

# Team Recommendation in Online Microfinance: A Field Experiment at Kiva

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# Why Teams? Theory and Lab

- Social identity
  - A person's sense of self derived from group membership
- Theory:
  - Tajfel and Turner (1979, 1986)
  - Akerlof and Kranton (2000, 2010)
- Lab: effects of intergroup competition
  - Eckel and Grossman (2005): VCM
  - Chen and Chen (2011): minimum effort coordination
  - Goette, Huffman, Meier and Sutter (2012): dark side

Empower people around the world with a \$25 loan

[How it works >](#)



## Jackline

Uganda

A loan of \$1,175 helps Jackline to buy building materials.

[Read their story>](#)

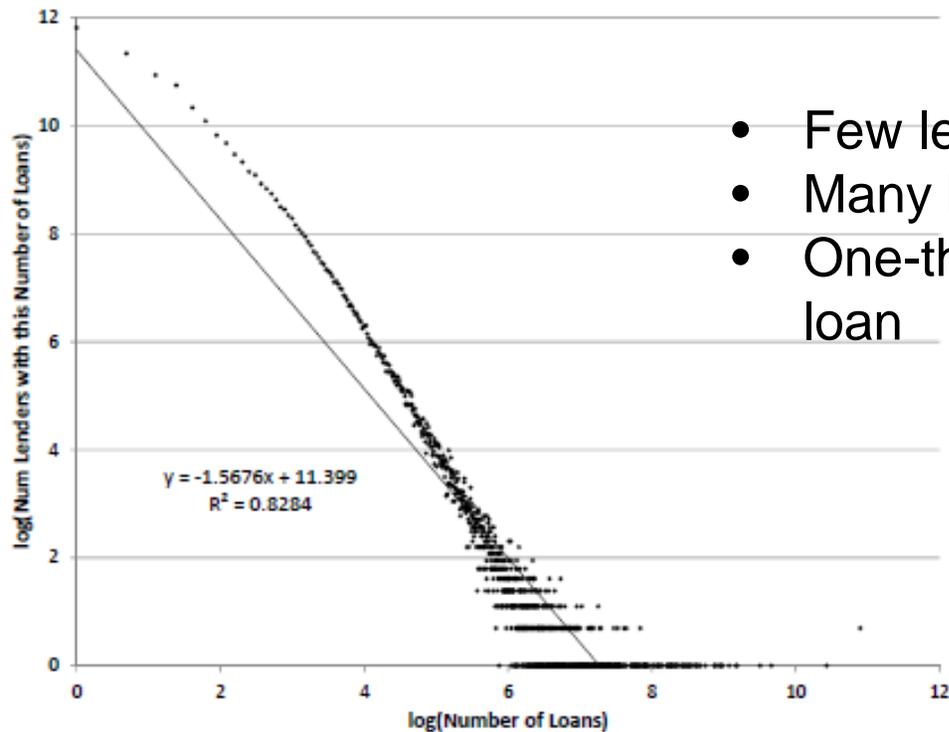
[Lend Now](#)

or [Browse all loans](#)



- \$25 or up per loan (**zero interest**)
- \$516 million in total
- 1.2 million borrowers from 73 countries,
- 1.5 million lenders across 208 countries
- Repayment rate > 98%

# Distribution of Number of Loans



- Few lenders made many loans;
- Many lenders made few loans;
- One-third of users never made a loan

How do we increase lender participation?

# Kiva Lending Teams

- Why lending teams?
  - Premal Shah: make Kiva “as fun and compelling as possible”
  - Atheist team captain: “The whole idea of teams in the Kiva context implies there should be competition.”
- Lending teams created in August 2008
  - 22,322 lending teams as of February 2012
  - Heterogeneity among teams
  - 43% of teams have not made a single loan in the past 12 months.

