

BAYES HACK 2016

# Protecting Consumers From Financial Foul Play

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<http://bayeshack.org/commerce.html>

- **Consumer Complaint Database:** A database of complaints lodged against financial institutions by consumers.
- **ACS Survey Data:** Information related to demographic information, able to be aggregated on the zip code level and joined with the CCD.

# fmr

financial marketplace referee

- **Volume Anomaly Detection Module:** Detects company-product pairs receiving excessive volume of complaints in a given time, which could be indicative of increased/new consumer abuse.
- **Large-Minority-Populated-Area Anomaly Detection Module:** Detects company-product pairs receiving a significant fraction of complaints originating from geographic regions largely populated by minorities, which could be indicative of systemic abuse of minority individuals.
- **Extensible:** Plugin based system for adding additional anomaly detection mechanisms.
- **Included Feature Transformation Pipeline:** Allows easy joining between the consumer complaints database and demographic information gleaned from the ACS.

# fmr

## Example usage

Using `fmr` we are able to answer questions such as which Student Loan providers receive abnormally high numbers of complaints from largely minority populated areas.

```
$ fmr \  
  -c path/to/complaints.csv \  
  -d path/to/zipcodes.csv \  
  --ratio  
  --badcompanies  
  --productline Student Loan
```

### Ratio Analysis:

```
[  
  "Allied Account Services, Inc.",  
  "Omega RMS, LLC",  
  "Driver Holdings, LLC",  
  "Frederick J. Hanna & Associates, P.C.",  
  "Paramount Capital Group, Inc.",  
  "Key 2 Recovery, Inc.",  
  "Lockhart, Morris & Montgomery Inc.",  
  "CommonBond, Inc.",  
  "Automated Collection Services, Inc.",  
  "Accounts Receivable Management, Inc.",  
  "Gurstel Chargo PA",  
  "Cash Money LLC",  
  . . .  
]
```

# fmr

## Example usage

Drilling in, we can use `fmr` to see how a company fares with their other products. Products are marked as `true` if there are indications of potential foul play

```
$ fmr \  
  -c path/to/complaints.csv \  
  -d path/to/zipcodes.csv \  
  --ratio  
  --isbad  
  --company Allied Account Services, Inc.
```

### Ratio Analysis:

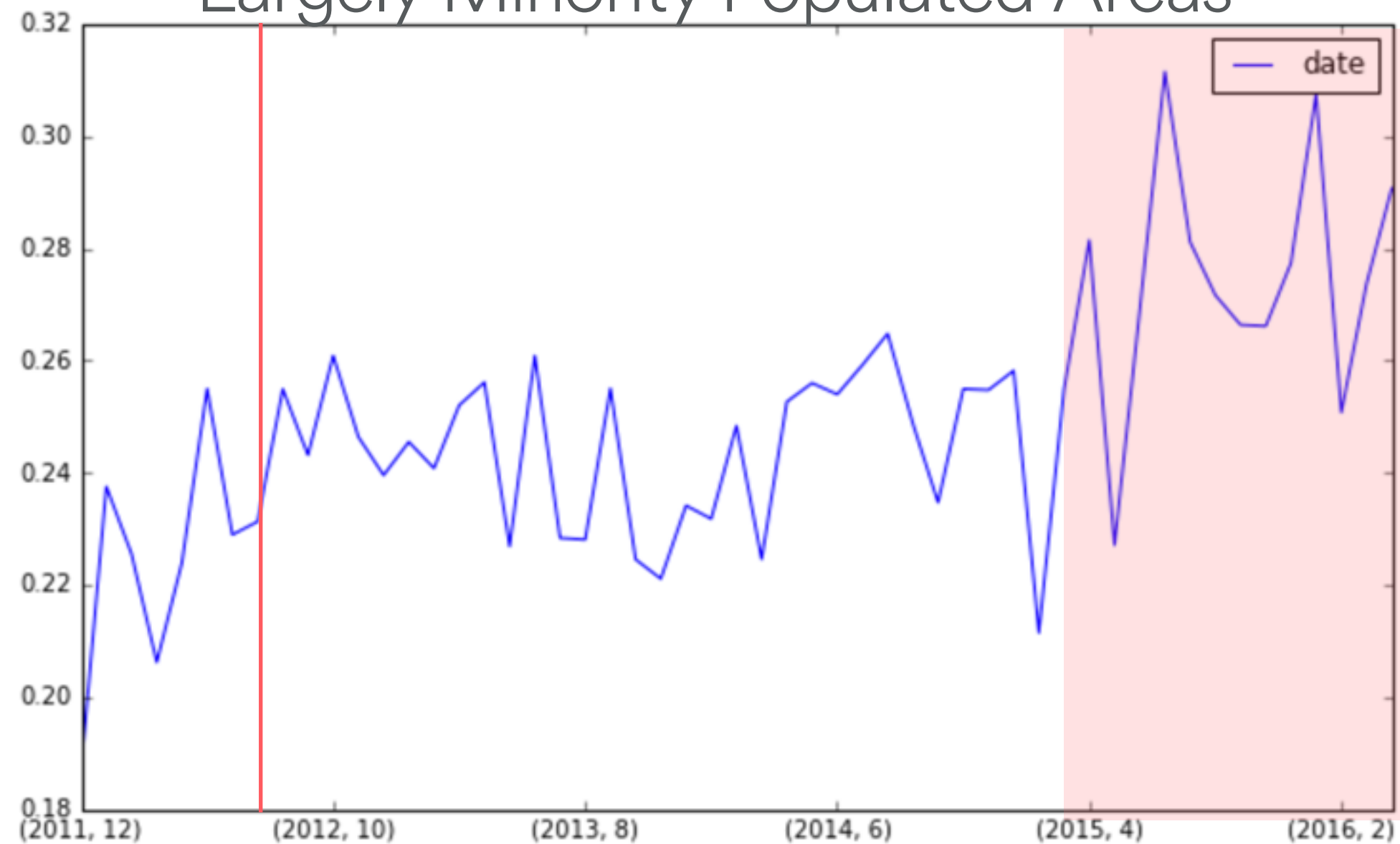
```
{  
  "Student loan": true,  
  "Debt collection": false  
}
```

