

# Scenarios to calculate the missing catch at age

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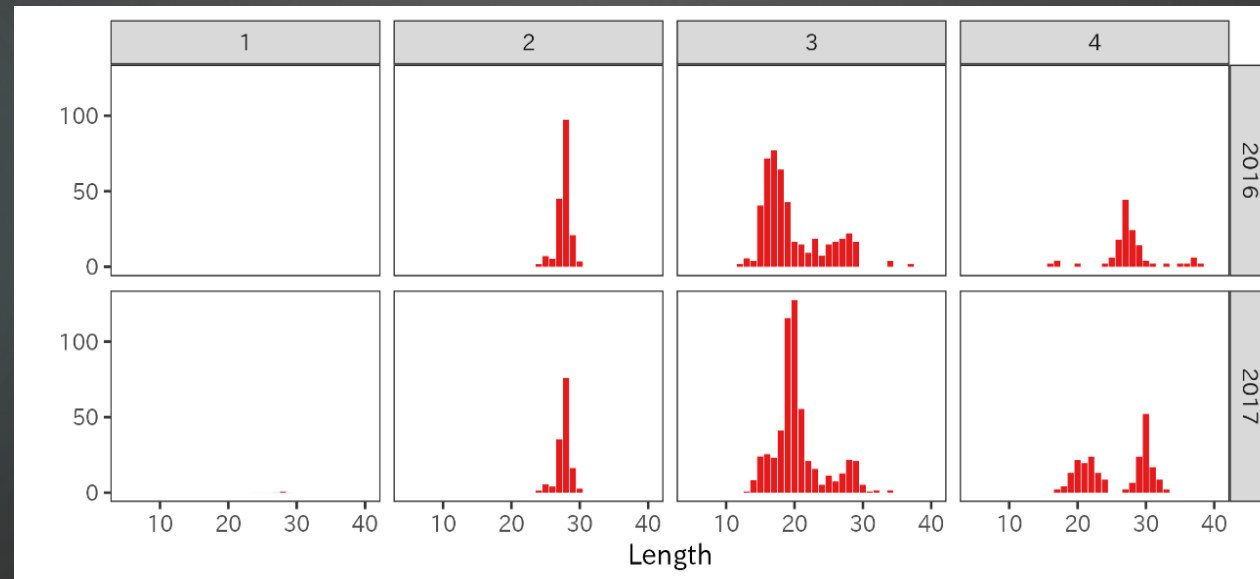
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# What's missing

- ▶ China
    - ▶ 2015 Missing Catch-at-Length (quarterly/yearly) and ALK
    - ▶ 2016 Missing ALK, quarterly Catch-at-length available
    - ▶ 2017 Missing ALK , quarterly Catch-at-length available
  - ▶ Russia
    - ▶ 2014 Missing Catch-at-Length (quarterly/yearly)
    - ▶ 2015 Missing Catch-at-Length (quarterly/yearly)
- \* Russia uses ALK from Eastern Japan

