

Vending Machines: Comparing Convenient Qualities Between America and Japan

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Advisors

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Outline

- Significance of the Study
- Research Questions
- Background Research
 - Vending Machine History
 - Unique Types of Vending Machines
 - Payment Method
- Research Method
- Research Findings
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Significance of the Study

- While abroad in Japan vending machines were an important part of daily life
- After returning to America I realized the inconvenience of American vending machines
- Ultimately I wanted to investigate vending machine use and its culture to find similarities and differences between America and Japan



Research Questions

1. What role do vending machines play in Japanese and American students daily lives?
2. How do Japanese and American students use of vending machines reflect upon their culture such as the interface design and payment preference?

Background Research

- History of Vending Machines
 - Worlds First Vending Machine
 - Early Vending Machines
 - Current Vending Machines
- Types of Vending Machines
 - Unique Types of Vending Machines
 - Hot cold vending in Japan
 - Tobacco and TASPO in Japan
- Payment Method
 - Cash
 - Cashless Payments

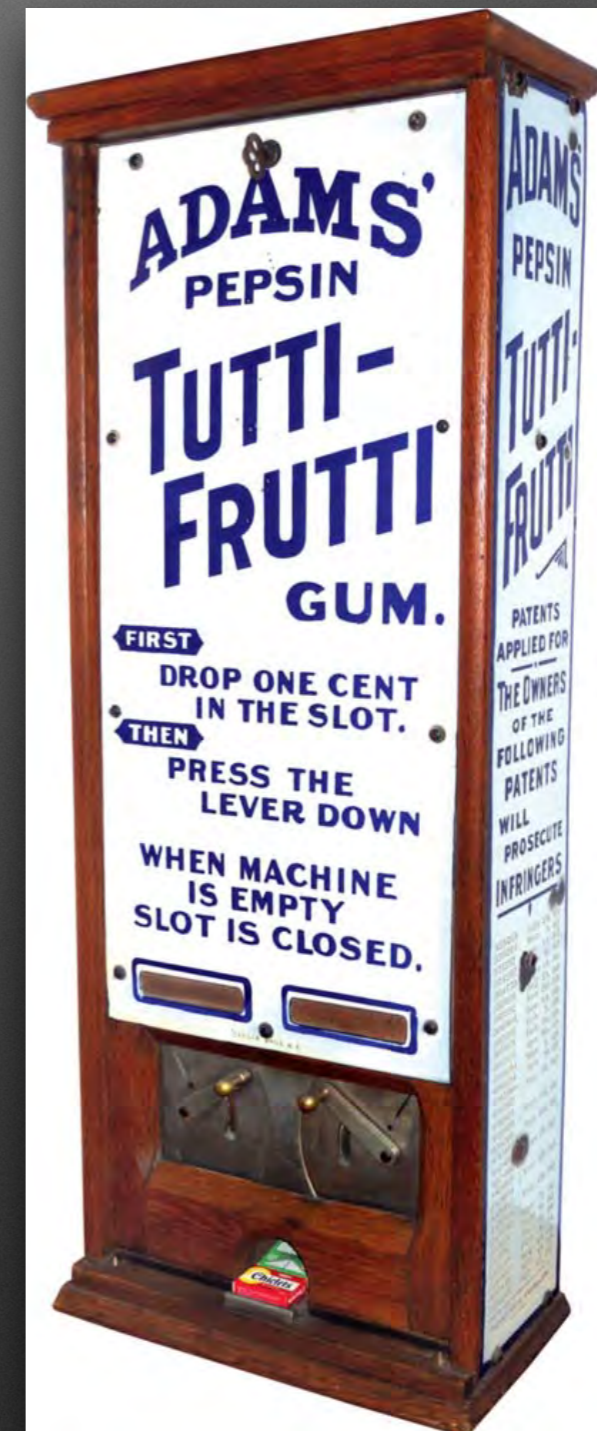
Worlds First Vending Machine

- Invented in the First Century AD
- By Hero of Alexandria
- Weight of coin dispensed holy water (Jaffe, 2006)



Early Vending Machines in America

- 1888 Thomas Adams began to sell Tutti Frutti gum from vending machines
- He placed them on train platforms to attract the most customers
- America's first profitable Vending Machine
(Sergrave, 2002)



Early Vending Machines in Japan

- Japan's first vending machine was produced in 1904 (Japan National Vending Manufacturers Association, 2015)
- Sold stamps and postcards
- Stamp vending machines first patented in England in 1857 (Segrave, 2002)



Current Vending Machines

JAPAN	AMERICA
3.8 million vending machines	6.9 million vending machines
2014 \$48 billion in goods sold	2013 \$42.7 billion in goods sold



It is speculated that across land mass and population Japan has the highest density of vending machines in the world

(Japan National Vending Manufacturers Association, 2015)

Unique Vending Machines

JAPAN	AMERICA
Alcohol	Big Electronics (iPad/Digital Camera)
Tobacco	Pharmaceuticals (Medical Marijuana)
Rice	DVD Rentals
Soup	
Cup Noodle	
Clothes	
Umbrellas	
And much more	



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Hot and Cold Vending in Japan

- Vending machines were large refrigerators that sold different types of drinks
- Canned coffee was popular but could only be served cold
- 1972 debut of machines that could sell hot or cold drinks
- Now they can sell both hot and cold items at the same time, even soups
(Vending Machines, 2012)



Tobacco and TASPO in Japan

- Since 2008 taspo (Tobacco Access Passport) cards are used to verify adults at vending machines and prevent underage smoking
 - 98% of Japanese tobacco vending machines use taspo
- Taspo uses NFC (Near Field Communications) so there is no need to swipe, just touch the card to the reader (Tobacco Institute of Japan, 2015)



Cash

JAPAN	AMERICA
7 types of commonly circulated coins (¥1; ¥5; ¥10; ¥20; ¥50; ¥100; ¥500)	4 types of commonly circulated coins (.01; .05; .10; .25)
3 Types of notes (¥1000; ¥5000; ¥10,000)	6 Types of notes (\$1;\$10;\$20; \$50;\$100)



One Japanese coin can have more value than one American coin

Current exchange rate
\$1≈¥120

(Bank of Japan, 2015;
United States Mint, 2015)

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Cashless Payments

Japan

- A common method of cashless payment at vending machines is using NFC (Near Field Communications) a technology to replace swiping cards and enables cell phones to be used for payments
 - 2001: East Japan Railway began using NFC based *Suica* cards to speed up the vending of train tickets; later it expanded to become electronic money card (JR East, 2015)
- 2004: *Osaifu-keitai* let your mobile phone emulate select NFC cards such as credit cards or *Suica*
 - 37.5 million DOCOMO users, (65% of the total subscribers) own a NFC-compatible device. (NTT Docomo, 2011)



Cashless Payments America

- To boost sales, vending machines that accept credit cards and NFC are being introduced

(Kharif, 2013)

- Average cashless transaction \$1.71
 - Average cash transaction \$1.16

(Vendscreen, 2013)

- Apple pay and Coca-Cola partner to offer NFC payments at 100,000 more vending machines by the end of 2015

(Moye, 2015)

- From January USA technologies enabled Apple Pay NFC payments at 200,000 existing machines

(USA Technologies, 2015)



Methods of the Study

- Participants of the Study
 - Demographics
 - 62 Participants
 - 32 American University Students
 - 13 Male, 19 Female
 - 30 Japanese University Students
 - 13 Male, 17 Female
 - Ages 18+
- Research Instrument:
 - Online survey (Japanese - English)
 - English
 - Japanese