# Case Studies



# Wells Fargo

Ratio of Complaints from  
Largely Minority Populated Areas



<http://www.latimes.com/business/la-fi-toyota-settlement-20160202-story.html>

FOR IMMEDIATE RELEASE

Thursday, July 12, 2012

## Justice Department Reaches Settlement with Wells Fargo Resulting in More Than \$175 Million in Relief for Homeowners to Resolve Fair Lending Claims

**African-American and Hispanic Borrowers Who Qualified for Loans and Were Charged Higher Fees or Rates or Were Improperly Placed into Subprime Loans Are Eligible for Compensation**

The Department of Justice today filed the second largest fair lending settlement in the department's history to resolve allegations that Wells Fargo Bank, the largest residential home mortgage originator in the United States, engaged in a pattern or practice of discrimination against qualified African-American and Hispanic borrowers in its mortgage lending from 2004 through 2009.

The settlement provides \$184.3 million in compensation for wholesale borrowers who were steered into subprime mortgages or who paid higher fees and rates than white borrowers because of their race or national origin. Wells Fargo will also provide \$50 million in direct down payment assistance to borrowers in communities around the country where the department identified large numbers of discrimination victims and which were hard hit by the housing crisis.

Additionally, Wells Fargo has agreed to conduct an internal review of its retail mortgage lending and will compensate African-American and Hispanic retail borrowers who were placed into subprime loans when similarly qualified white retail borrowers received prime loans. Compensation paid to any retail borrowers identified in the review process will be in addition to the \$184.3 million to compensate wholesale borrowers who were victims of discrimination.