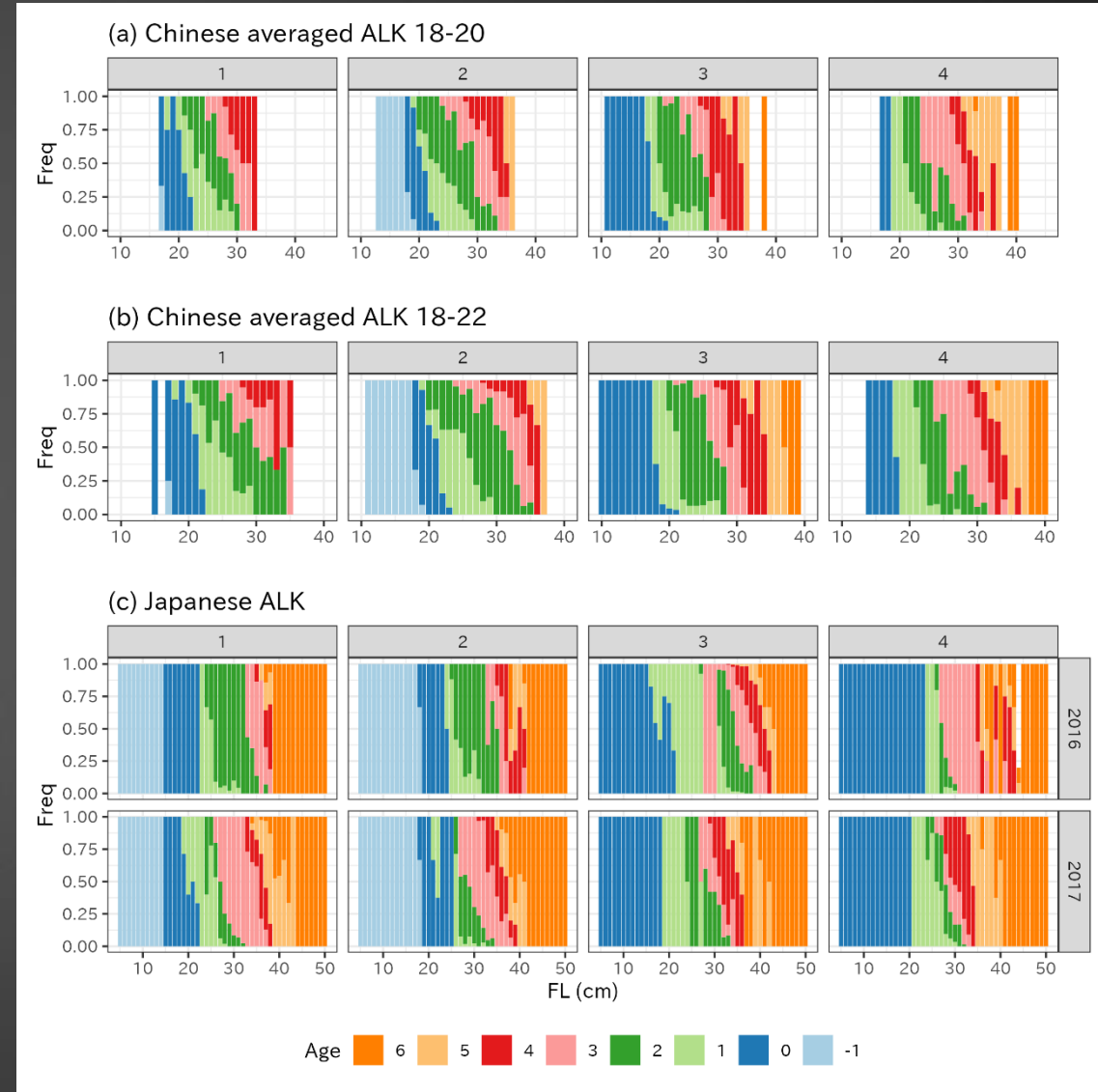
# Calculate Chinese CAA 2016-2017

- ▶ Chinese length compositions are available, but ALK is missing
- ▶ Three scenarios for alternative ALK
  - ▶ Use average Chinese ALK from 2018-2020 (*Ave1820*)
  - ▶ Use average Chinese ALK from 2018-2022 (*Ave1822*)
  - ▶ Use Eastern Japanese ALK from the equivalent quarter/year