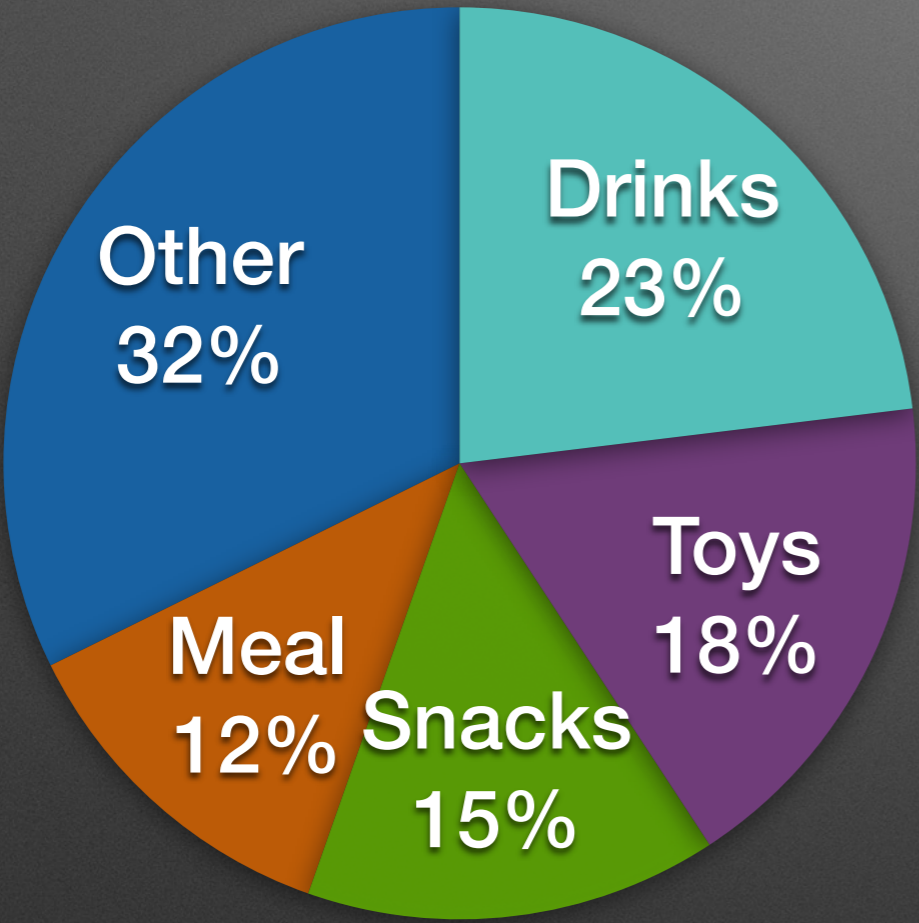
Research Findings 1

Research Question #1

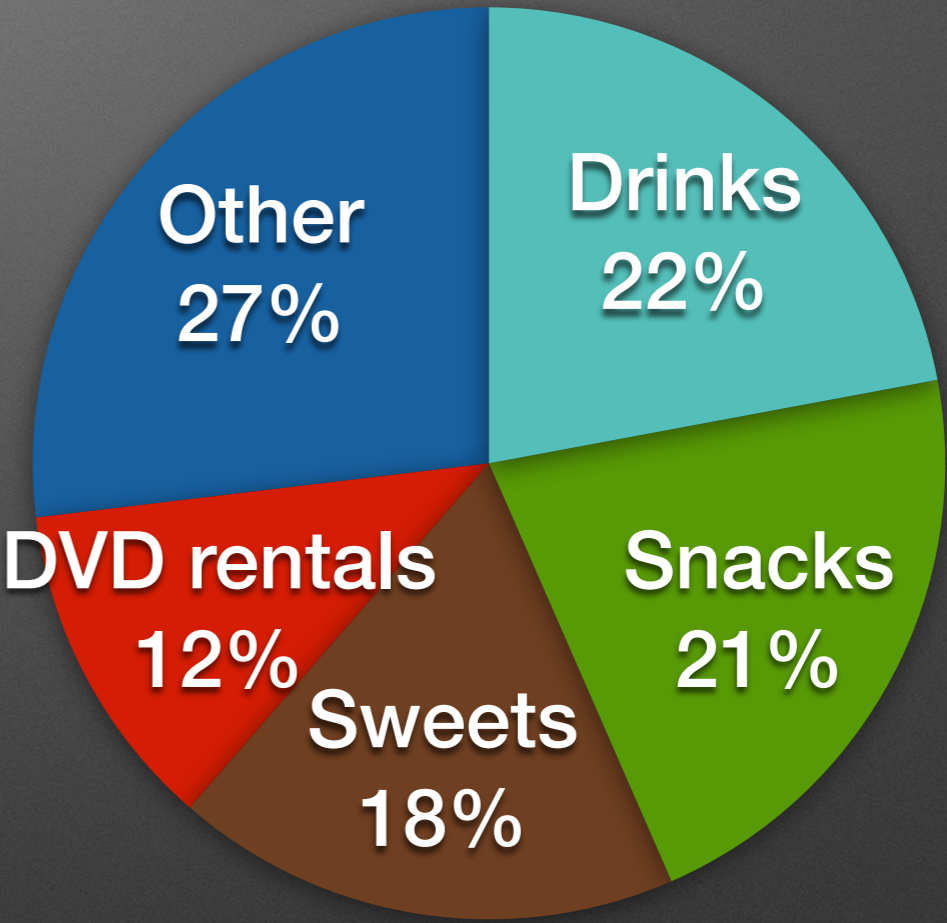
What role do vending machines play in Japanese and American students daily lives?

Common types of vending machines that have been used

Japan



America



For both Japanese and Americans Drinks and Snacks are popular

Toys are more common in Japan

DVD rentals are more common in America

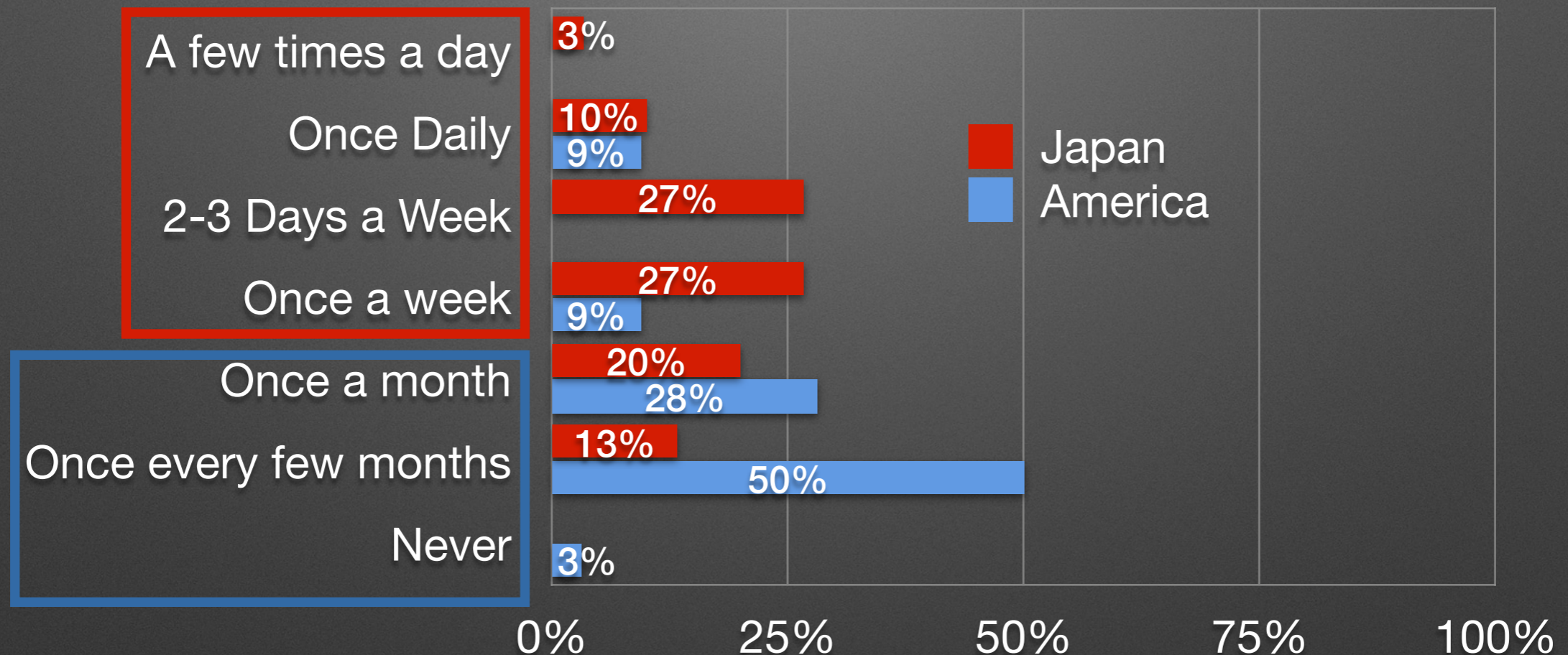
Top 3 most used types of vending machines in daily life

	JAPAN	AMERICA
#1	Drinks	Drinks
#2	Snacks	Snacks
#3	Tickets	Sweets

The top 2 are the same for both Japanese and Americans

For #3 Americans like to fill their sweet tooth while Japanese buy tickets

Frequency of Vending Machine Use

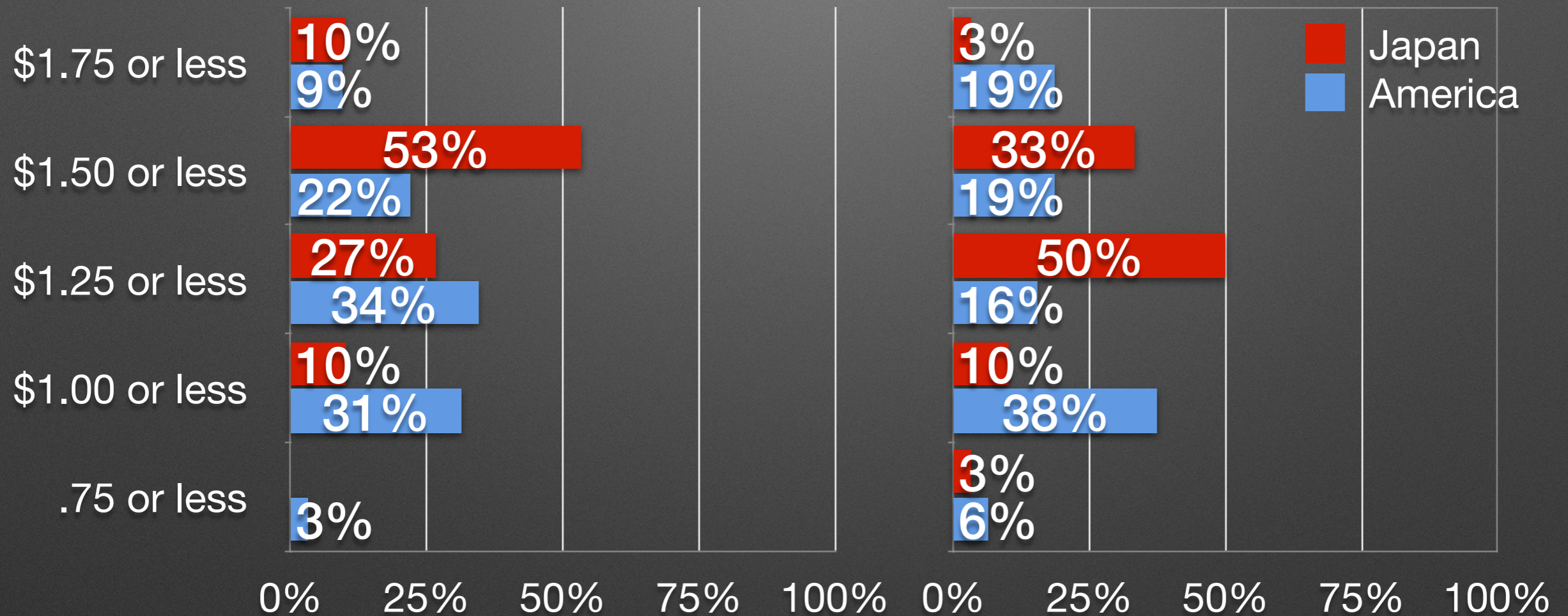


67% of Japanese use vending machines once a week or more, while 78% of Americans whom use vending machines once a month or less.

How much you would ideally spend at a vending machine

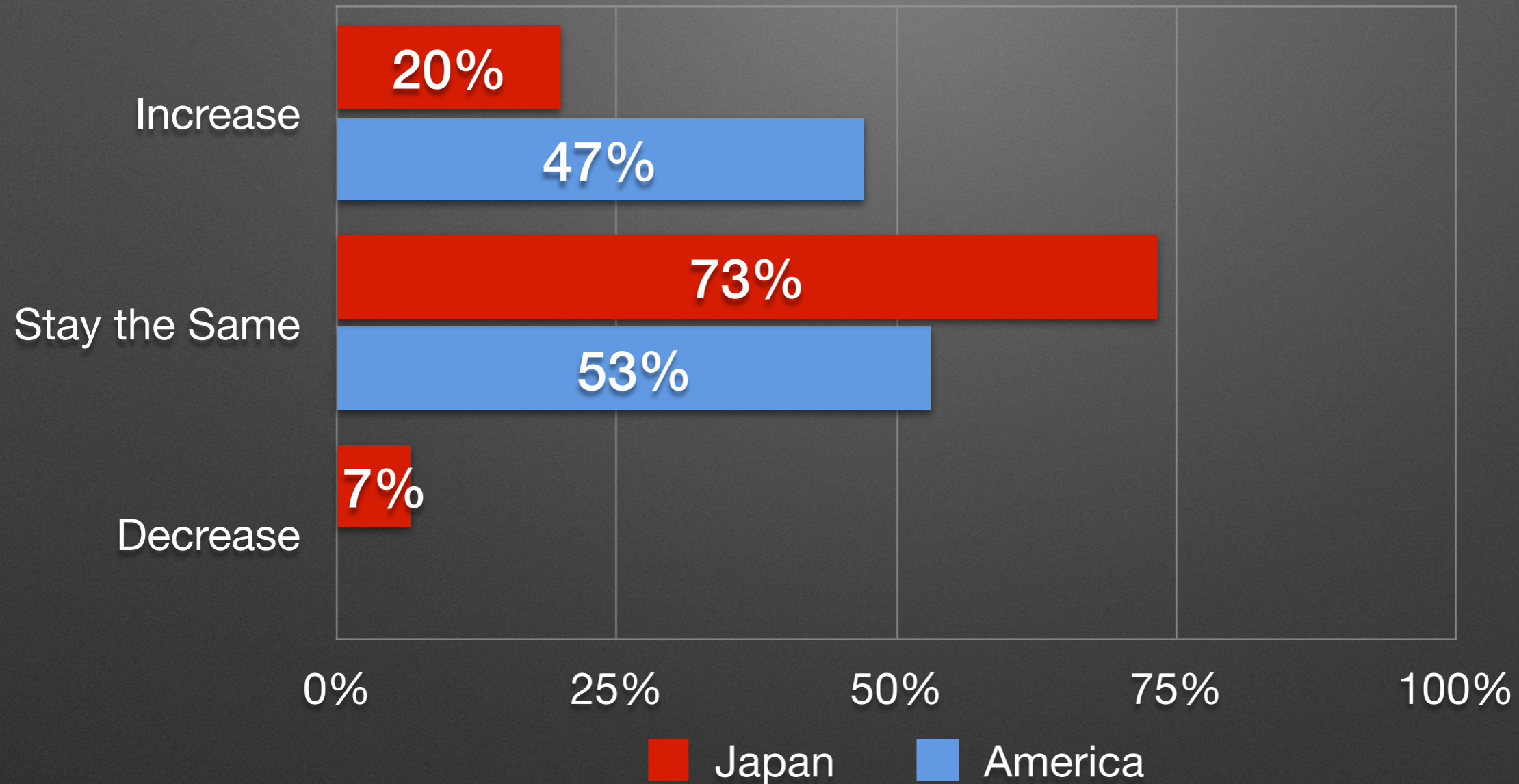
Coca-Cola

Coffee or Tea



The majority of Japanese students are willing to spend more on both soft drinks, and coffee or tea than Americans