# Team Competition: Leaderboards

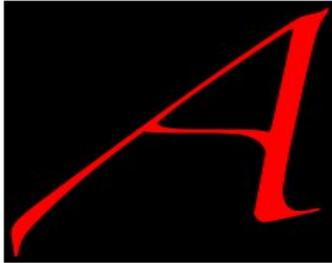


# Kiva Lending Team: Atheists, Agnostics, Skeptics, Freethinkers, Secular Humanists and the Non-Religious

A Common Interest team on Kiva.org since Aug 28, 2008

Recommend 524

Summary · Loans · Members · Goals<sup>beta</sup> · Graphs<sup>beta</sup>



Join Team

**Location:** Earth  
**Category:** Common Interest  
**Team URL:** <http://www.kiva.org/team/atheists>  
**We loan because:** We care about the suffering of human beings.  
**About us:** Those of us who know we are one human family.  
  
\*\*New to the team? Read this: [is.gd/51mxq](http://is.gd/51mxq)  
  
\*\* FriendFeed: [friendfeed.com/rooms/aasfshnr](http://friendfeed.com/rooms/aasfshnr)  
  
\*\* Facebook Group: [is.gd/lzMJ](http://is.gd/lzMJ)  
  
**Check out:** <http://atheist-monkey.blogspot.com/>  
**Team Since:** Aug 28, 2008

# Kiva Lending Team: Kiva Christians

A Friends team on Kiva.org since Aug 31, 2008

Recommend 142

Summary · Loans · Members · Goals<sup>beta</sup> · Graphs<sup>beta</sup>



Join Team

**Location:** Worldwide  
**Category:** Friends  
**Team URL:** <http://www.kiva.org/team/christians>  
**We loan because:** Pure and undefiled religion before God the Father is this: to care for orphans and widows in their misfortune and to keep oneself unstained by the world. (Jam. 1:27)  
  
Link to information regarding Christian partners [www.gerv.net/info/christian-field-partners](http://www.gerv.net/info/christian-field-partners)  
  
**About us:** A group of believers in Jesus Christ, brought together through a common purpose: to help those in need around the world.  
  