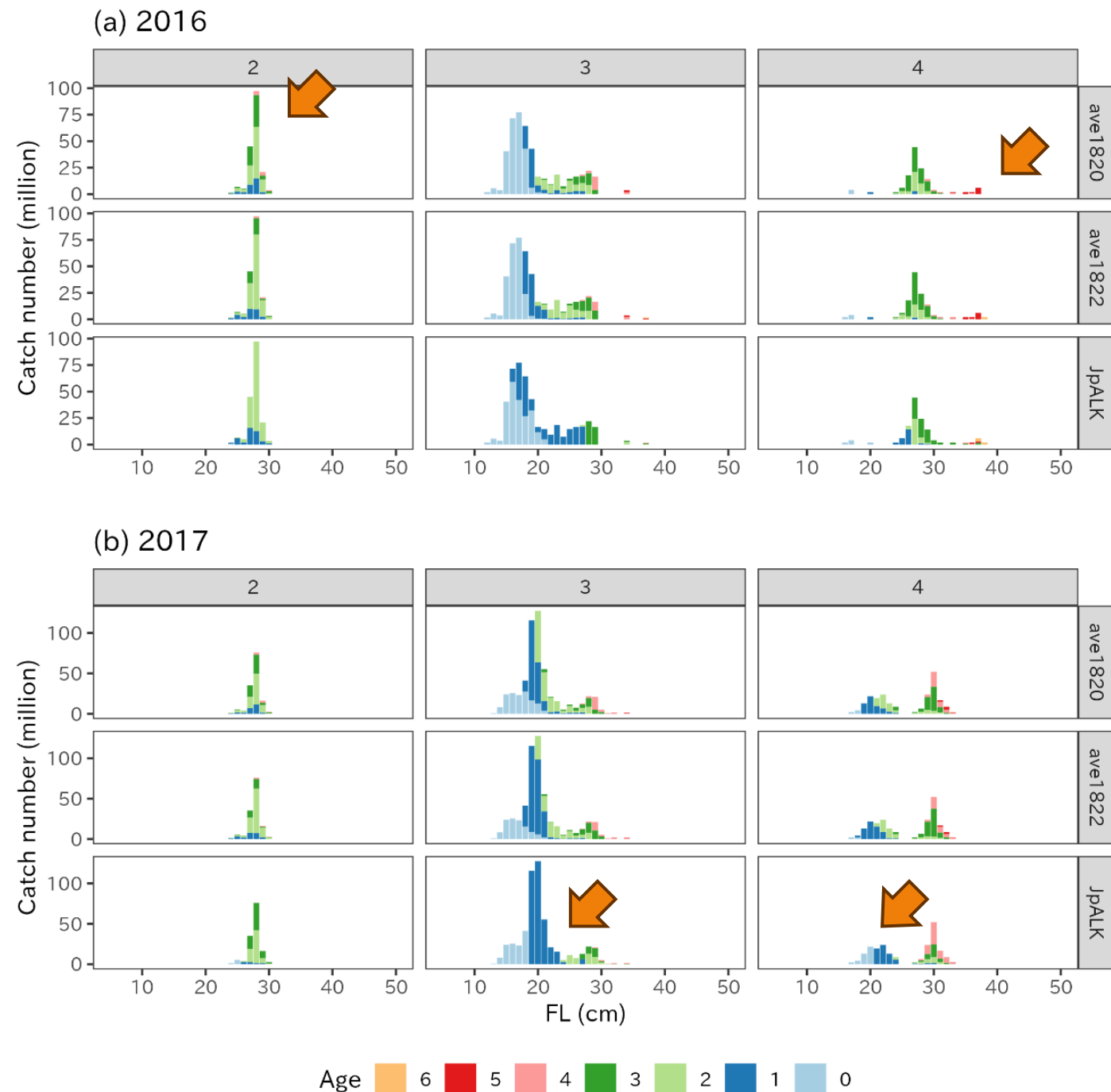
# Alternative ALKs for China 2016-2017

- ▶ The difference in age composition pattern is not significant among Chinese ALKs
  - ▶ Slightly larger proportion of age-minus1 in Q2 for ALK 2018-2022
- ▶ Japanese ALK describes the actual age composition at the adjacent region
  - ▶ Greater proportion of age-0 and age-1 in Q3 in 2016 and 2017 than two Chinese counterparts