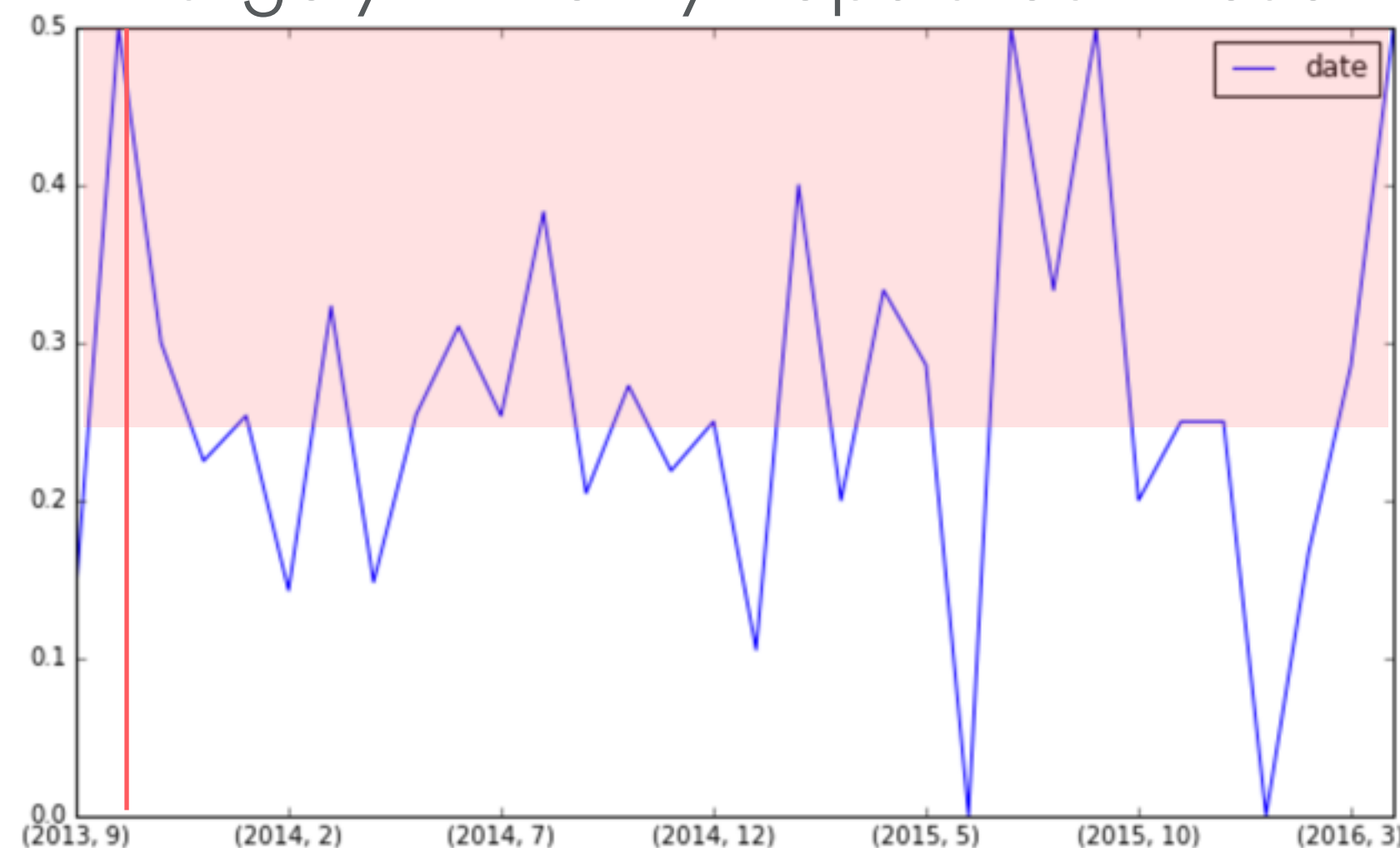
"The department's action makes clear that we will hold financial institutions accountable, including some of the nation's largest, for lending discrimination," said Deputy Attorney General James M. Cole. "An applicant's creditworthiness, and not the color of his or her skin, should determine what loans a borrower qualifies for. With today's settlement, the federal government will ensure that African-American and Hispanic borrowers who were discriminated against will be entitled to compensation and borrowers in communities hit hard by this housing crisis will have an opportunity to access homeownership."



# CashCall/Delbert

- Detected by both the **volume** and **racial** analysis modules in **fmr**

Ratio of Complaints from  
Largely Minority Populated Areas



<http://www.latimes.com/business/la-fi-toyota-settlement-20160202-story.html>

Press Release

## CFPB Sues CashCall for Illegal Online Loan Servicing

DEC 16, 2013

SHARE THIS



*Bureau's First Online Lending Action Seeks Refund of Illegally Collected Money*

**WASHINGTON, D.C.** - Today the Consumer Financial Protection Bureau (CFPB) took its first action against an online loan servicer, CashCall Inc., its owner, its subsidiary, and its affiliate, for collecting money consumers did not owe. The CFPB alleges that the defendants engaged in unfair, deceptive, and abusive practices, including illegally debiting consumer checking accounts for loans that were void.