**Check out:** <http://whoisjesus-really.com/>  
**Team Since:** Aug 31, 2008

# Teams as Social Groups



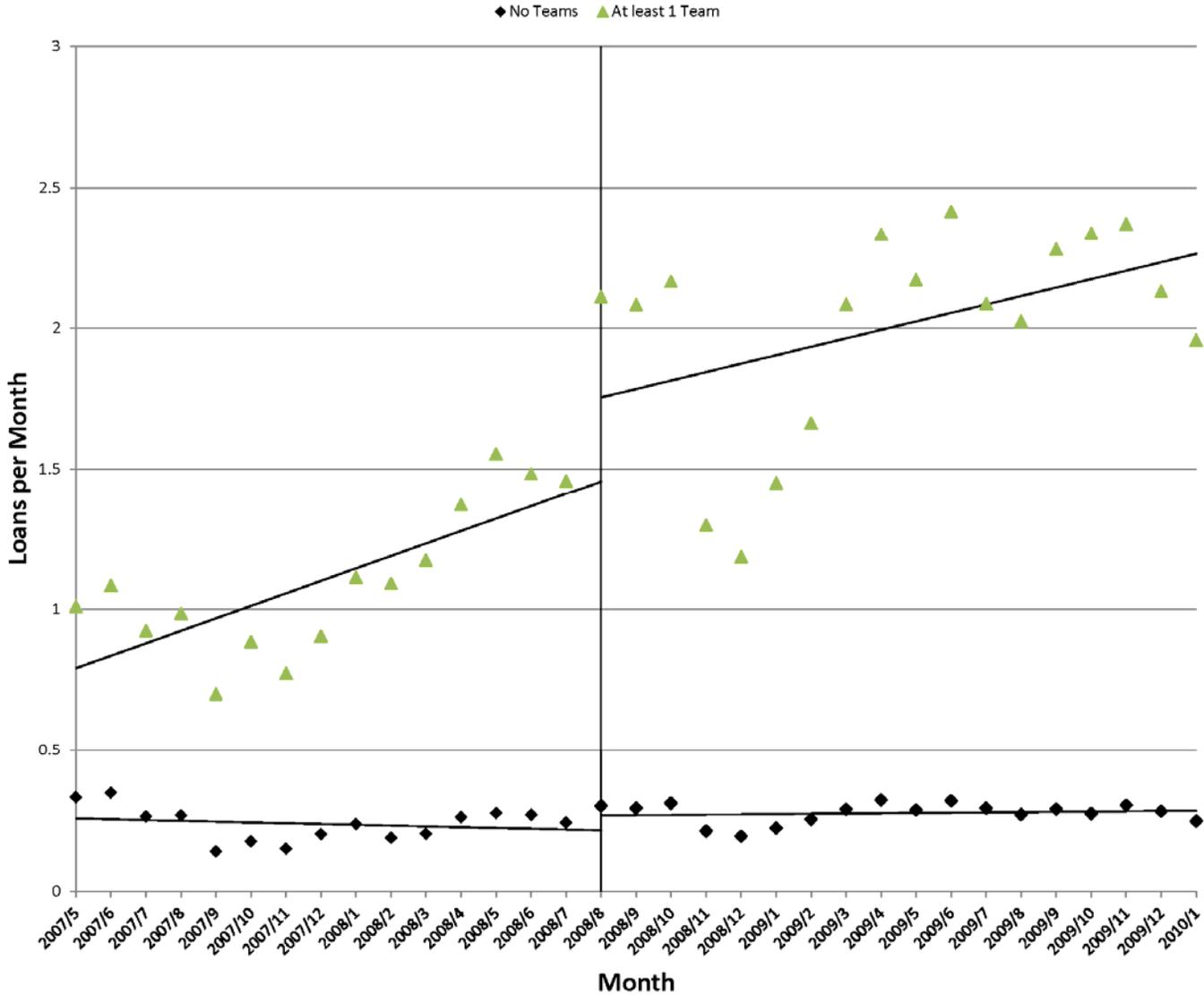
The screenshot shows a Kiva team page for 'Team Canada'. At the top, there are navigation tabs: 'ABOUT', 'LOANS 124K', 'MEMBERS 6.7K', 'GRAPHS', and 'IMPACT'. The main content area features a red maple leaf icon on the left. To its right, the text reads: 'We loan because... So little means so much. And because we are so fortunate to be able to lend with the luxury of not worrying about whether we ever see that money again, while the clients borrow with the hope and determination that they will be able to repay, and improve their lives along the way.' Below this, it says 'Check out fundraising loans already being supported by Team Canada:' followed by the URL 'www.kiva.org/team/team\_canada/loans?status=fundRaising'. Further down, there is an 'About us' section with the text 'We're Canadian, eh?' and 'Location: Canada' with a link to 'Team website'. An orange 'Join Team' button is located on the right side of the page.

Share a common statement: “We loan because ...”

Intergroup competition: Kiva leaderboard

Communication: dedicated forum

# Does joining a team increase lending?



# Team Membership and Lending Activities

- Does joining a team increase lending?
  - Yes, 1.2 loans (\$30-\$42) per lender per month
  - Chen, Chen, Liu and Mei (2014) : API, data dump
- Why?
  - Team forums:
    - Coordination: share borrower URL
    - Competition: goal setting
  - Field experiment using forum messages
- 82% Kiva users do not belong to any team

# Hypotheses

- Users will be more likely to join teams if we make “good” recommendations

What’s “good”?

- Location similarity: homophily
  - Loan history similarity: homophily
  - Leaderboard positions: bandwagon
- Users will lend more after they join teams

# Experiment Design: Sample Selection

- Field experiment: May 2014
- Sample selection criteria:
  - Have made at least 2 loans in the past 6 months
  - Haven't joined any team
  - Have location information in their profile
  - Allow marketing email, set their pages public
- 69,845 users met these criteria

# Eight Experimental Conditions

1. Control: no contact
2. Team awareness: “team exists” email
3. Location popularity + explanation
4. Location popularity + no explanation
5. Lending history + explanation
6. Lending history + no explanation
7. Leaderboard + explanation
8. Leaderboard + no explanation