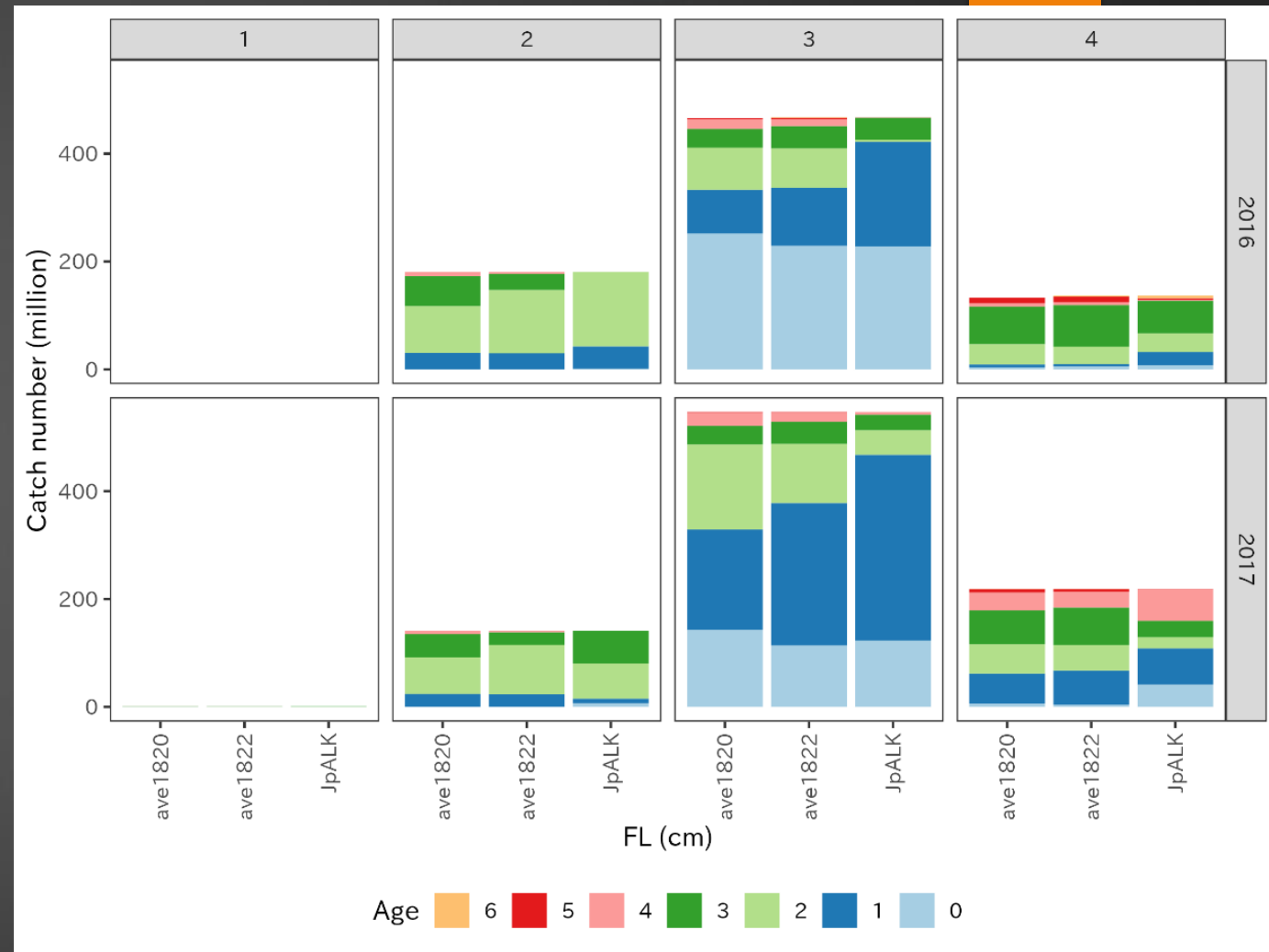
# Catch at age 2016-17

- ▶ Chinese ALKs (Ave1820, Ave1822) estimate larger number of age-3 and age-4 in Q2 and Q3
- ▶ Japanese ALK allocates more age-0 to age-3 fish in Q2-4.
- ▶ The difference in ALK affect strongly in 2016/Q2 for 27-28cm FL and 2016/Q Q4 for 35-38cm FL.
- ▶ Japanese ALK yields more age-0 and age-1 fish in 2017/Q3 and 2017/Q4