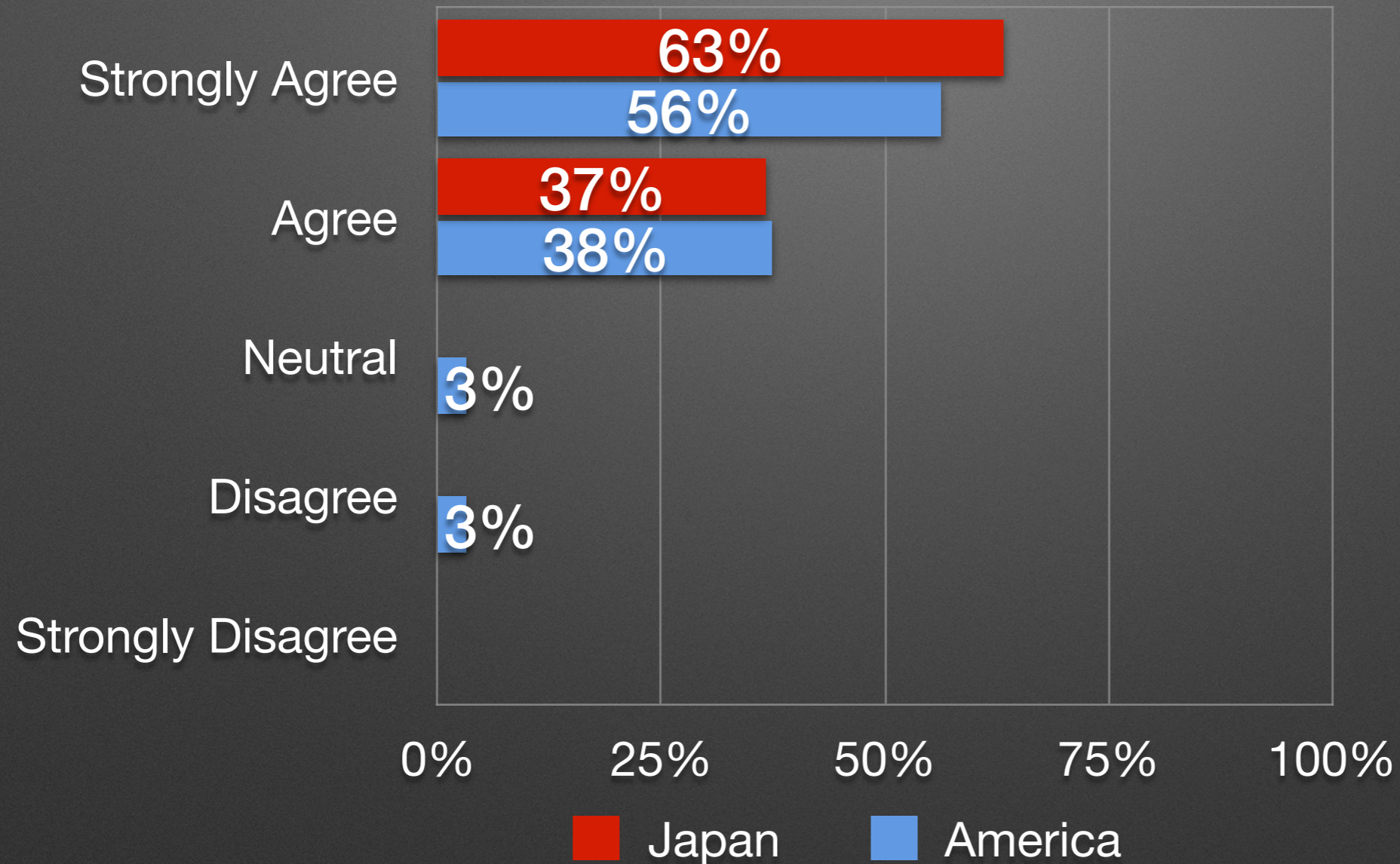
I want the number of vending machines in my area to _____



47% of Americans want more vending machines

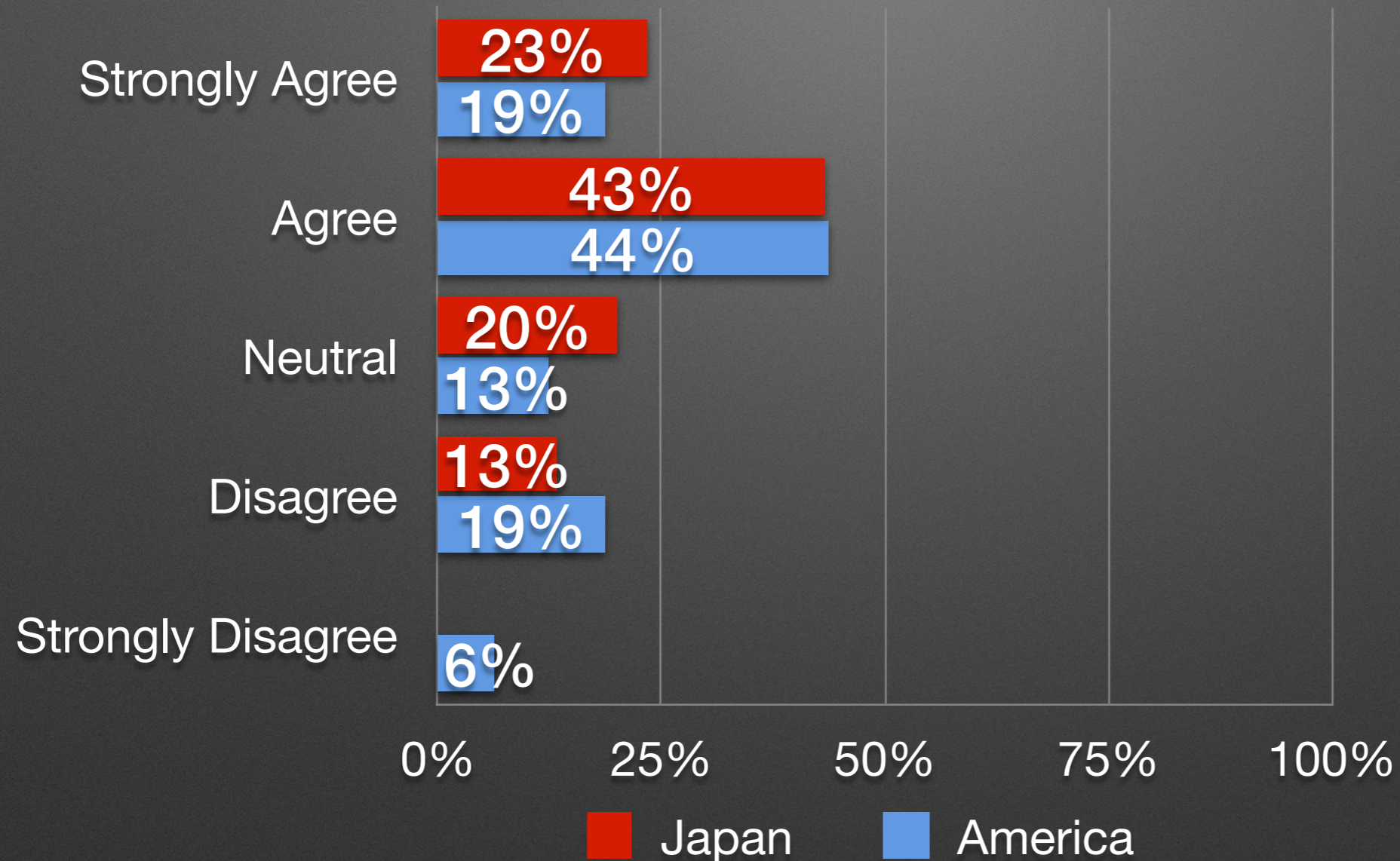
73% of Japanese do not want the number to change

Vending machines are easy to use



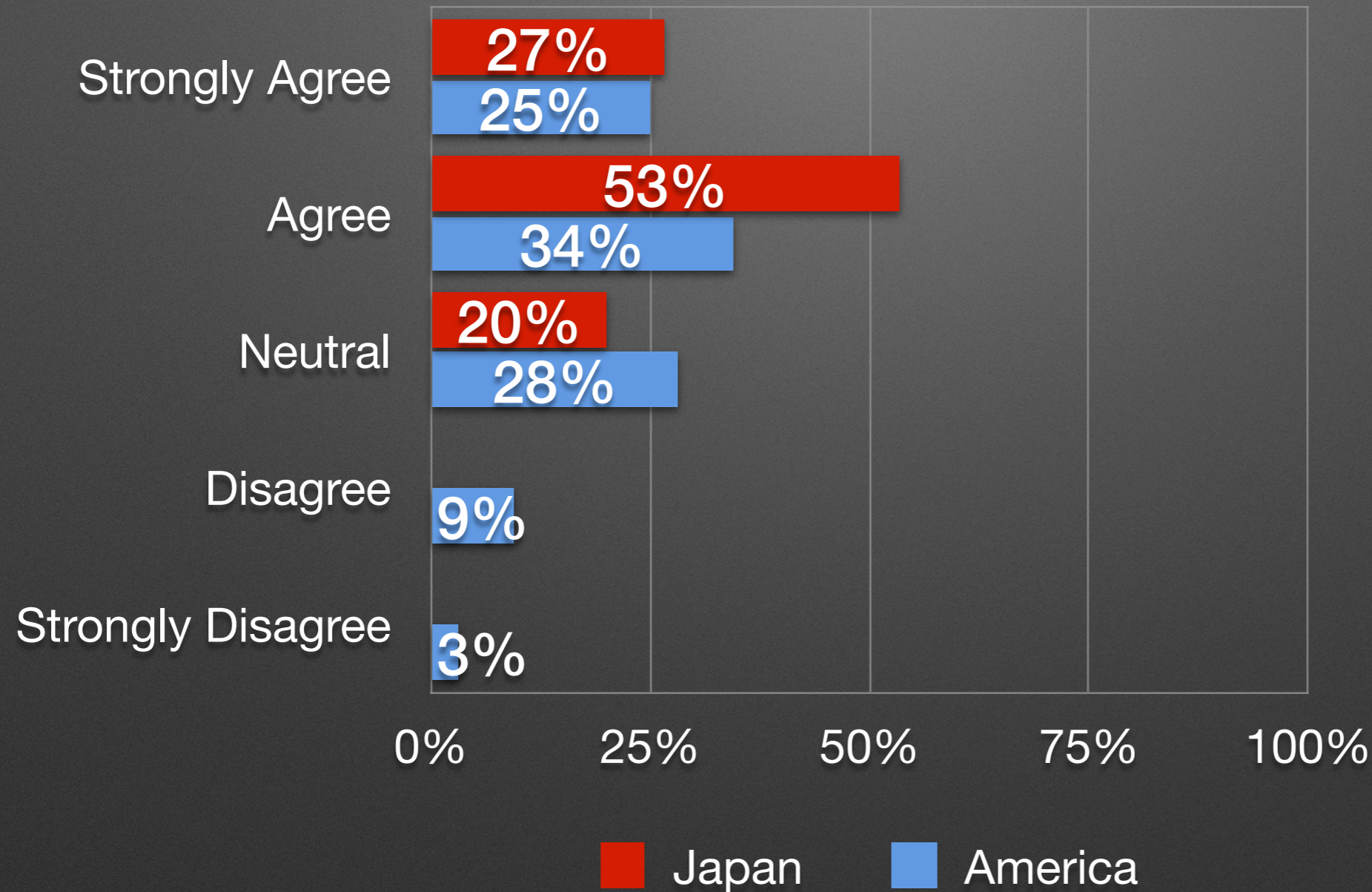
Both groups agreed with 100% of Japanese and 96% of Americans