# Eight Experimental Conditions

## Treatments: 3\*2 factorial design

- Algorithms
  - Location; lending history; leaderboard
- With or without explanations

|           |              | Explanation             |                           |
|-----------|--------------|-------------------------|---------------------------|
|           |              | Explanation             | No Explanation            |
| Algorithm | Location     | Location-Explanation    | Location-NoExplanation    |
|           | Loan History | History-Explanation     | History-NoExplanation     |
|           | Leaderboard  | Leaderboard-Explanation | Leaderboard-NoExplanation |
| Control   |              | No Contact              |                           |
|           |              | Team Exist              |                           |



Hi Wei,

Since you're such an awesome Kiva lender, we wanted to let you know about a fun feature of the Kiva experience: [Kiva Lending Teams!](#)

Lending Teams are self-organized groups around shared interests – location, alumni orgs, social causes, you name it. You can connect with other lenders, discover loans you might be interested in, and track your collective impact.

Check out some of the [thousands of lending teams](#) to find the right one for you.

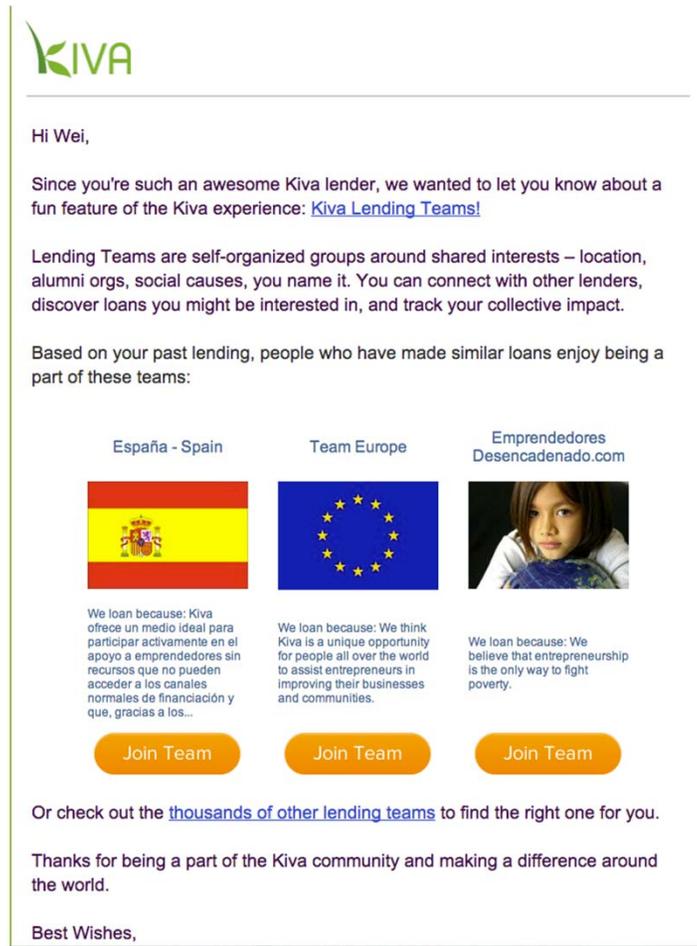
Thanks for being a part of the Kiva community and making a difference around the world.

Best Wishes,  
The Kiva Team

**“Team exists” email**

(Experimental Condition 2: Team Awareness)

# “Team recommendation” Emails



**KIVA**

Hi Wei,

Since you're such an awesome Kiva lender, we wanted to let you know about a fun feature of the Kiva experience: [Kiva Lending Teams!](#)

Lending Teams are self-organized groups around shared interests – location, alumni orgs, social causes, you name it. You can connect with other lenders, discover loans you might be interested in, and track your collective impact.

Based on your past lending, people who have made similar loans enjoy being a part of these teams:

| España - Spain   | Team Europe  | Emprendedores Desencadenado.com  |
|--|--|--|
|    |    |          |
| <p>We loan because: Kiva ofrece un medio ideal para participar activamente en el apoyo a emprendedores sin recursos que no pueden acceder a los canales normales de financiación y que, gracias a los...</p> | <p>We loan because: We think Kiva is a unique opportunity for people all over the world to assist entrepreneurs in improving their businesses and communities.</p> | <p>We loan because: We believe that entrepreneurship is the only way to fight poverty.</p> |
| <a href="#">Join Team</a>  | <a href="#">Join Team</a>  | <a href="#">Join Team</a>  |

Or check out the [thousands of other lending teams](#) to find the right one for you.