"Today we are taking action against CashCall for collecting money it had no right to take from consumers," said CFPB Director Richard Cordray. "Online lending is rapidly growing and deserves ample regulatory attention. The Consumer Financial Protection Bureau will take action against online lenders and servicers that engage in unfair, deceptive, or abusive practices."

California-based CashCall, its subsidiary, WS Funding LLC, and its affiliate, Delbert Services Corporation, a Nevada collection agency, are all under the common ownership of J. Paul Reddam. The Bureau's investigation discovered that beginning in late 2009, CashCall and WS Funding entered into an arrangement with Western Sky Financial, a South Dakota-based online lender. Western Sky Financial asserted state laws did not apply to its business because it was based on an Indian reservation and owned by a member of the Cheyenne River Sioux Tribe. But this relationship with a tribe does not exempt Western Sky from having to comply with state laws when it makes loans over the Internet to consumers in various states.

The loans ranged from \$850 to \$10,000, and typically had upfront fees, lengthy repayment terms, and annual interest rates from nearly 90 percent to 343 percent. Many consumers signed loan agreements permitting loan payments to be debited directly from their bank accounts, similar to a payday lender. The loans were then acquired by WS Funding and serviced by CashCall.

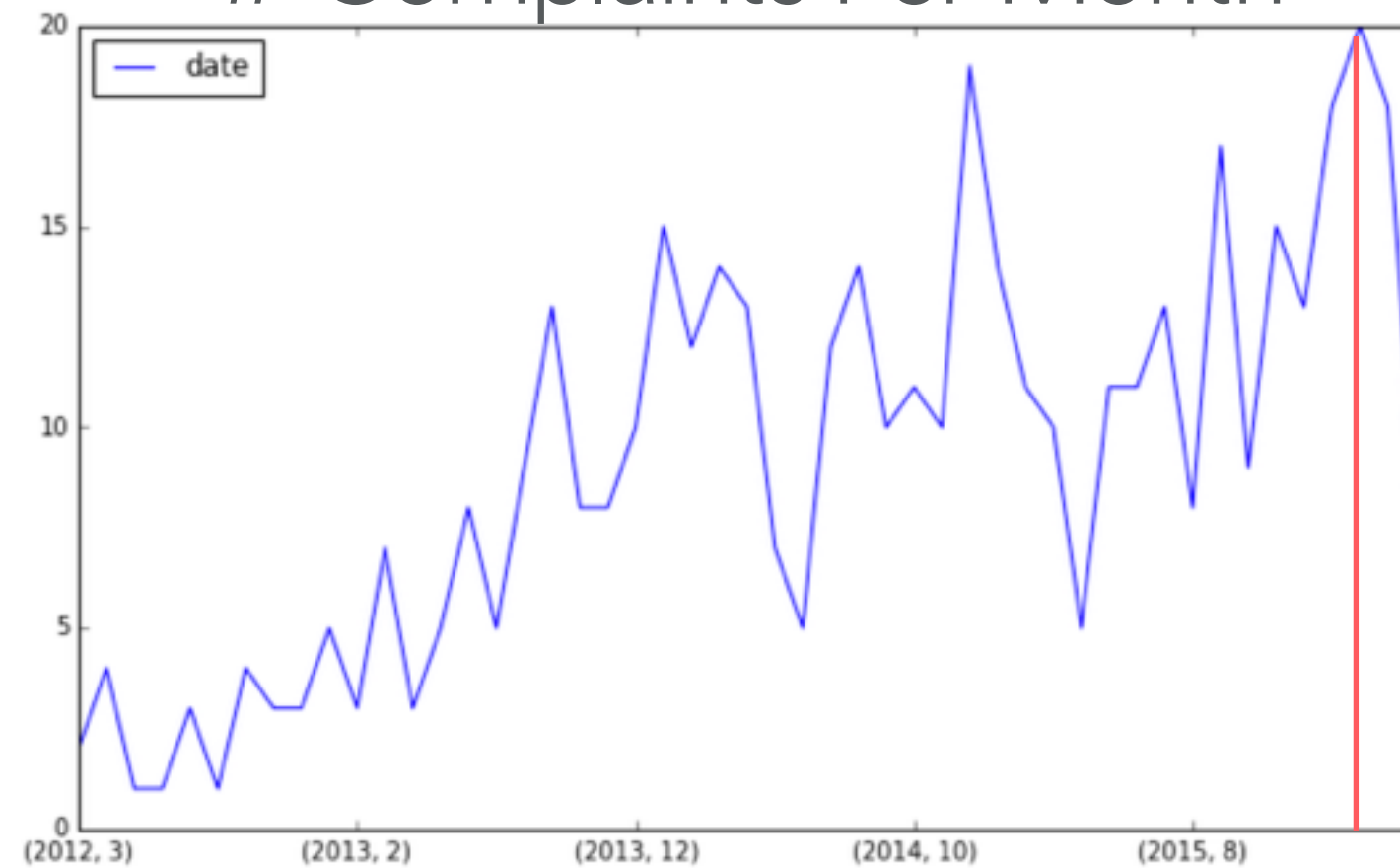
In September 2013, Western Sky stopped making loans and began to shut down its business after several states began investigations and court actions. But CashCall and its collection agency, Delbert, have continued to take monthly installment payments from consumers' bank accounts or have otherwise sought to collect money from borrowers.