Vending machines have a variety of products offered



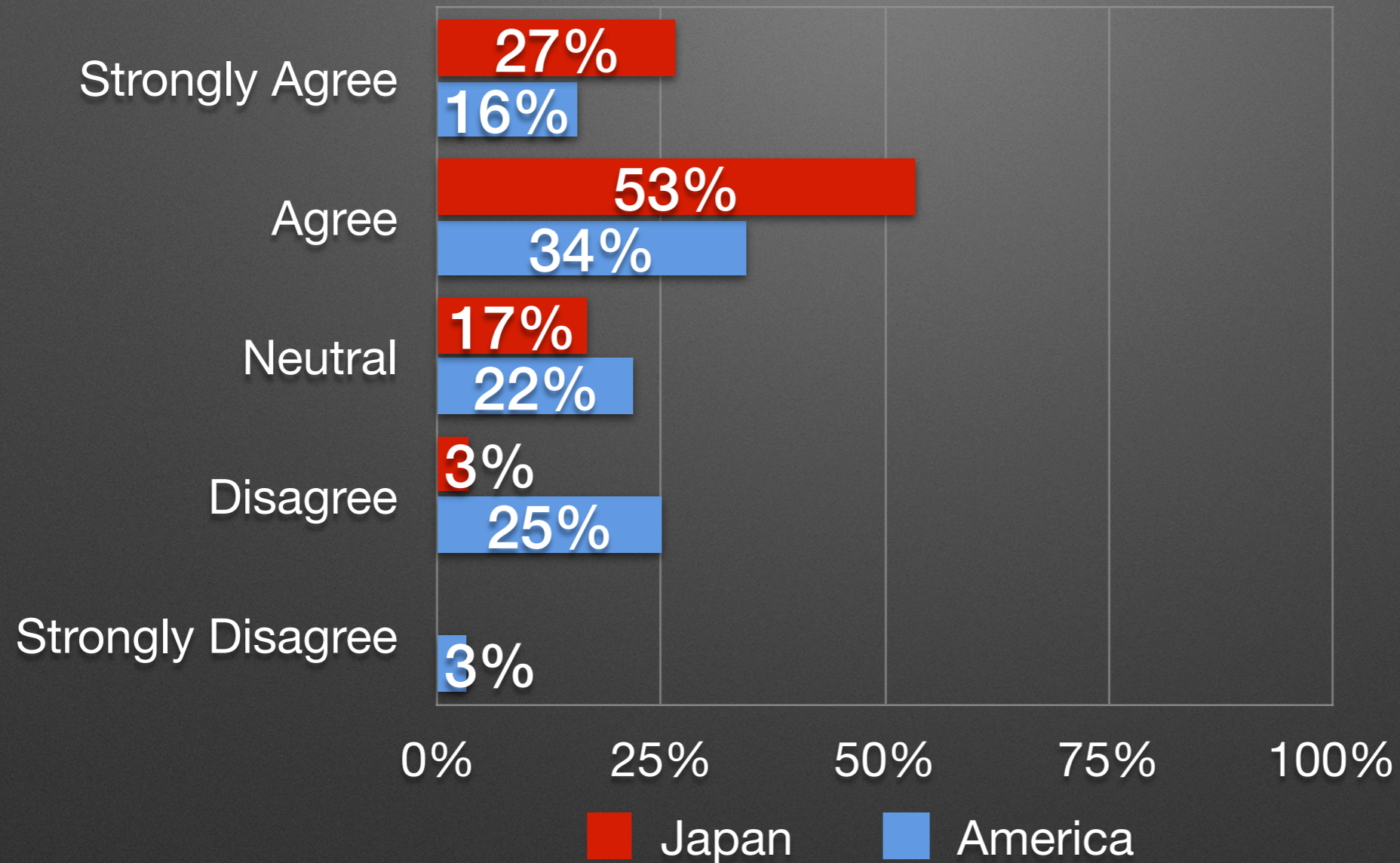
Over 60% agreed to a wide variety of products across both American and Japanese students

Vending machines are reliable dispensing their product



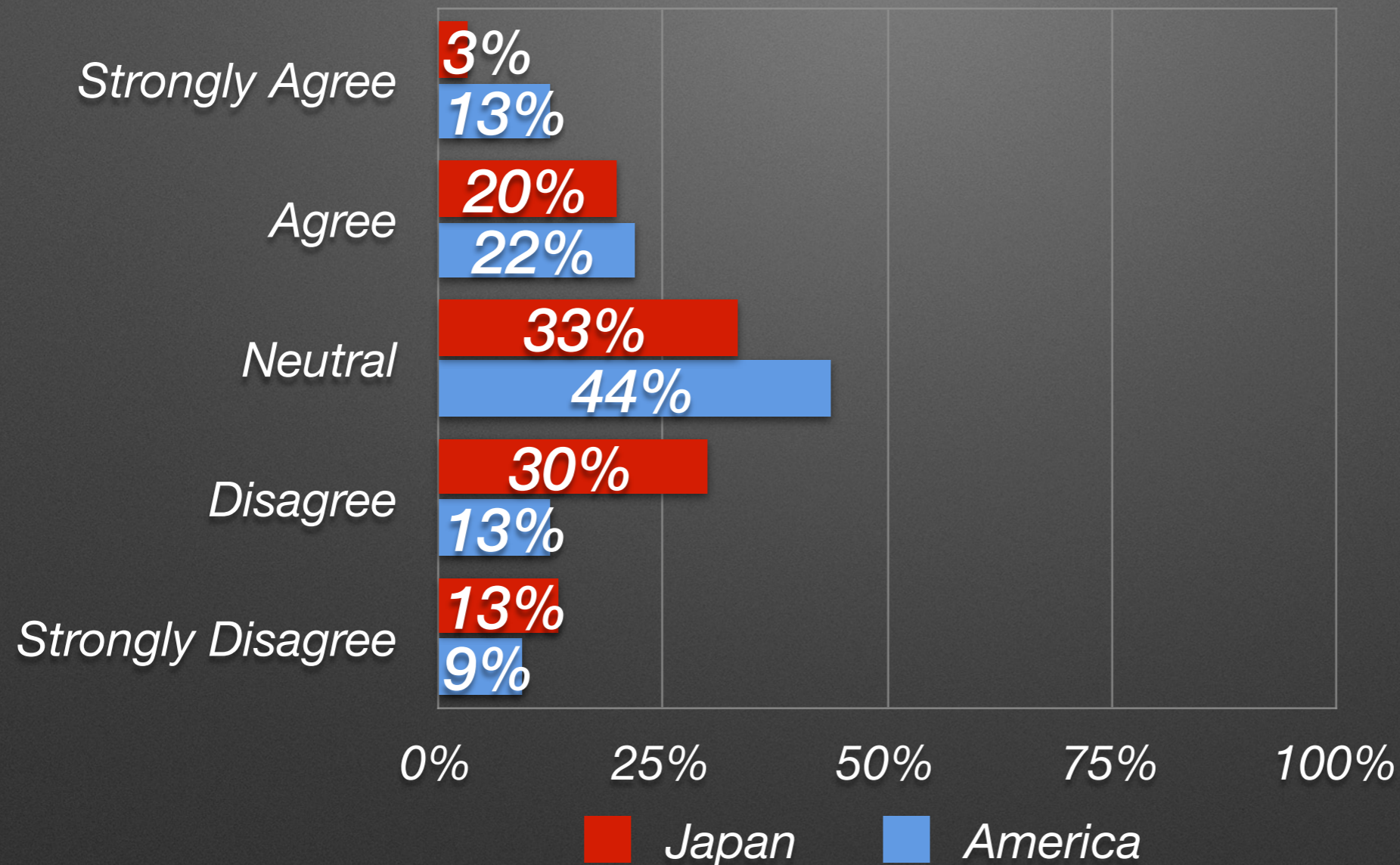
80% of Japanese agreed that dispensing is reliable compared to Americans 59%

Vending machines are reliable with cash



80% of Japanese students agreed cash is reliable while Americans had only 50% agreement

