



IMPACTS OF COVID-19 PANDEMIC ON U.S. AQUACULTURE & AQUAPONICS

AQUAPONICS ASSOCIATION CONFERENCE

10/18/2020

JONATHAN VAN SENTEN
MATTHEW A. SMITH
CAROLE R. ENGLE





VIRGINIA TECH.



Thank you

Thank you to those farms and businesses that
participated in the study and
to all those who helped distribute the
survey to industry and other stakeholders.

“Individually, we are one drop. Together, we are an ocean.”

- Ryunosuke Satoro -

Background & Justification

- January 20th, 2020 : First confirmed case of COVID-19 in the United States ^a
 - March 11th, 2020 : World Health Organization declares global pandemic ^b
 - March 13th, 2020 : United States declares national emergency ^c
 - Closure of non-essential businesses & social distancing measures implemented ^d
 - Agriculture (aquaculture & aquaponics) clarified as essential industries ^e
-
- Extension communications with producers
 - Reports of lost sales
 - Reports of production challenges



In response to the information from producers, Matthew Smith proposed to assess impacts of COVID-19 on the U.S. aquaculture industry.

A collaborative effort was initiated to collect data and assess impacts, with the support of industry associations and individual producers.





Data collection

Quarterly survey administered
through Qualtrics (online).

No sampling protocol,
respondents self-selected for
participation

Q1 : January through April 10

Q2 : April 10 to June 29

qualtrics[®] XM

Aquaculture sales by first point of sale in 2018

(USDA 2019)

Segment of aquaculture	Processor	Live hauler / broker	Retail outlets	Direct to consumer	Recreational stocking	To other producers	Government agencies	Exports	Other
Foodfish	69%	10%	6%	2%	4%	8%	(Z)	(Z)	(Z)
Sportfish	1%	26%	14%	3%	28%	5%	3%	20%	(Z)
Baitfish	(X)	38%	15%	7%	19%	17%	1%	2%	1%
Ornamental fish	(X)	19%	32%	15%	5%	18%	(D)	(D)	10%
Crustaceans	10%	28%	25%	6%	(Z)	8%	(D)	(D)	(D)
Mollusks	29%	19%	15%	4%	(D)	25%	(D)	5%	4%
Miscellaneous	7%	22%	26%	7%	(D)	6%	(D)	27%	3%

(D) withheld to avoid disclosing data for individual farms

(X) not applicable

(Z) less than half the unit shown



Q1 Results

652 total participants

537 responses sufficiently
complete for analysis

± 18% of 2018 USDA Census of
Aquaculture reporting farms
(2,932)

Q2 Results

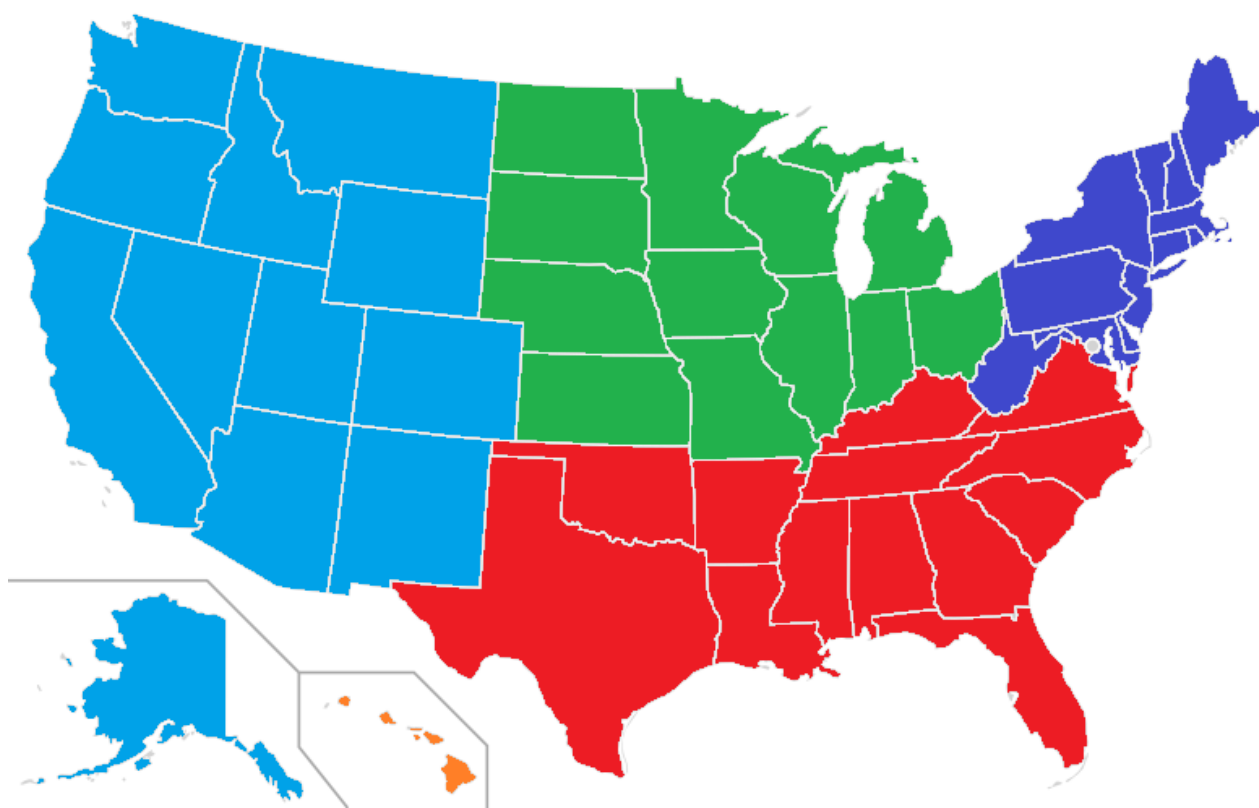
256 total participants

248 responses sufficiently
complete for analysis

± 8% of 2018 USDA Census of
Aquaculture reporting farms
(2,932)