Thanks for being a part of the Kiva community and making a difference around the world.

Best Wishes,

- Other lenders who live near you enjoy being a part of these teams
  - (Treatment 3)
- Based on your past lending, people who have made similar loans enjoy being a part of these teams
  - (Treatment 5)
- Some of the most popular teams are
  - (Treatment 7)
- Here are a few teams you may want to check out
  - (Treatment 4,6,8)

# Recommendation and Joining Teams

Table 3: Team Recommendation Summary

| Treatment         | Emails Sent | Opening | Joining Team | Joining Recommended |
|-------------------|-------------|---------|--------------|---------------------|
| No-Contact        | 0           | 0       | 41           | 0                   |
| Team-Exist        | 8076        | 2977    | 63           | 0                   |
| Location-Exp      | 8037        | 2914    | 103          | 74                  |
| Location-NoExp    | 8028        | 2931    | 79           | 49                  |
| History-Exp       | 8070        | 2890    | 83           | 37                  |
| History-NoExp     | 8048        | 2930    | 77           | 29                  |
| Leaderboard-Exp   | 8036        | 2922    | 75           | 34                  |
| Leaderboard-NoExp | 8072        | 2911    | 79           | 33                  |

**1/3 emails opened: Highest proportion 3.5% (Location with Explanation)**

Table 4: Treatment Effect on Joining Teams (Probit Regression)

| Dependent Variable: Whether a user has joined a team or not (binary) |           |           |           |
|--|-----------|-----------|-----------|
|  | (1)       | (2)       | (3)       |
|  | All Users | All Users | Opened    |
| Team-exist   | 0.0040*   |           |           |
|  | (0.002)   |           |           |
| Location-Explanation   | 0.0118*** | 0.0060*** | 0.0177*** |
|  | (0.003)   | (0.002)   | (0.006)   |
| Location-NoExplanation   | 0.0072*** | 0.0025    | 0.0072    |
|  | (0.002)   | (0.002)   | (0.005)   |
| History-Explanation  | 0.0082*** | 0.0032*   | 0.0112**  |
|  | (0.003)   | (0.002)   | (0.005)   |
| History-NoExplanation  | 0.0072*** | 0.0024    | 0.0038    |
|  | (0.002)   | (0.002)   | (0.004)   |
| Leaderboard-Explanation  | 0.0068*** | 0.0022    | 0.0052    |
|  | (0.002)   | (0.002)   | (0.005)   |
| Leaderboard-NoExplanation  | 0.0066*** | 0.0020    | 0.0074    |
|  | (0.002)   | (0.002)   | (0.005)   |
| Receiving Email  |           | 0.0031**  |           |
|  |           | (0.001)   |           |
| Observations   | 65,653    | 65,653    | 20,453    |

# Treatment Effects on Joining Teams

- Every treatment except “Team-Exist” did significantly better than the control
- **Location with explanation** has the largest effect (2% more likely) compared to the control
- Among those who opened email, two treatments did significantly better than the team-exist treatment:
  - Location-explanation
  - History-explanation

# Treatment Effect on Lending (all lenders)

Table 5: Diff-in-Diff Regressions of Average Daily Lending Amount (2SLS)

|              | IV 1st Stage         | IV 2nd Stage: Average Amount |                        |                       |                       |                       |
|--------------|----------------------|------------------------------|------------------------|-----------------------|-----------------------|-----------------------|
|              | (1)                  | (2)                          | (3)                    | (4)                   | (5)                   | (6)                   |
|              |                      | 1-Day                        | 4-Day                  | 7-Day                 | 14-Day                | 30-Day                |
| Email        | 0.0048***<br>(0.001) |                              |                        |                       |                       |                       |
| Join Team    |                      | 230.3181***<br>(66.916)      | 95.9732***<br>(29.675) | 43.9033**<br>(21.453) | 2.2396<br>(11.635)    | 6.0588<br>(7.836)     |
| Constant     | 0.0047***<br>(0.001) | -2.3660***<br>(0.603)        | -1.3041***<br>(0.268)  | -0.8973***<br>(0.193) | -0.3057***<br>(0.105) | -0.2034***<br>(0.071) |
| Observations | 65,087               | 65,087                       | 65,087                 | 65,087                | 65,087                | 65,087                |

For those who joined a team, their average lending amount per day increased by **\$230 in the one-day window**, by **\$44 per day in the 7-day window**. The effects wear off after the 7-day window, probably because of account balance.