Vending machines are reliable with credit/debit cards

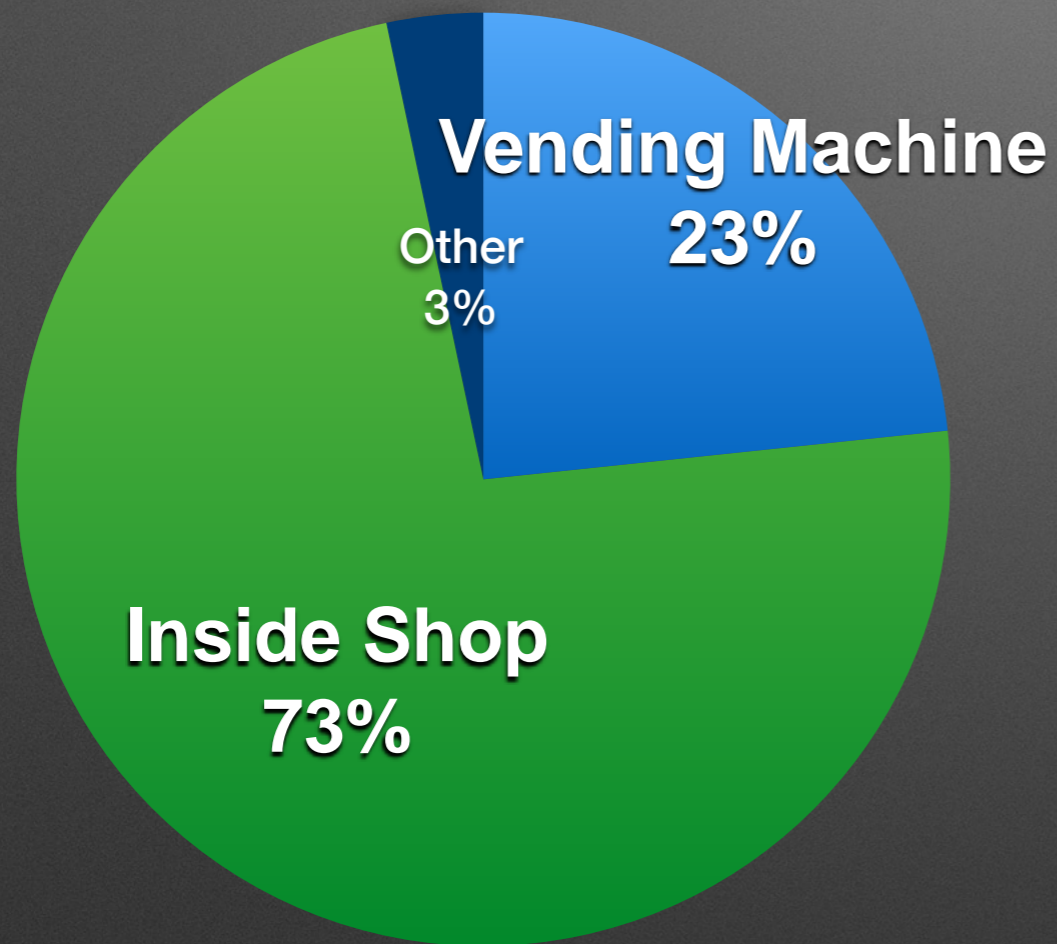


43% of Japanese disagree cards are reliable compared to 22% of Americans

There is a vending machine outside of a shop and they both sell the same product you want.

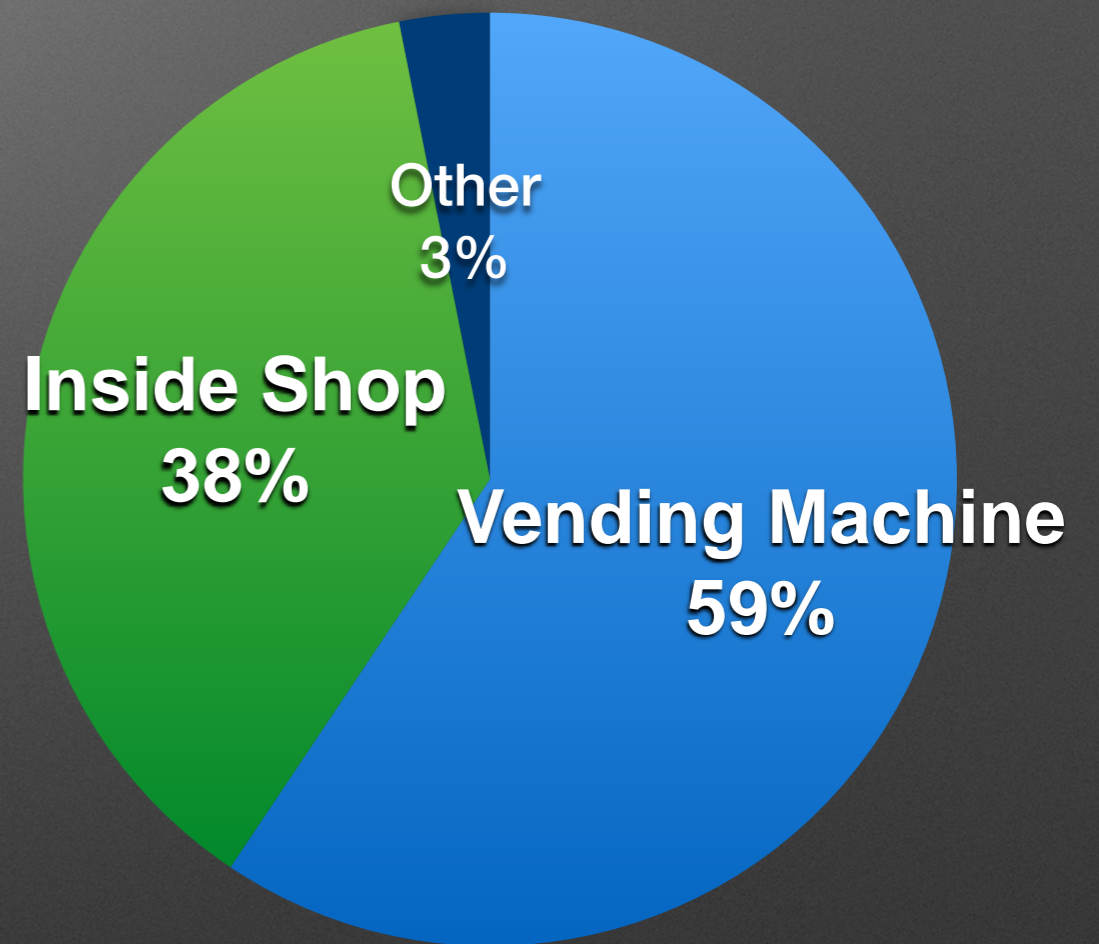
Which would you make a purchase from?

Japan



The top reason for Japanese students was Cheaper price

America



Top 3 reasons were for Americans were Faster, More Convenient, and No line

Summary of Findings #1

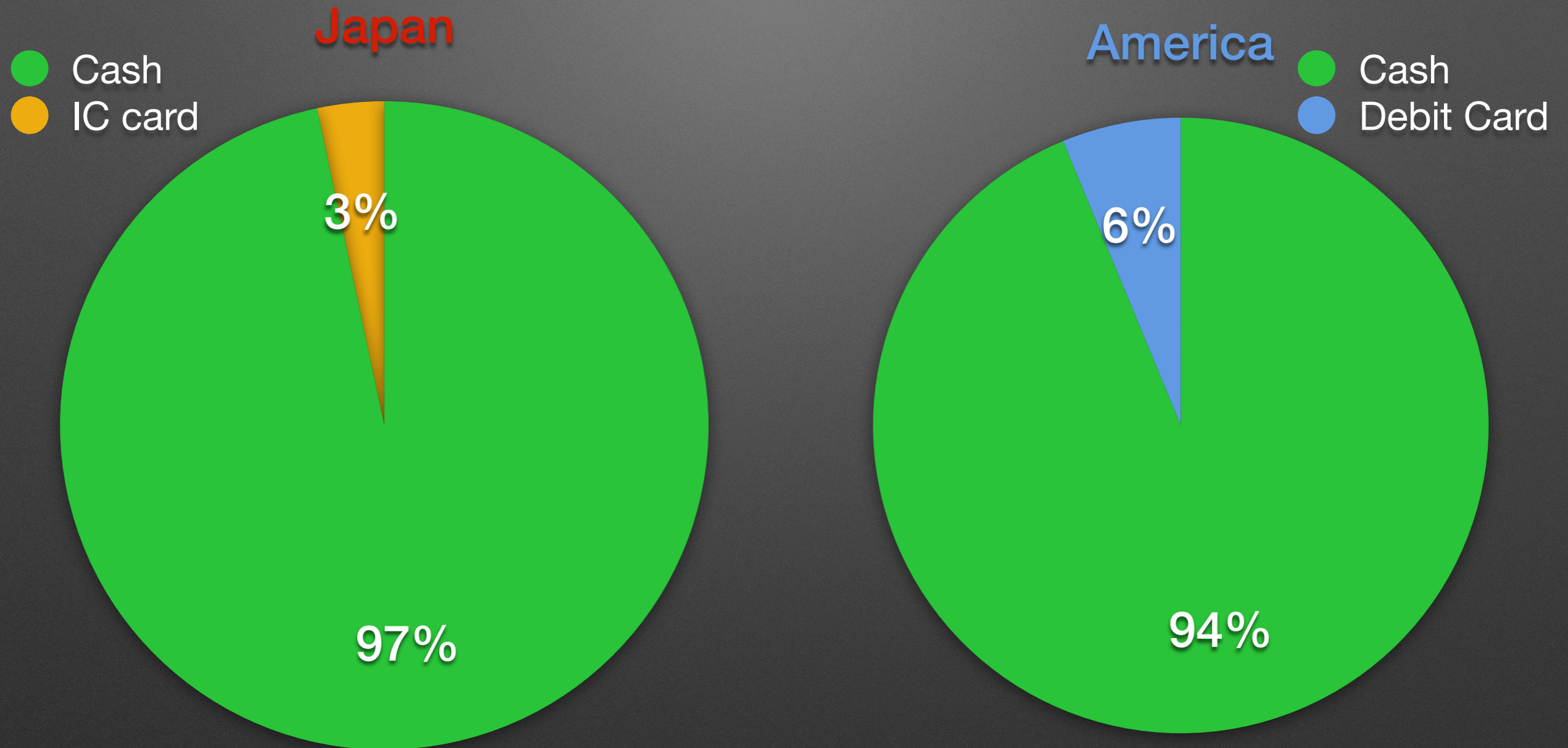
- Japanese Students use vending machines at a higher rate than Americans
- Japanese students seem willing to pay more for a drink
- Japanese vending machines had a higher rate of reliability
- Americans view credit/debit cards as more reliable
- The saying that people use machines to avoid human interaction may not be true for all.