Respondent Characteristics

USDA Aquaculture Region of Respondents

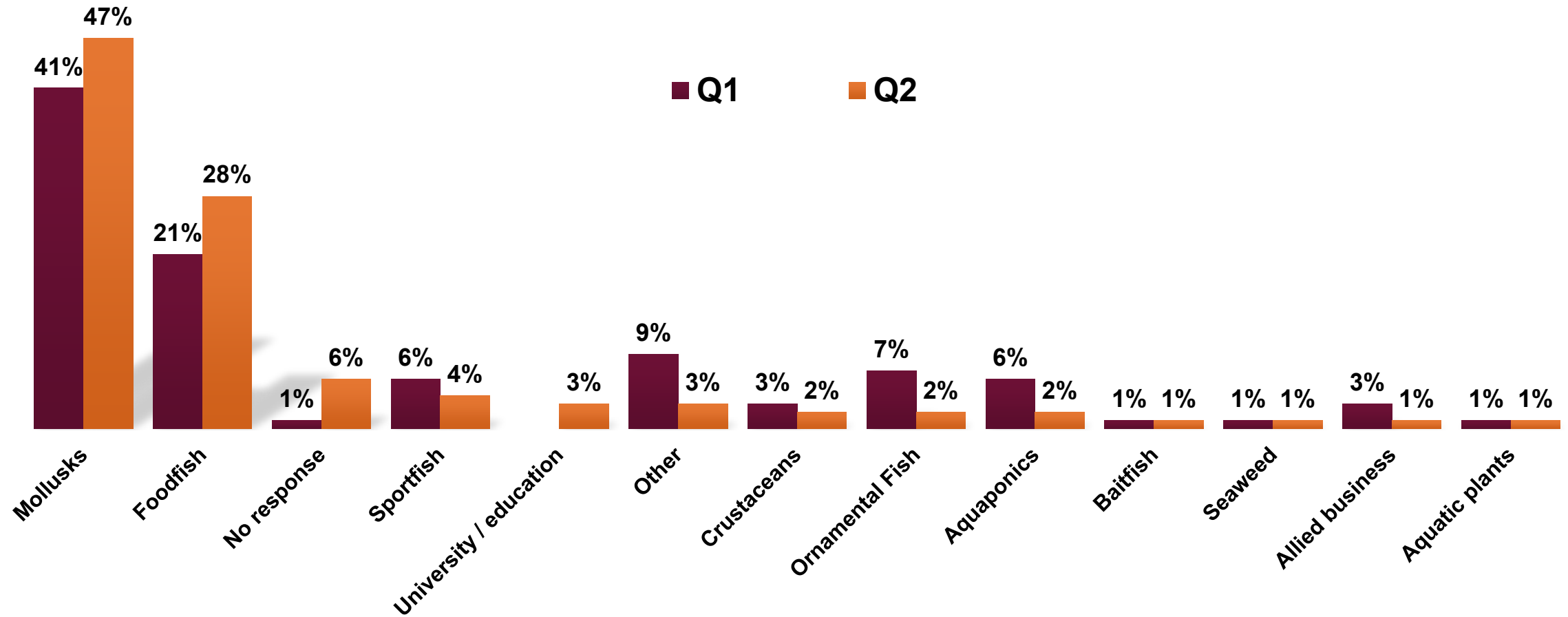


Region	USDA census reporting farms	Q1 survey respondents	Q2 survey respondents
Southern	59%	49%	42%
Northeast	18%	26%	24%
Western	12%	10%	14%
North Central	9%	11%	5%
Tropical and Sub-tropical	2%	3%	2%

