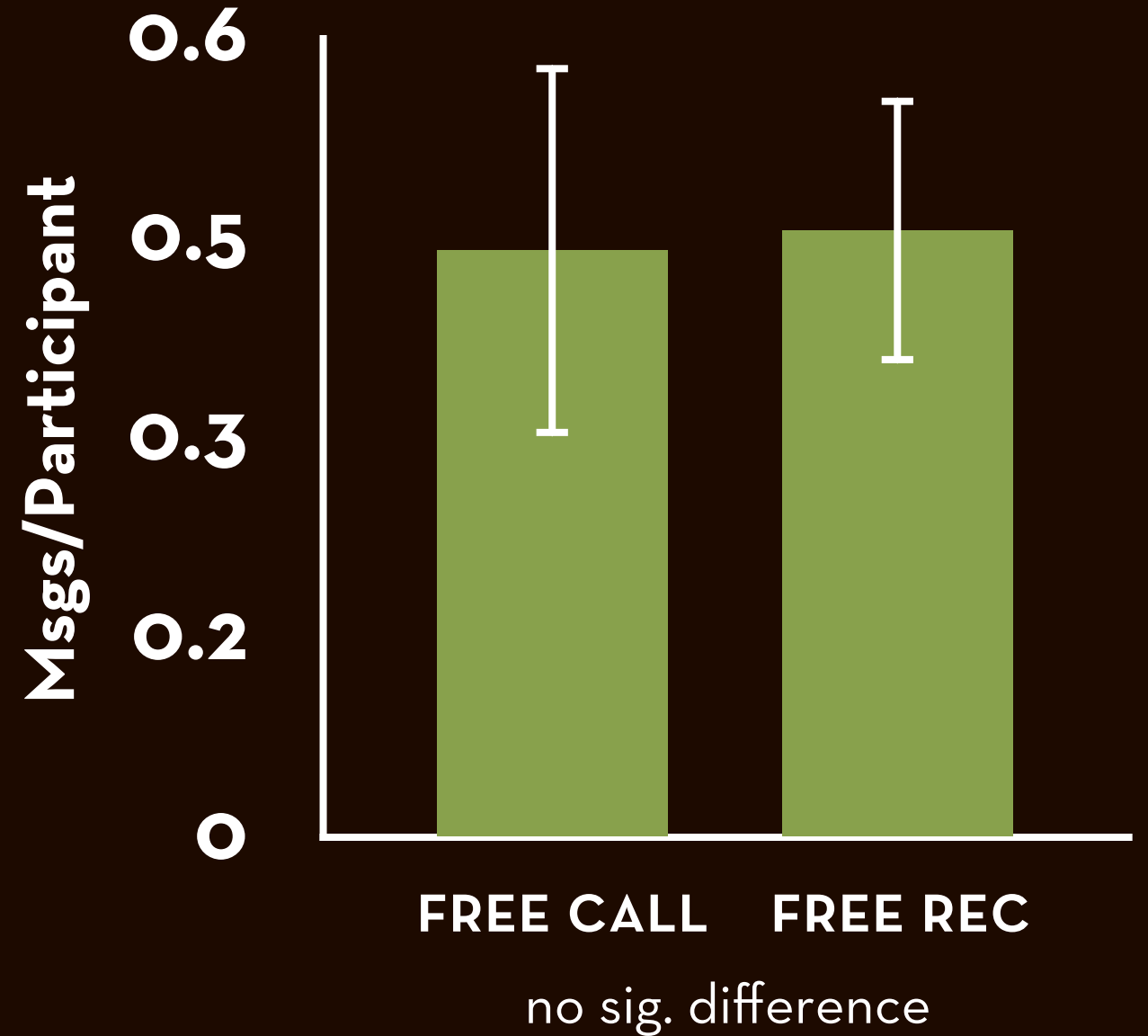
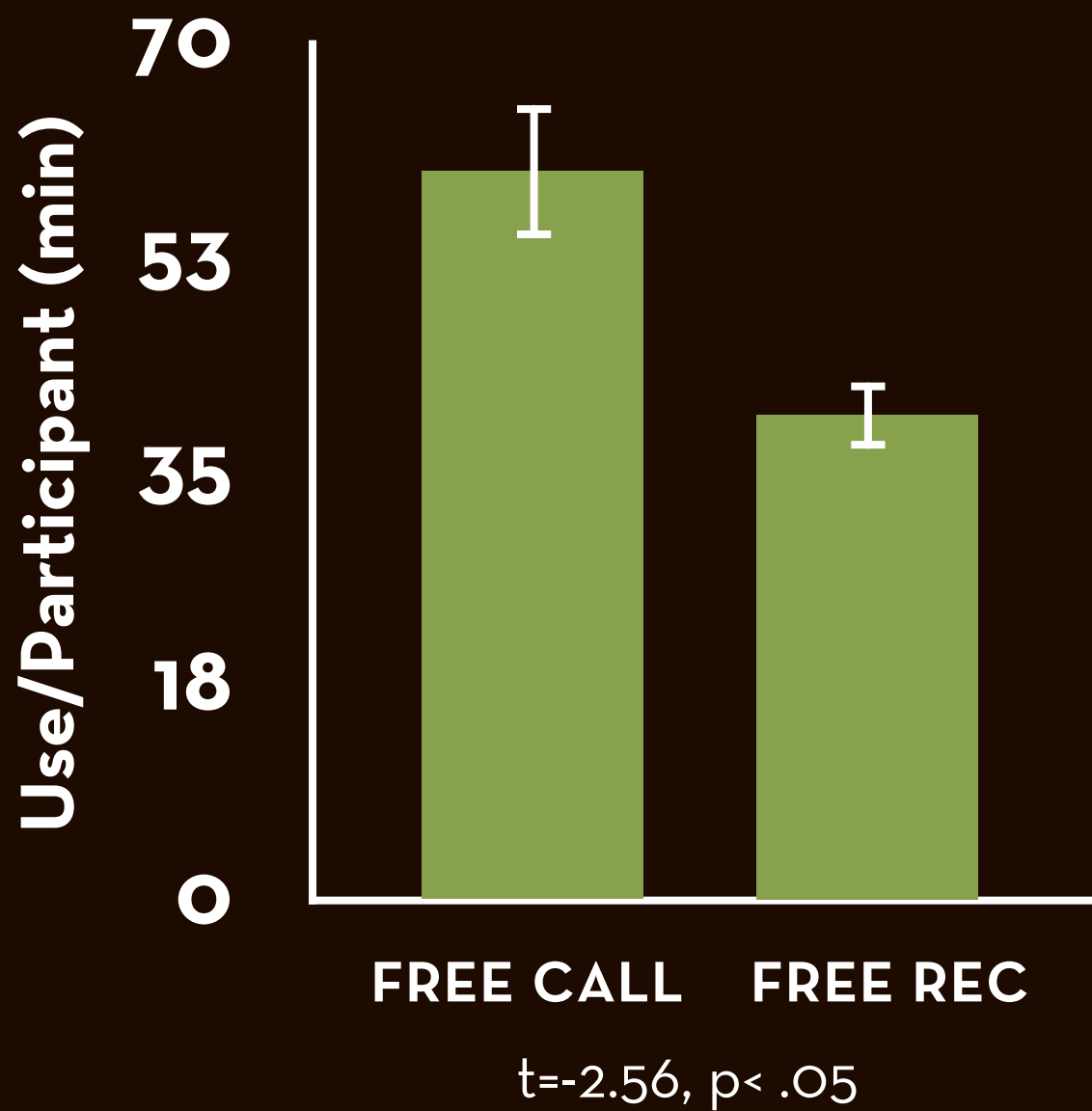
CALL (t=3.33), RATE (t=5.14) p<.01

More messages with free calling and recording



CALL ($|t|=3.93$), REC ($|t|=3.23$) > RATE $p<.01$

Free calling led to more use, but not more recording



Thanks to...

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Funders

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Advisors

Scott Klemmer
Tapan Parikh



<http://hci.stanford.edu/research/voice4all>