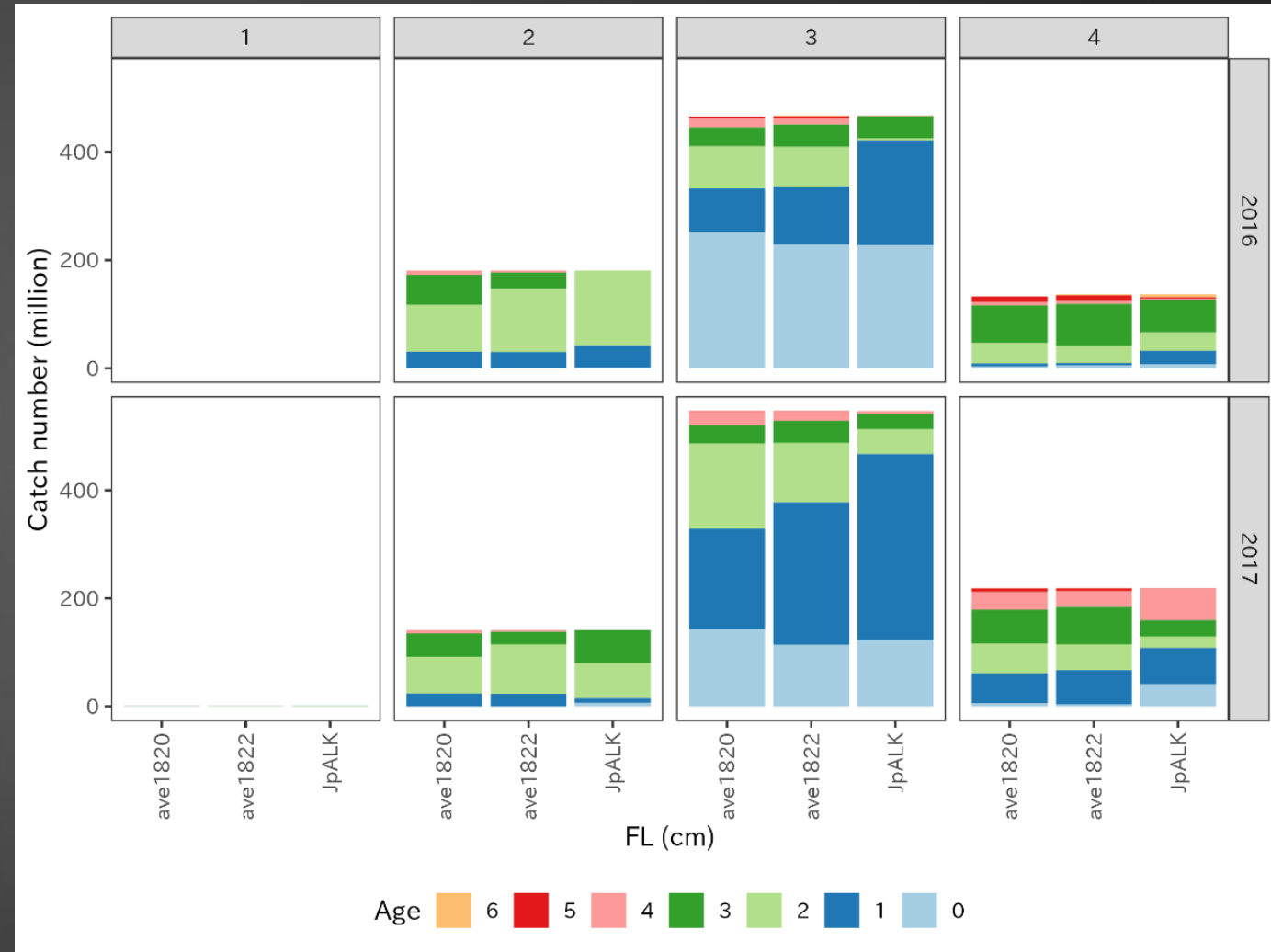
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# Recommendation on Chinese CAA 2016-17

- ▶ ALK is variable on yearly basis
- ▶ Introduction of 2013-year class changed the growth pattern
- ▶ When the ALK of the equivalent year is available, it is better to refer to the data
- ▶ Usage of Eastern Japanese ALK is recommended to calculate Chinese CAA for 2016-2017