Research Findings 2

Research Question #2

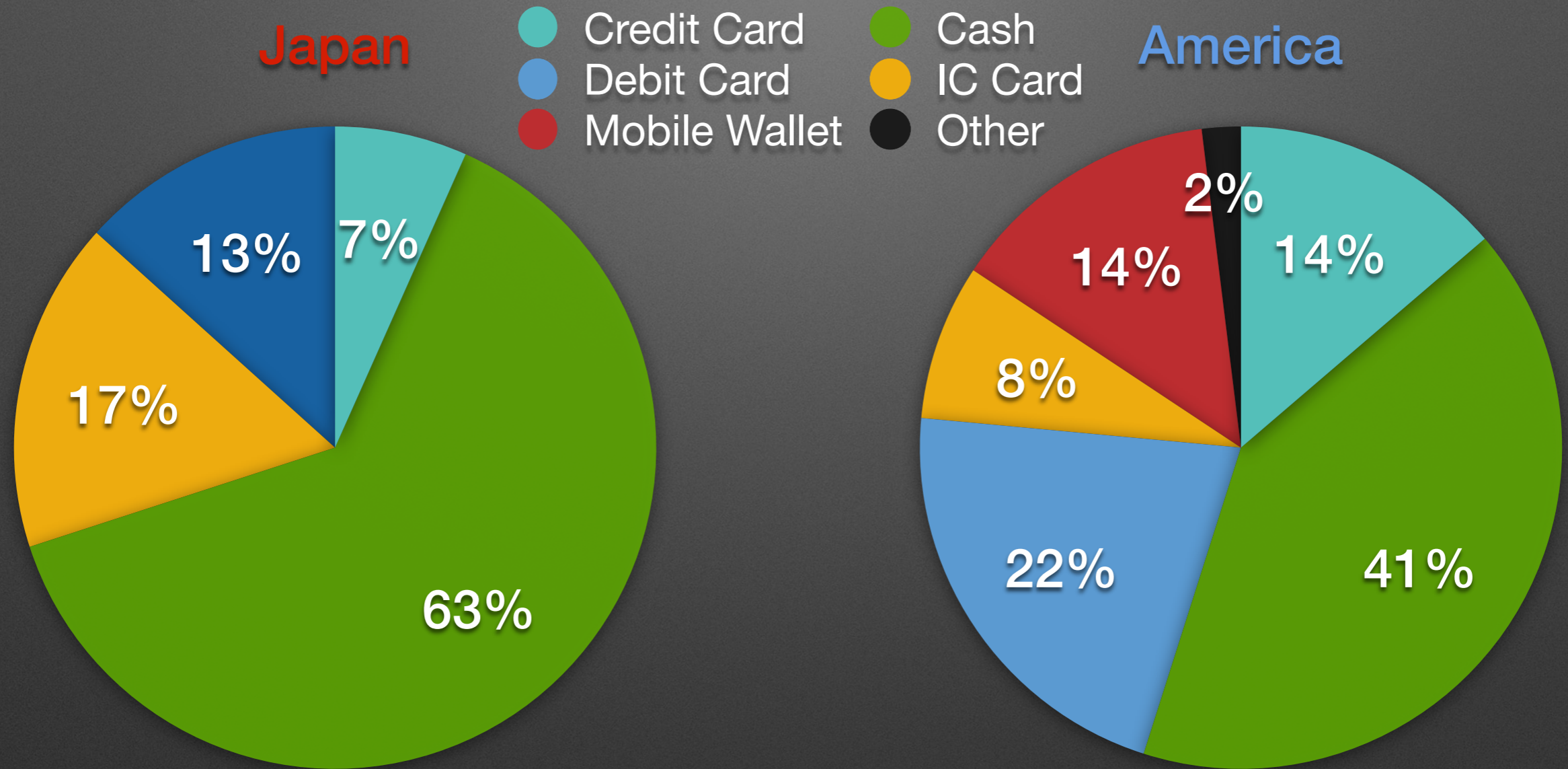
How do Japanese and American students use of vending machines reflect upon their culture such as the interface design and payment preference?

How students pay at vending machines most often



Currently cash is the most used for both Japanese and American students

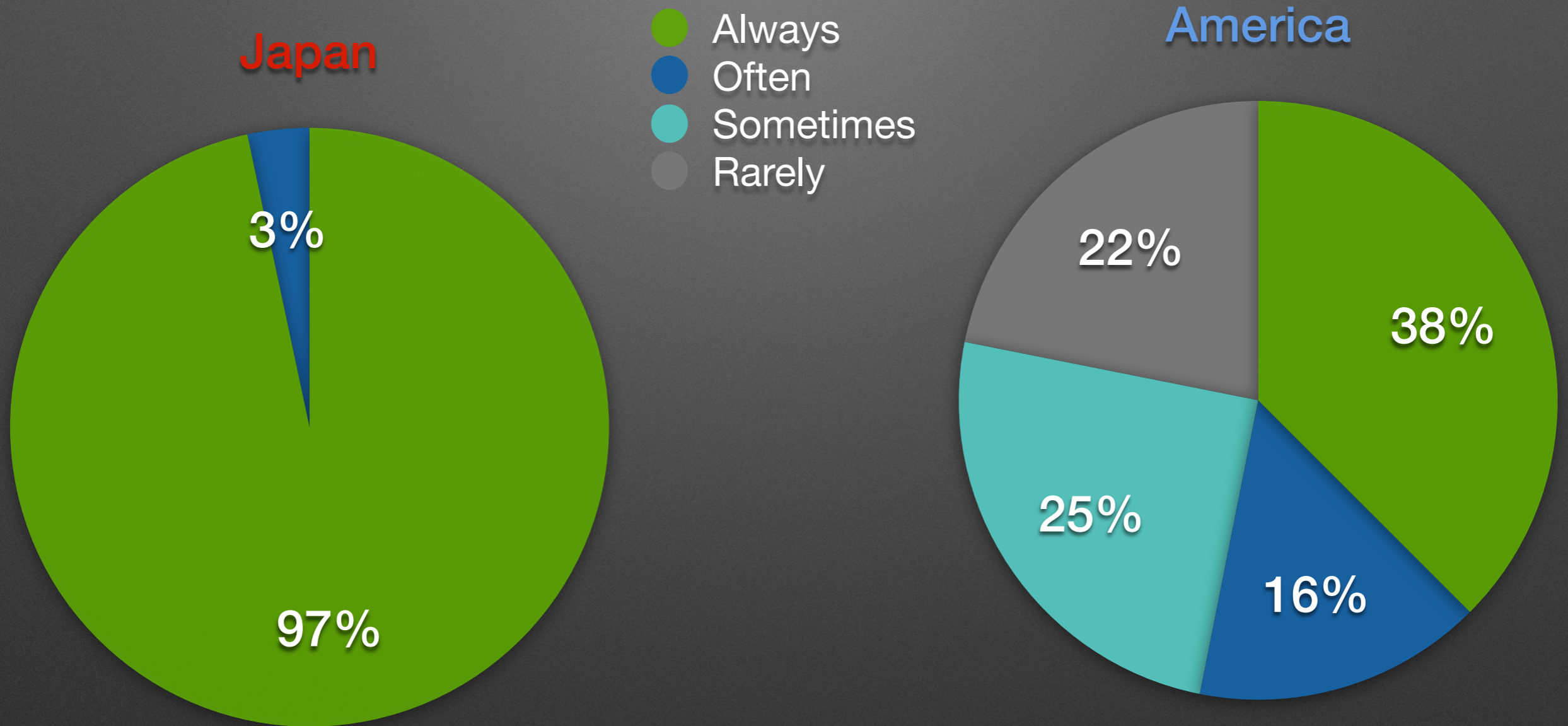
In the future how students would like to pay at vending machines



63% of Japanese would like to pay with cash in the future

59% of Americans would like to pay with an alternative to cash in the future

Frequency of Carrying Cash

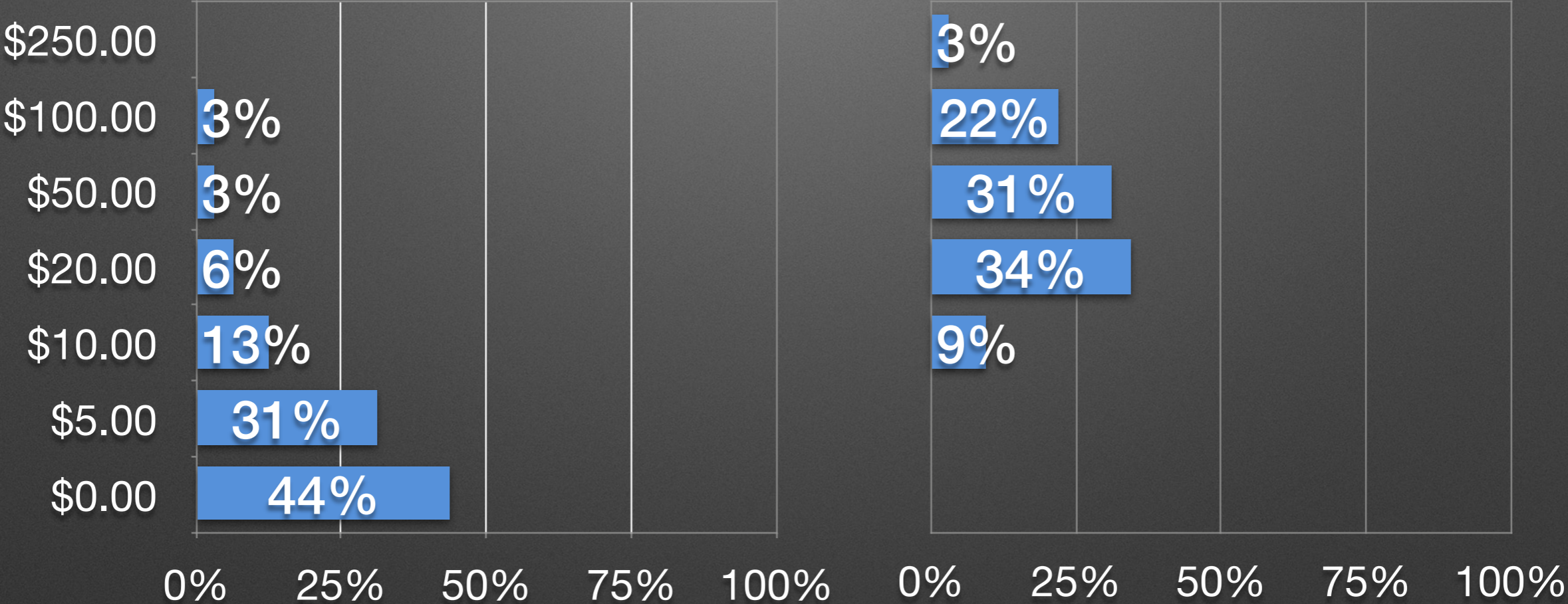


97% of Japanese always carry cash but only 38% of American always carry cash

How much cash students feel comfortable carrying in America

Least

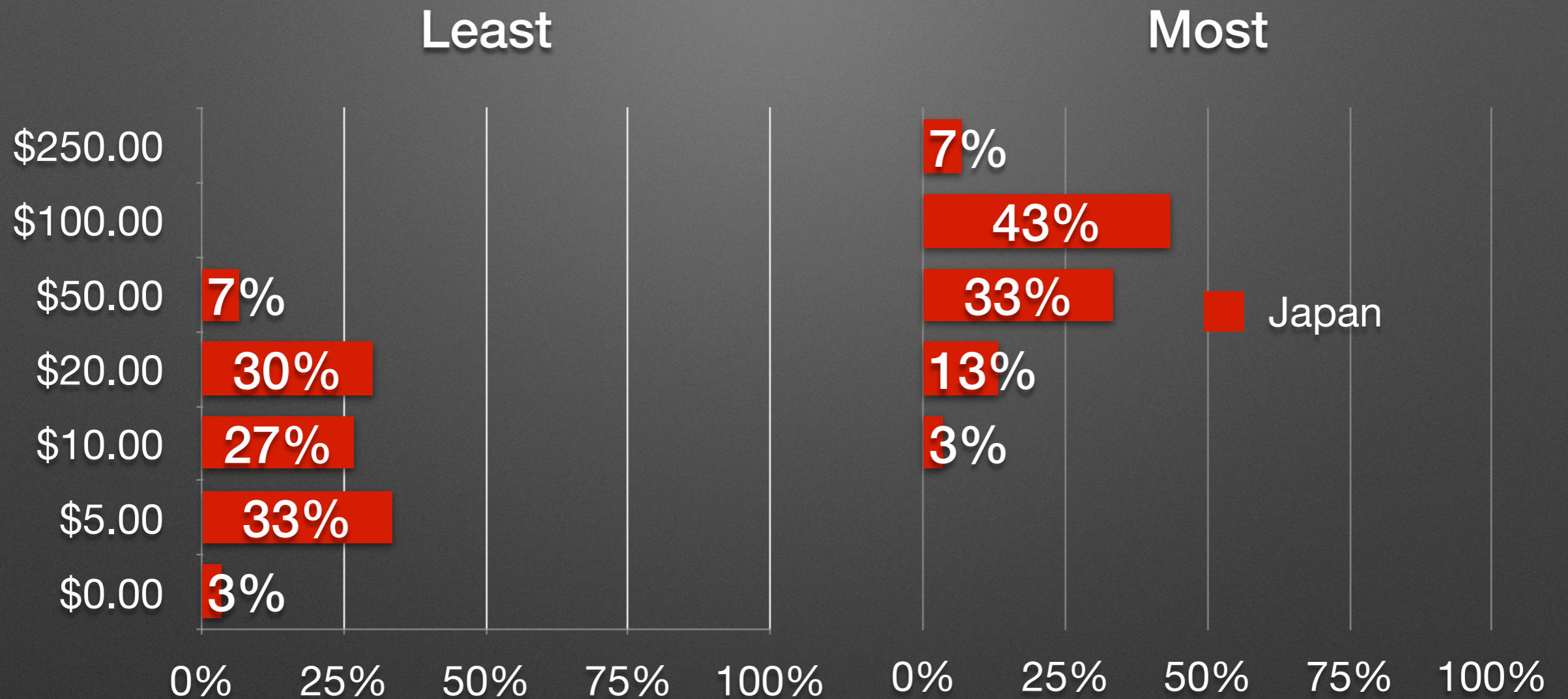
Most



75% Americans feel comfortable carrying a minimum \$5 or less, with 44% fine with nothing.