# Toyota

- Detected by both the **volume** and **racial** analysis modules in **fmr**
- Still detected with 2016 data withheld! **fmr** can be effective at predictions!

# Complaints Per Month



<http://www.latimes.com/business/la-fi-toyota-settlement-20160202-story.html>

# Toyota will compensate black and Asian borrowers to settle bias investigation

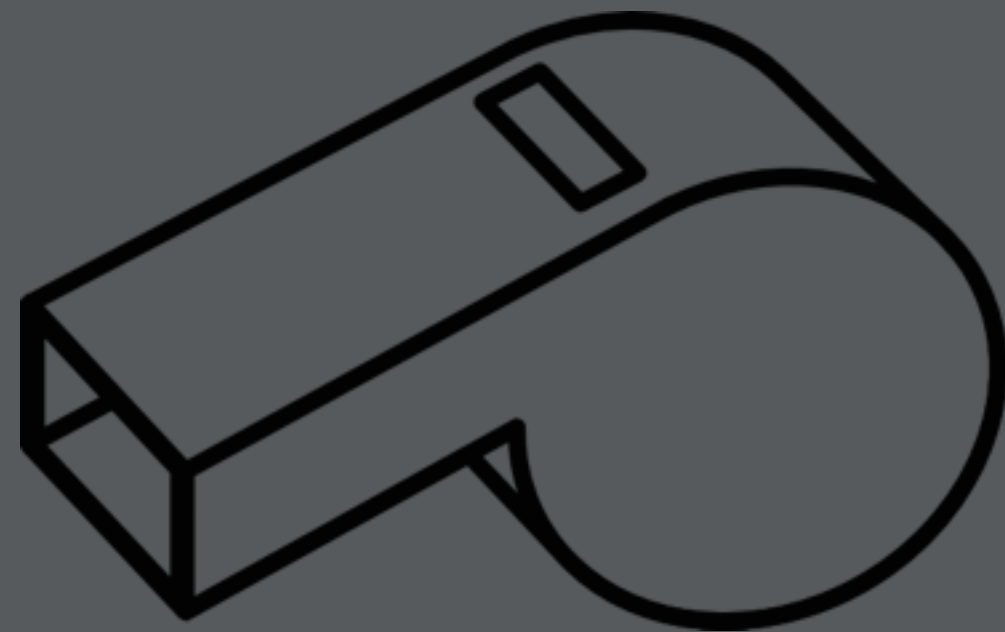


Toyota's U.S. auto financing arm, headquartered in Torrance, has agreed to pay restitution to black and Asian borrowers after federal regulators found those borrowers paid more than whites for their car loans. (Christina House / For The Times)

By **James Rufus Koren** · Contact Reporter

FEBRUARY 2, 2016, 4:42 PM

**T**oyota's financing arm will pay as much as \$21.9 million to black and Asian borrowers who paid more for auto loans than whites, settling allegations of discrimination by federal regulators.



**Financial Marketplace Referee**