# Joining Recommended Teams (opened)

|                     | 1-Day              | 4-Day              | 7-Day               | 14-Day              | 30-Day             |
|---------------------|--------------------|--------------------|---------------------|---------------------|--------------------|
| (Intercept)         | -0.36***<br>(0.10) | -1.66***<br>(0.24) | -4.31***<br>(0.35)  | -4.84***<br>(0.42)  | -3.35***<br>(0.63) |
| join.binTRUE        | 1.86*<br>(1.08)    | -3.81<br>(2.50)    | -11.13***<br>(3.68) | -13.20***<br>(4.43) | 3.62<br>(6.66)     |
| join.rec.binTRUE    | -3.41**<br>(1.44)  | 6.74**<br>(3.31)   | 11.94**<br>(4.89)   | 15.38***<br>(5.88)  | -1.97<br>(8.84)    |
| R <sup>2</sup>      | 0.00               | 0.00               | 0.00                | 0.00                | 0.00               |
| Adj. R <sup>2</sup> | 0.00               | 0.00               | 0.00                | 0.00                | 0.00               |
| Num. obs.           | 20470              | 20470              | 20470               | 20470               | 20470              |

Among those who opened our emails,

- Some **joined a recommended team**:  
**\$3 more per day** in the 14-day window (\$42 more in total)
- Some **joined a team we did not recommend**:  
**\$13 less per day** in the 14-day window (\$182 less in total)

# Lessons Learned

- Team recommendation emails significantly increase the likelihood a lender joins a team compared to the control
  - **Location + explanation** has the largest effect
- For those who joined a team, their average lending amount per day increased by
  - **\$230** in the one-day window
  - **\$308** in the 7-day window
- For those who joined a team:
  - Recommended team: Positive effect
  - Otherwise: negative effect

# Kiva and Wikipedia

- Similarities
  - Public goods provision
    - Kiva: poverty alleviation
    - Wikipedia: free knowledge and information
  - Challenges: peripheral to core
    - Kiva: activate inactive lenders
    - Wikipedia: sustain contribution of editors, esp. new editors
- Differences
  - Kiva: money, substitutes
  - Wikipedia: time and effort, complements

# I. WikiProject Recommendation

- **Research question**
  - What are effective mechanisms to retain new editors?
- **Proposal**
  - Recommend new editors to teams or WikiProjects based on their interests
  - Compare [online group only] with [online+offline group]
  - Offline group example: Michigan Wikipedians
- **Researchers**
  - Yan Chen, Rosta Farzan, Bob Kraut, Qiaozhu Mei, Iman Yeckehzaare

# Experimental Design

- Varying two factors: 4\*2 factorial design
  - Tenure (interest) diversity
  - [Online only] vs [online + offline]
- Offline groups
  - Work with large introductory-class instructors
  - Introduce students to editing
  - Randomly assign
    - Some to online groups
    - Others to online + offline groups

# Hypotheses

- New editors assigned to a WikiProject are more likely to contribute and stay active, compared to those in the control
- New editors assigned to more diverse teams (both in terms of tenure and interest diversity) are more likely to contribute again
- New editors assigned to a WikiProject with an offline group are more engaged and productive, compared to those assigned to online-only groups

## 2. ExpertIdeasBot

(Chen, Farzan, Kraut, Yeckehzaare)

- Involve scholars who have published in specific domains to contribute to improve Wikipedia articles in that domain
- Inferring expertise: Google Scholar page
- Matching experts with Wikipedia articles
- Invite scholars to comment on Wikipedia articles in a protected environment (our server)
- ExpertIdeasBot will post expert comments to Wikipedia talk pages

# Thanks!



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