65% Americans feel comfortable carrying \$20-\$50 at most

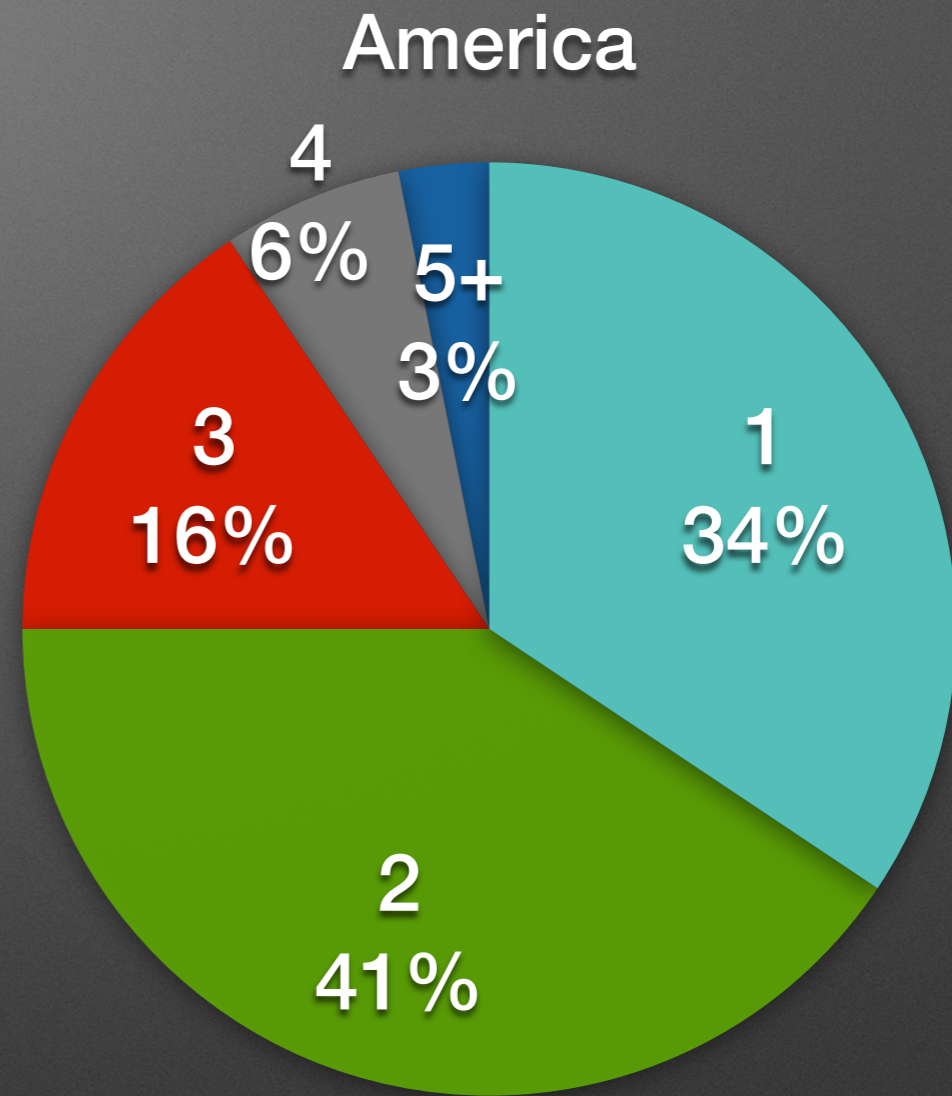
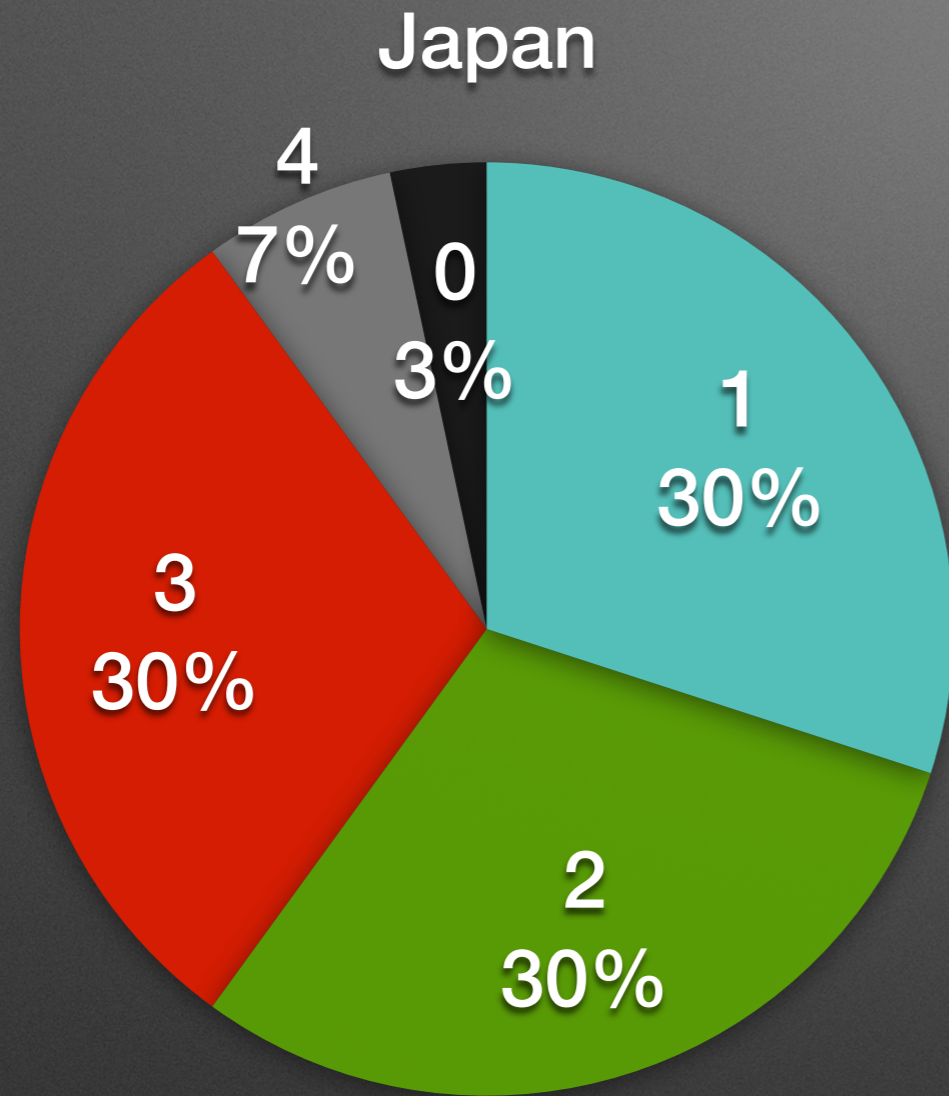
How much cash students feel comfortable carrying in Japan



90% of Japanese students feel comfortable with a \$5-\$20 at least

76% of Japanese students feel comfortable with \$50-\$100 at most

Number of cards carried in a wallet that can be used instead of cash



The majority of Japanese and Americans carry a substitute to cash on them with most students carrying 1-3 cards

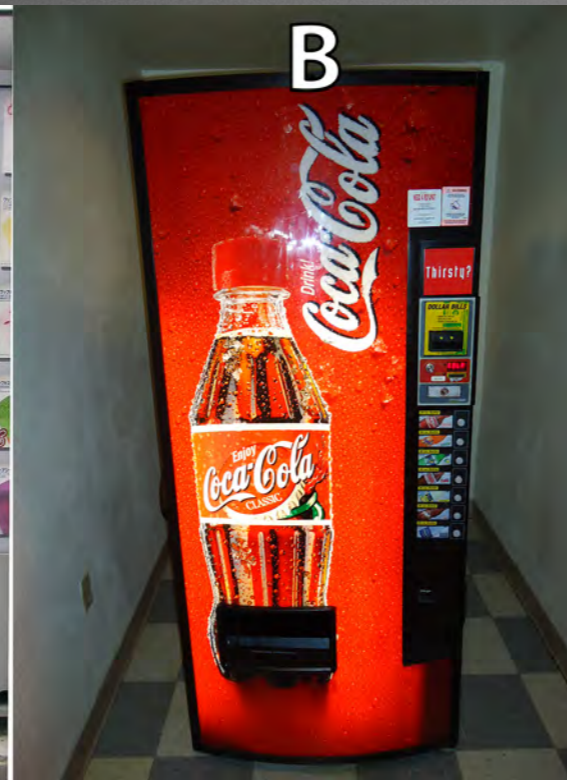
Convenience of Payment Methods

RANK	JAPAN		AMERICA	
1	Cash	90%	Debit Card	97%
2	Credit Card	80%	Credit Card	72%
3	IC Card	56%	Cash	72%

Americans thought Debit Cards most convenient while Japanese preferred cash

Americans found cash equally convenient to a credit card

Comparing the following vending machines which were more visually appealing and functional