Respondent Characteristics

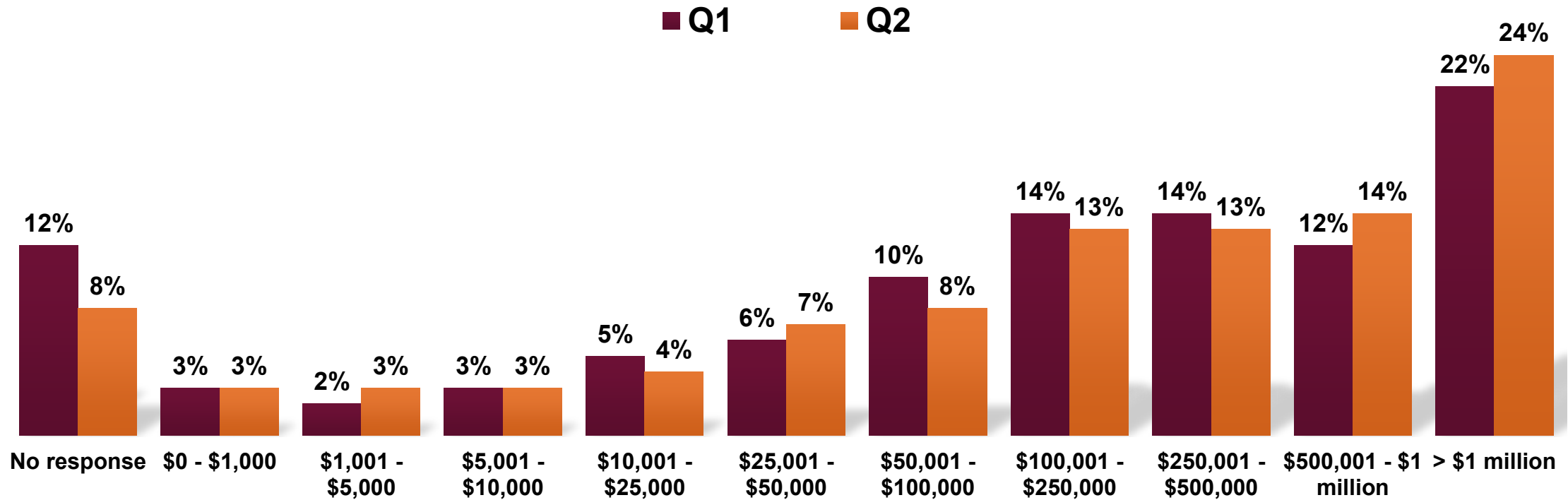
Primary product

■ Q1 ■ Q2



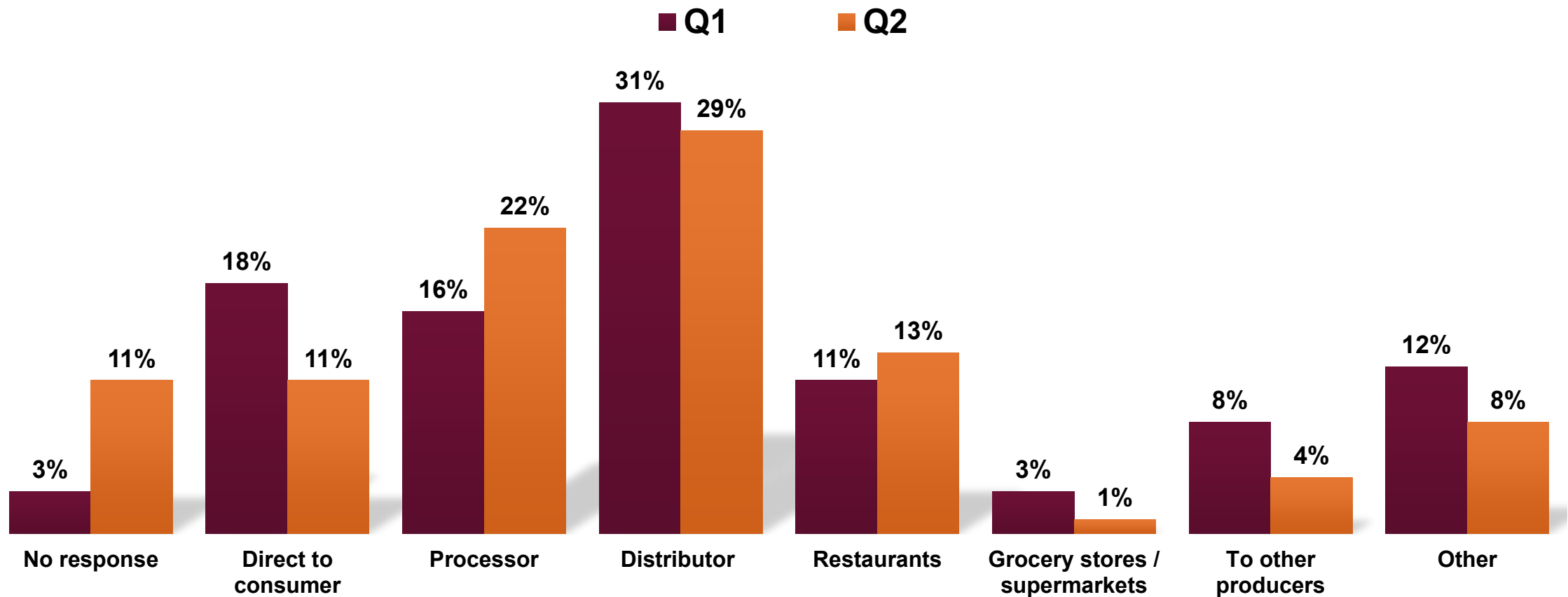
Respondent Characteristics

Scale of production (pre COVID-19)



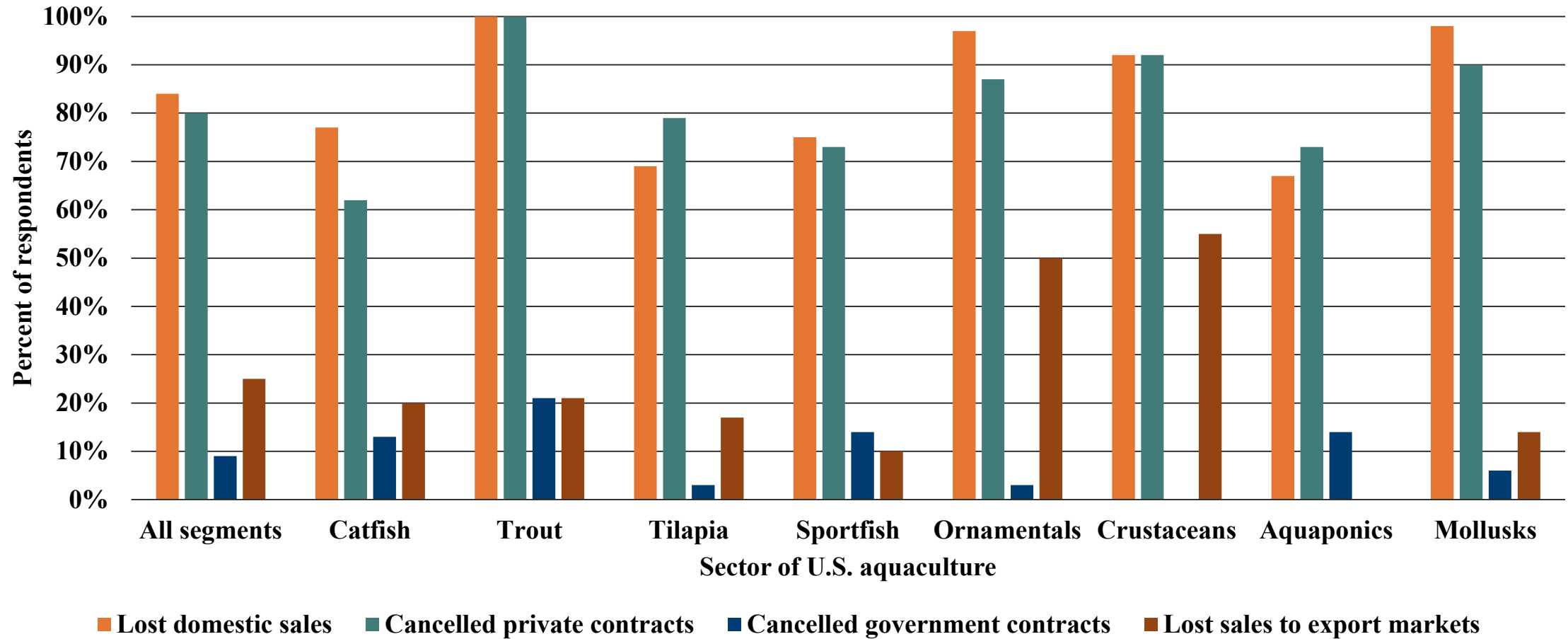
Respondent Characteristics

Primary marketing channels



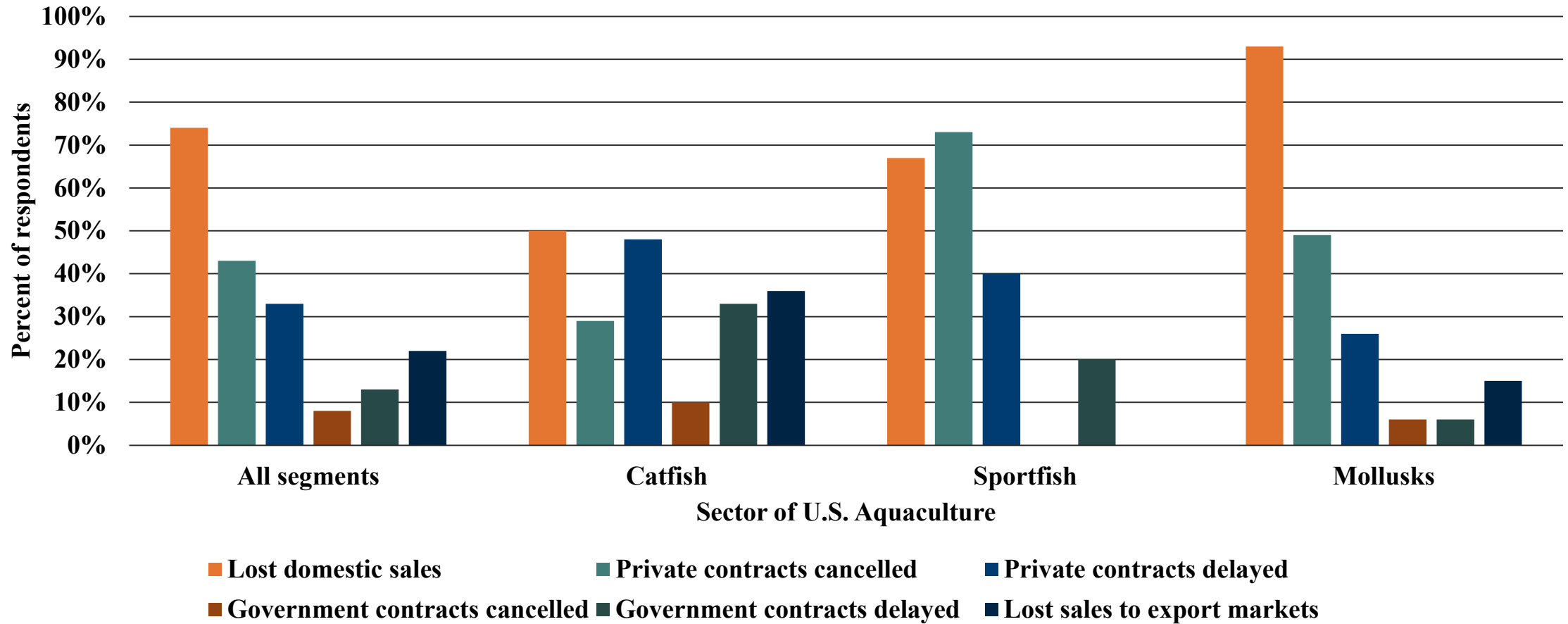
Q1 Lost sales

Lost sales and cancelled contracts in Q1



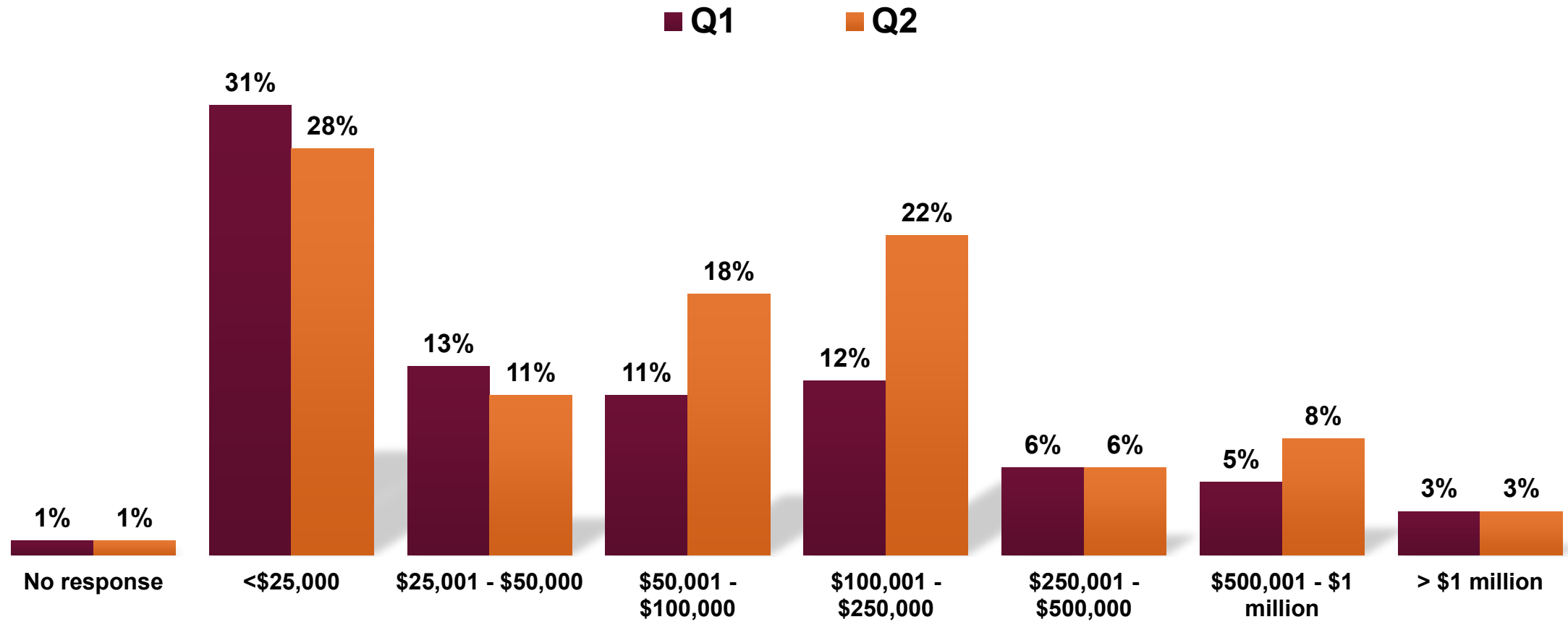
Q2 Lost sales

Lost sales and cancelled contracts in Q2



Lost sales

Value of lost sales in Q1 and Q2



Labor challenges

Effects on labor in Q1 and Q2

Response	Q1	Q2
No response	1%	4%
Laid off employees	33%	27%
No change	40%	50%
Will have to soon	26%	15%
Have hired additional employees	N/A	5%

Number of employees laid off	Q1	Q2