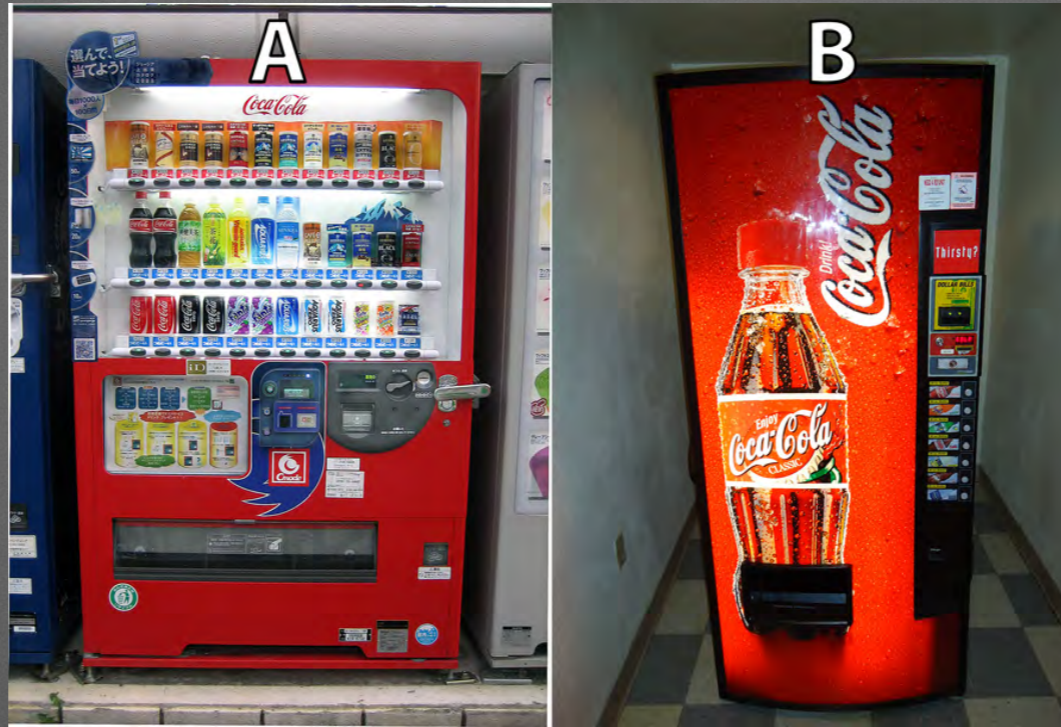


Vending machine A

- cash, NFC cards
- button underneath of the item

Vending machine B

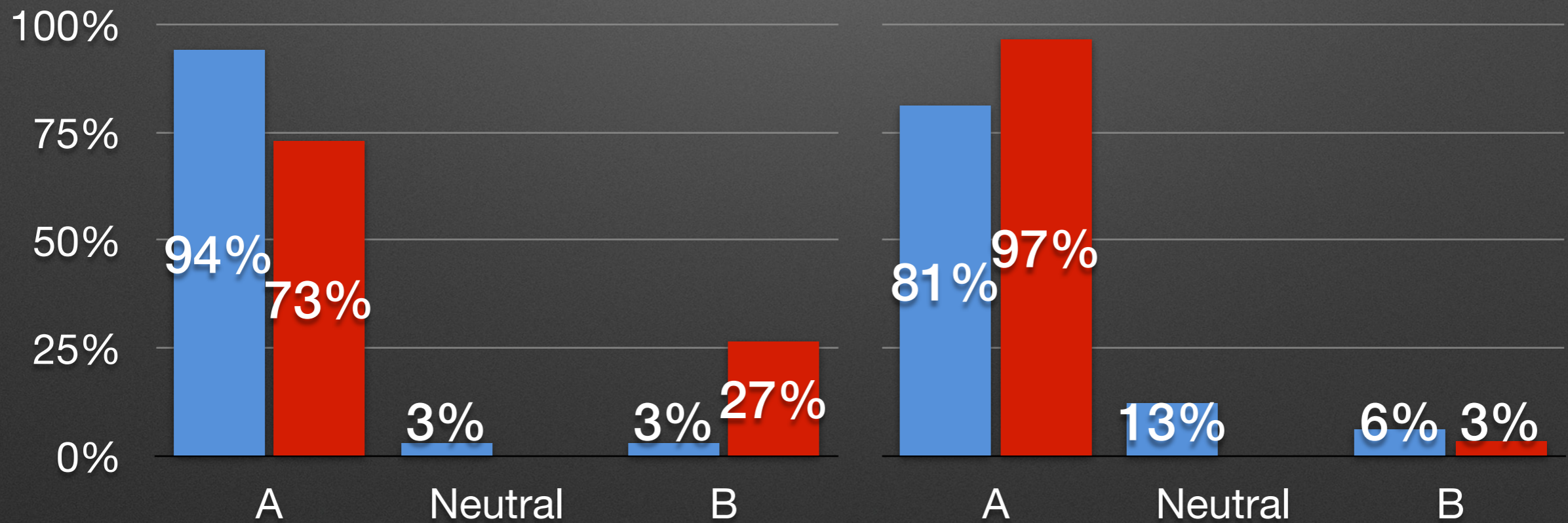
- cash only
- button on the right.



Visually Appealing

Functional

America
Japan



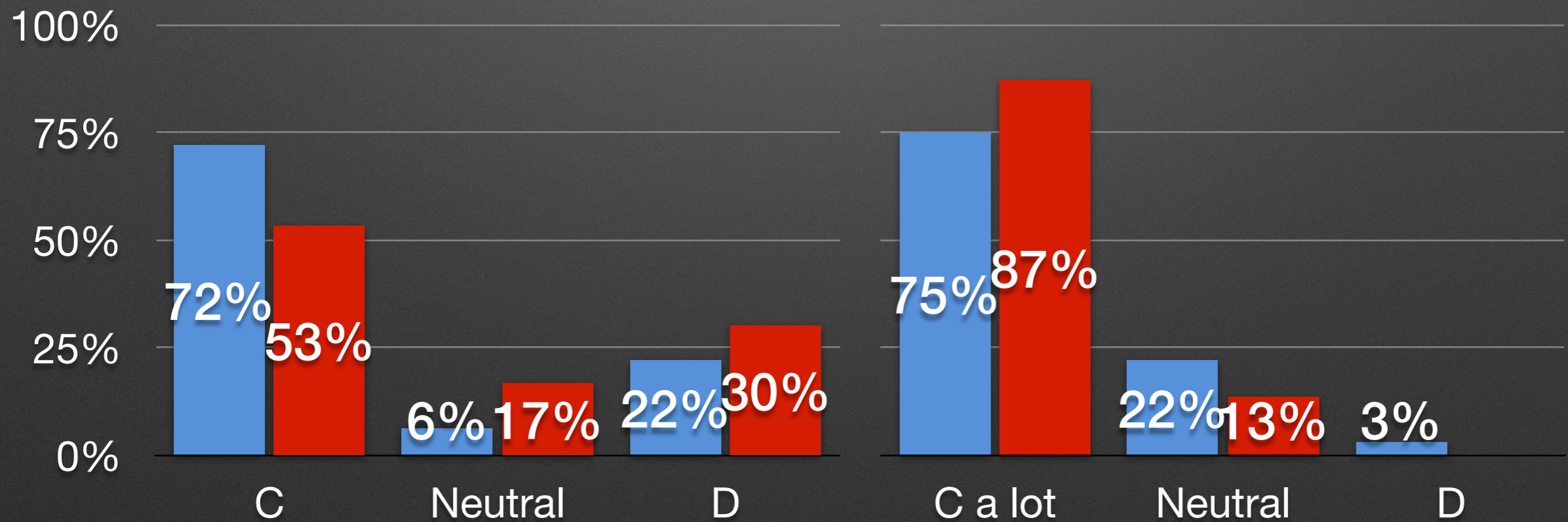
Japanese made machine A was favored by both Japanese and Americans



Visually Appealing

Functional

America
Japan



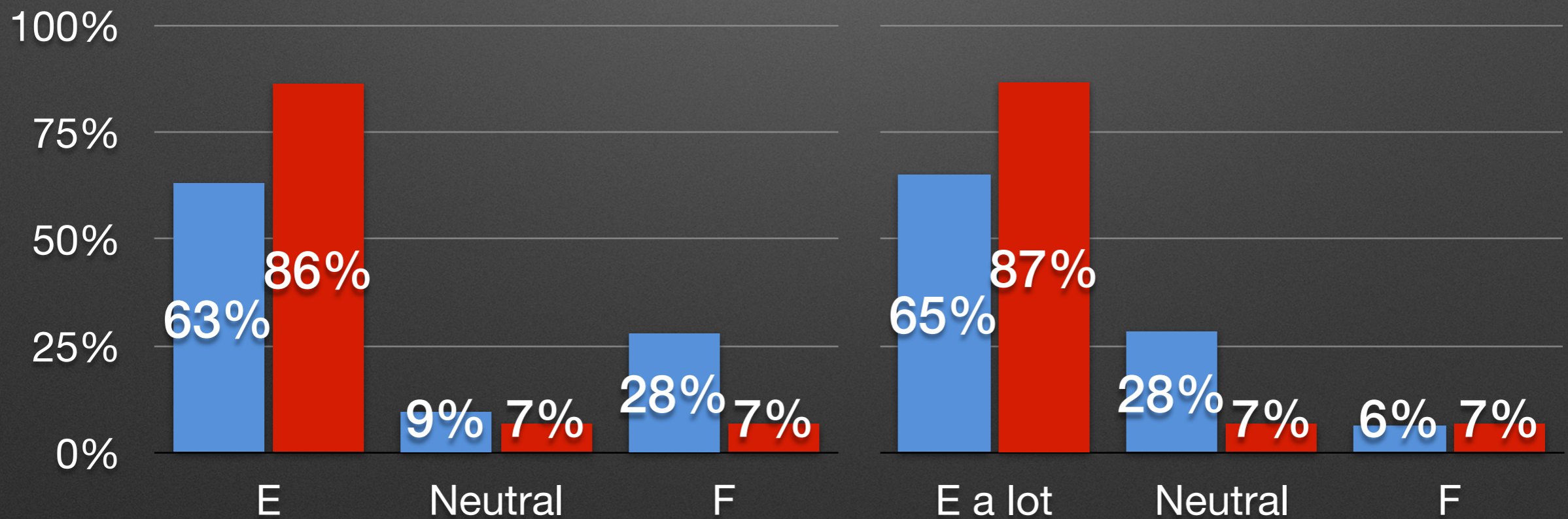
Japanese made machine C was favored by both Japanese and Americans



Visually Appealing

Functional

■ America
■ Japan



Japanese made machine E was favored by both Japanese and Americans

Summary of Findings #2

- Both groups use cash at vending machines most often but do not rely just on cash in their daily lives
- Japanese students found cash more convenient in their daily lives
- Americans felt Credit and Debit cards to be as convenient as cash
- Japanese students felt comfortable carrying more cash than American students
- Americans want to replace cash in the future
- Both groups found Japanese vending machines to be more visually appealing and functional

Conclusion

- Japanese use of Vending Machines are more frequently than Americans
 - But given a choice Japanese are more likely to buy from a human
- College students have a fairly positive view about vending machines
 - Japanese vending machines are better to serve the customer not only reliably but visually and functionally
- NFC was not widely used by the participants
- Japan still has a strong cash culture among college students, and in the future, cash may still be most common for college students in Japan, but Americans may go cashless
- Single coin vending may be a factor for Japanese to use vending machines more

Discussion

Limitations of the study

- Small sample size
- Consisted mainly of CSUMB and Okayama University students
- NFC infrastructure and IC cards are not widespread in America

Future Study

- Survey the convenience of carrying cash (weight vs value) and withdrawing cash (ATMs vs cash back)
- Compare the vending machine use between rural and urban areas in Japan and America

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Q&A