1 to 3	56%	64%
4 to 6	19%	24%
7 to 10	7%	3%
11 to 15	7%	3%
16 to 20	3%	0%
> 20	6%	6%

Number of weeks to make a decision	Q1	Q2
No response	1%	0%
< 1 week	15%	6%
1 - 3 weeks	54%	17%
4 - 6 weeks	22%	61%
7 - 10 weeks	7%	11%
> 10 weeks	2%	6%

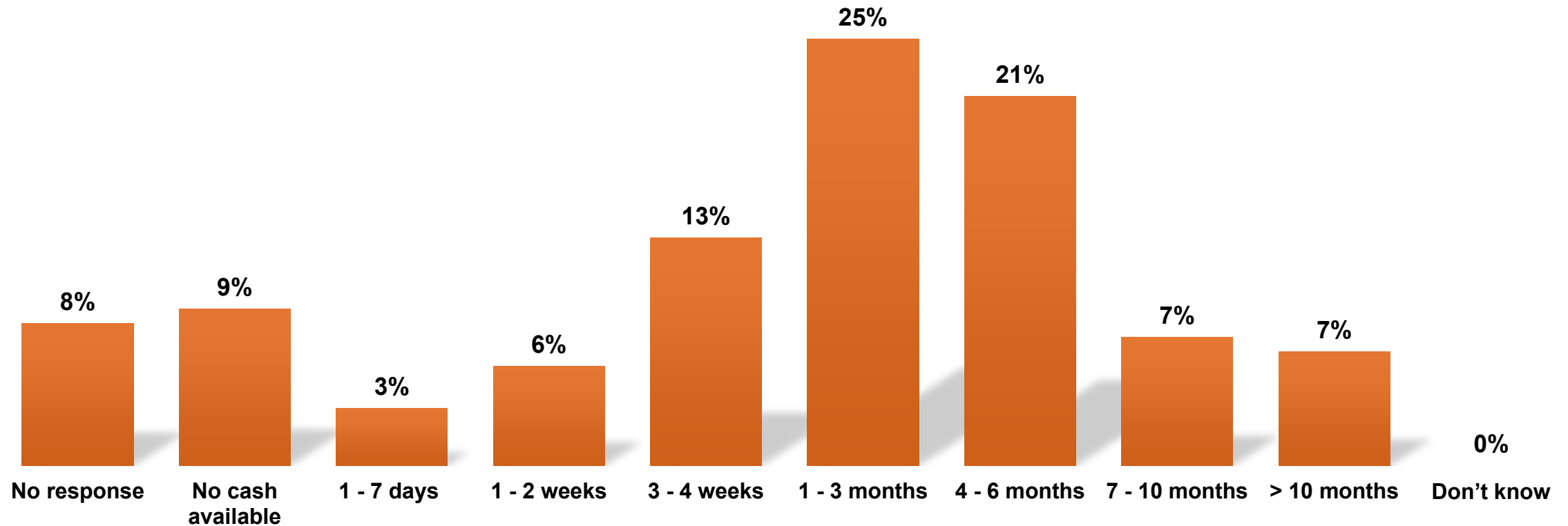
Production challenges

Effects on production in Q1 and Q2

Challenges experienced	Q1	Q2
Production inputs	43%	46%
Repair, construction, consultant, engineering services	32%	28%
Financial services	29%	28%
Other challenges	30%	36%
Cannot identify at this time	22%	10%

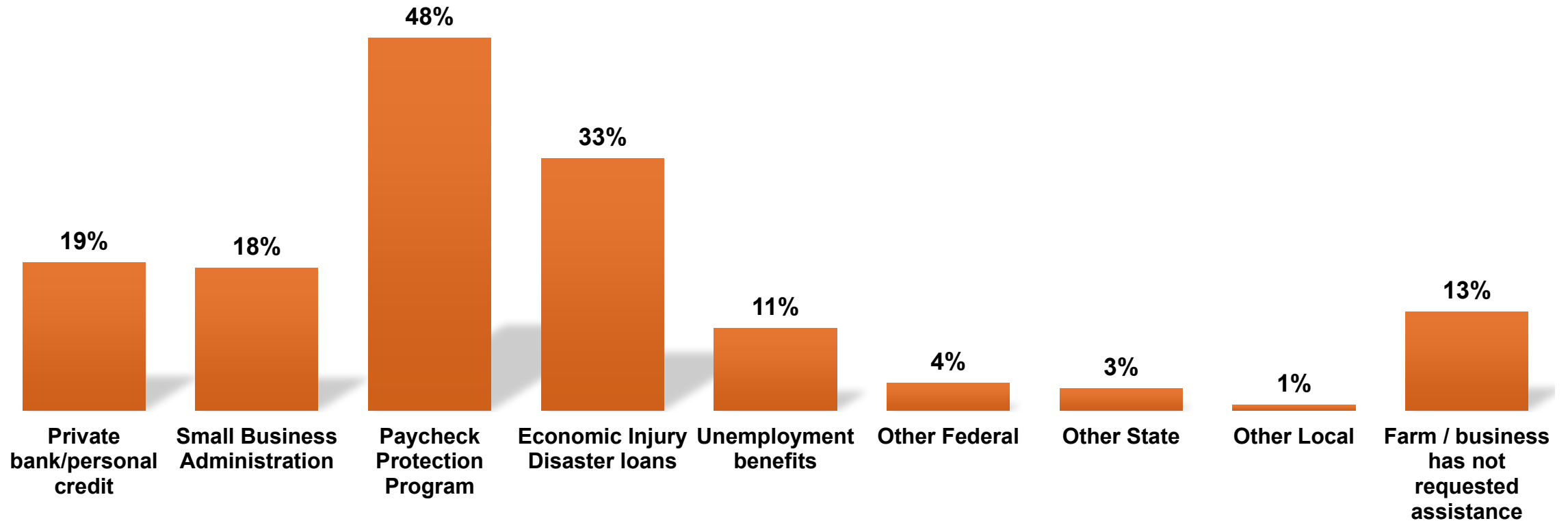
Q2 Cash On Hand

Availability of cash on hand (including financial assistance loans) in Q2



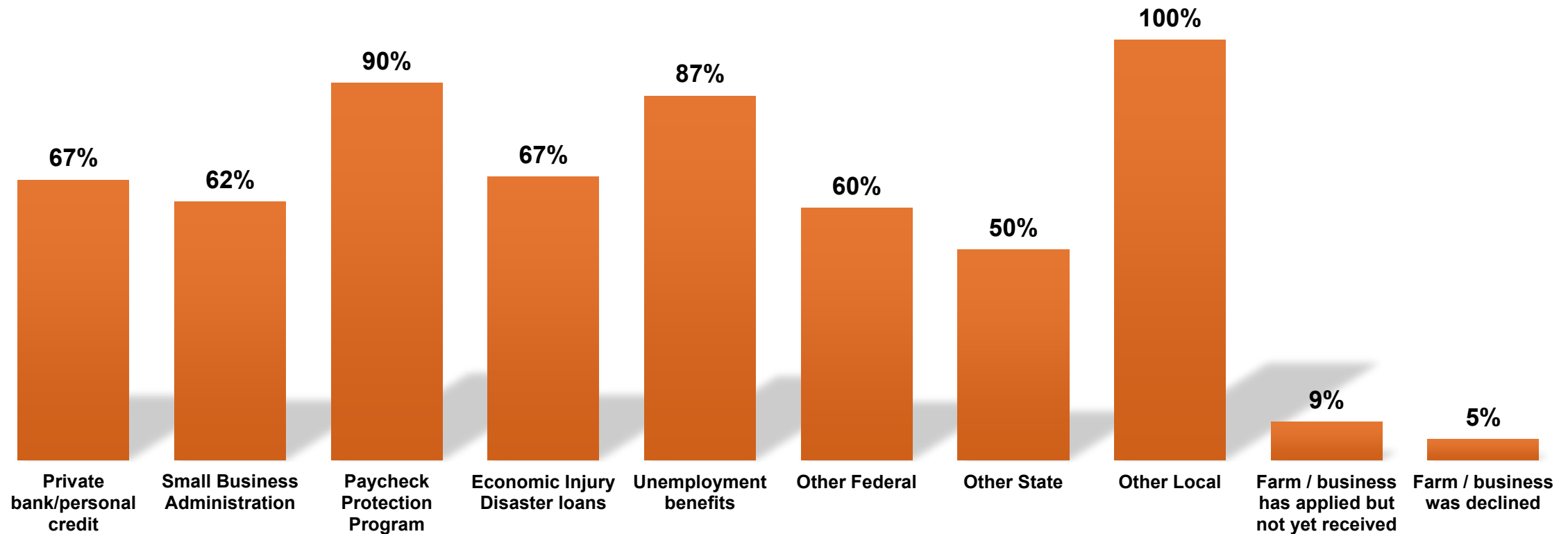
Q2 Loans or Financial Assistance

Loans or financial assistance programs applied for in Q2



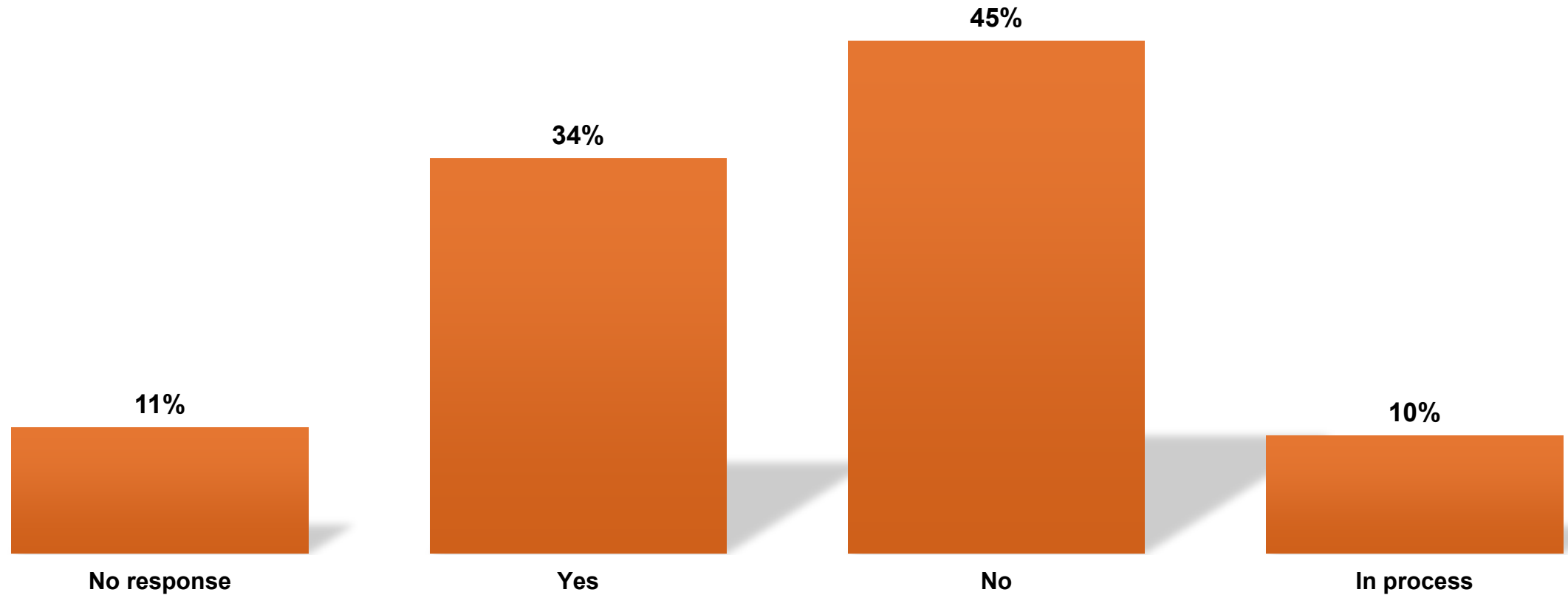
Q2 Loans or Financial Assistance

Loans or financial assistance programs received in Q2



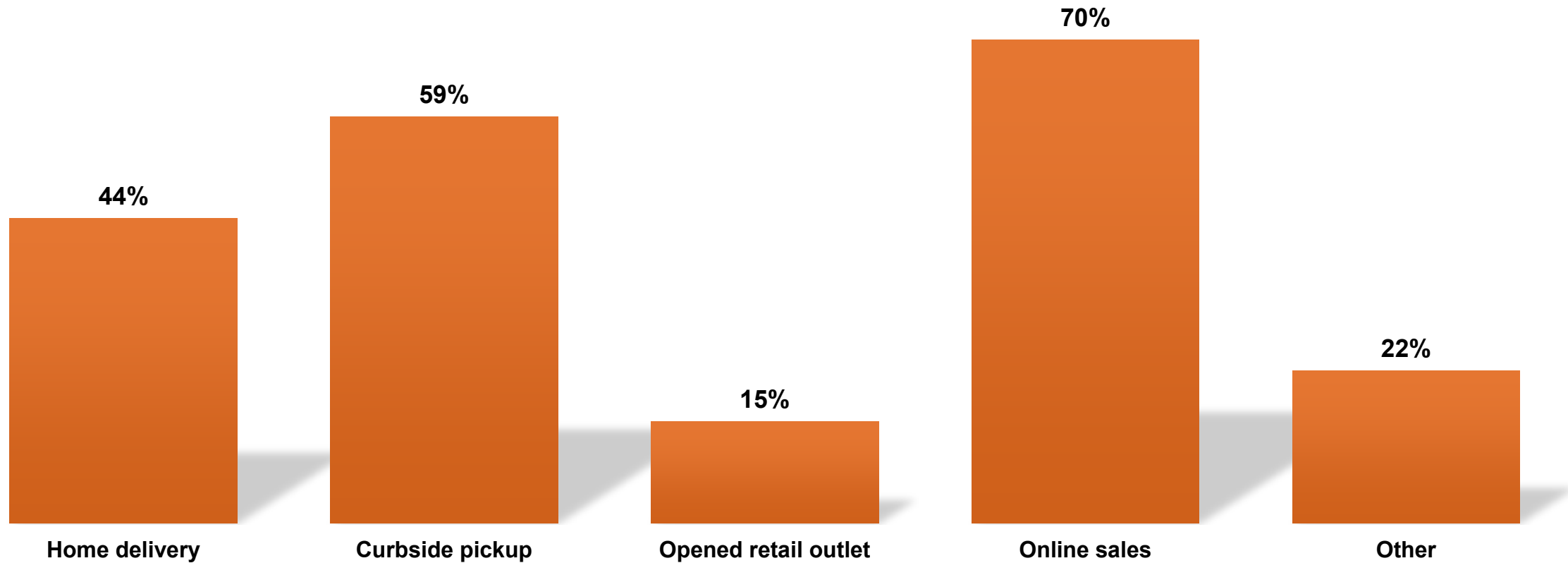
Q2 Marketing Channels

Implementing a new marketing channel in Q2



Q2 Marketing Channels

New marketing channels opened in Q2





Major Impacts and Effects

Lost sales

Labor Challenges

Production Challenges

Major Impacts and Effects as of the end of June, 2020

Lost Sales

- Lost sales and cancelled contracts were primarily the result of disrupted traditional marketing channels due to closures of restaurants and food service establishments.
- Disruptions at seafood processors, due to fears of COVID-19 outbreaks, likely also played a role in reduced farm sales.
- The cascading effects of market channel disruptions and the resulting loss of revenues, are therefore likely to present the U.S. aquaculture industry with continued challenges for the duration of 2020.

Major Impacts and Effects as of the end of June, 2020

Labor Challenges

- Farm labor impacts were driven primarily by the loss of revenue from marketing channel disruptions.
- In addition to terminations, and temporary loss of employees, respondents also reported salary cuts for owners and management positions.
- Several respondents raised concerns about the loss of specialized and skilled labor; describing an inability to manage production or processing activities because of a reduced labor force.
- Respondents also expressed concern about the health and wellbeing of their employees; noting efforts to implement revised protocols to allow for social distancing and purchasing of additional COVID-19 related personal protective equipment.

Major Impacts and Effects as of the end of June, 2020

Production Challenges

- Respondents also indicated that they experienced production-related challenges due to COVID-19.
- Respondents noted that holding inventory of market-ready products will interfere with their ability to start production of future crops.
- This would suggest that the disruptions caused by the COVID-19 pandemic may result in a supply shortage of U.S. aquaculture products beyond 2020, as some crops take multiple years to reach market size.

Conclusions as of the end of June, 2020

- A variety of specific challenges and impacts resulting from the COVID-19 pandemic.
- These impacts and effects can be summarized into the three broad categories; (1) the disruption of traditional marketing channels and resulting losses in revenue, (2) effects on labor, (3) challenges with inputs, goods, and services provided by other sectors of the U.S. economy.
- 13% of Q1 respondents said their farm or business would not survive 3 months without external intervention; increasing to 32% when the term was increased to 6 months without external intervention.
- 7% of Q2 respondents said that their farm or business would not survive 3 months without external intervention; increasing to 17% when the term was increased to 6 months without external intervention.
- Respondents indicate that Federal and State assistance will help their farm or business to survive.
- Results suggest that there will be longer-term economic effects for the U.S aquaculture industry.



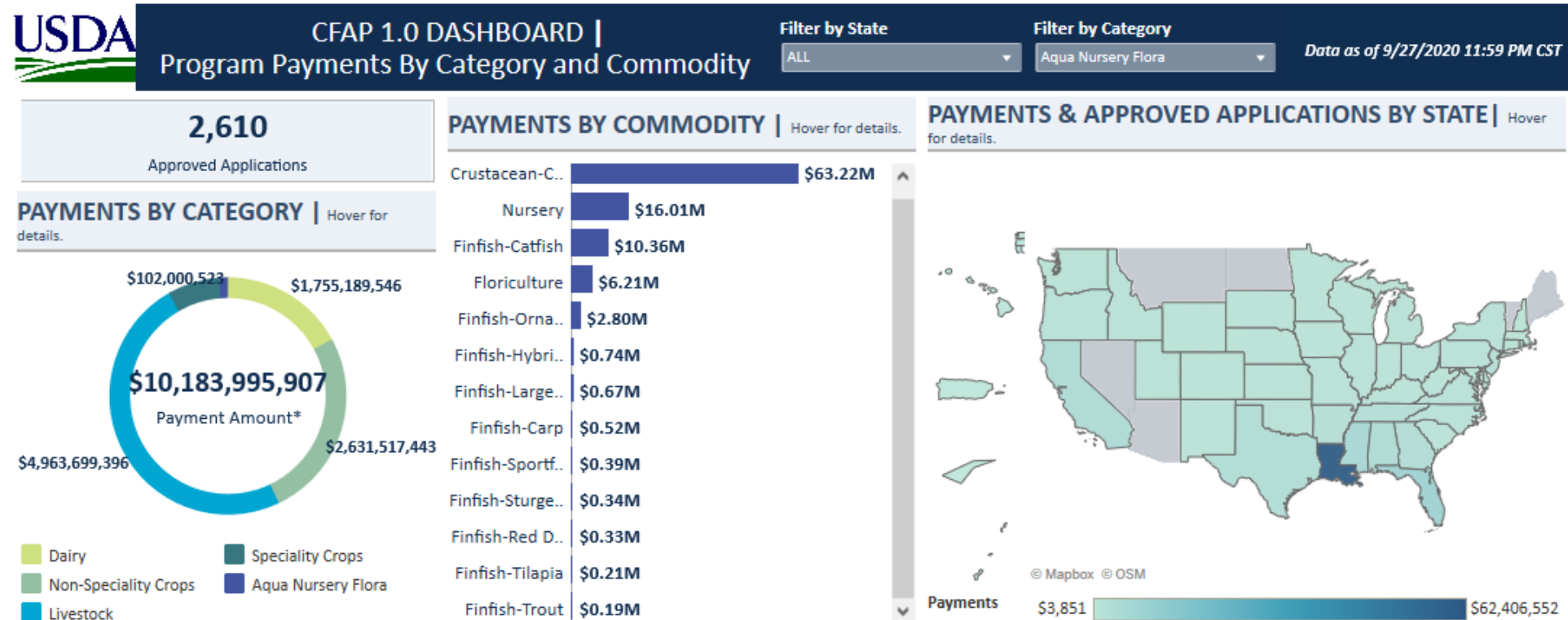
USDA-FSA CFAP 1

Coronavirus Food Assistance Program

- USDA-FSA CFAP 1 applications began August 17th and a number of aquaculture crops were eligible.
- CFAP 1 relief funds have provided much some needed cash relief for aquaculture farms.

USDA-FSA CFAP 1

Coronavirus Food Assistance Program





Additional information

Extension fact sheets and reports:

https://www.ares.vaes.vt.edu/ares/virginia-seafood/research/Impacts_of_COVID19.html

JWAS editorial:

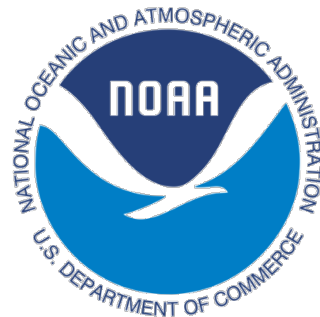
<https://onlinelibrary.wiley.com/doi/epdf/10.1111/jwas.12715>

Journal manuscript:

Submitted to Journal of Applied Economic Perspectives and Policy

THANK YOU

Project Sponsors



Q3 Survey:



https://virginiatech.qualtrics.com/jfe/form/SV_b1m0jYRZbgZeRLv