# Calculating CAA for the data-less years

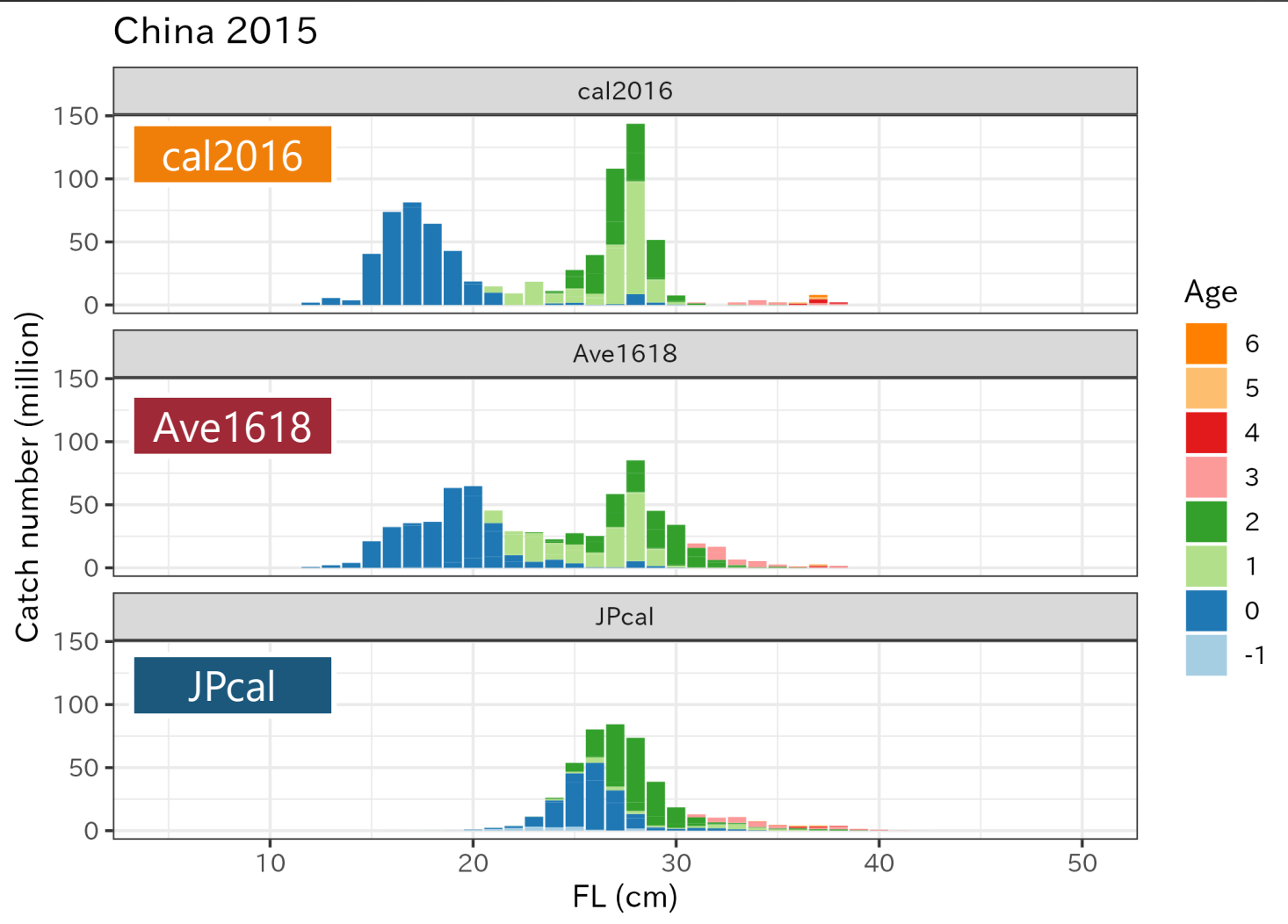
- ▶ Catch-at-length and ALK are both unavailable
  - ▶ China 2015
  - ▶ Russia 2014-2015
- ▶ Three scenarios are used to estimate CAA

Scenarios	Pros	Cons
Use Catch at length from 2016 <b>(Cal2016)</b>	The most recent available data of own member	Stick to single year size composition
Use mean Catch at length from 2016-2018 <b>(Ave1618)</b>	More stable length composition of own member	Referring to length composition far away from 2014-2015
Use Catch at length from Eastern Japan for 2014 and 2015 <b>(JPCal)</b>	Able to represent the actual length composition of the equivalent year	Catch composition itself may differ among members



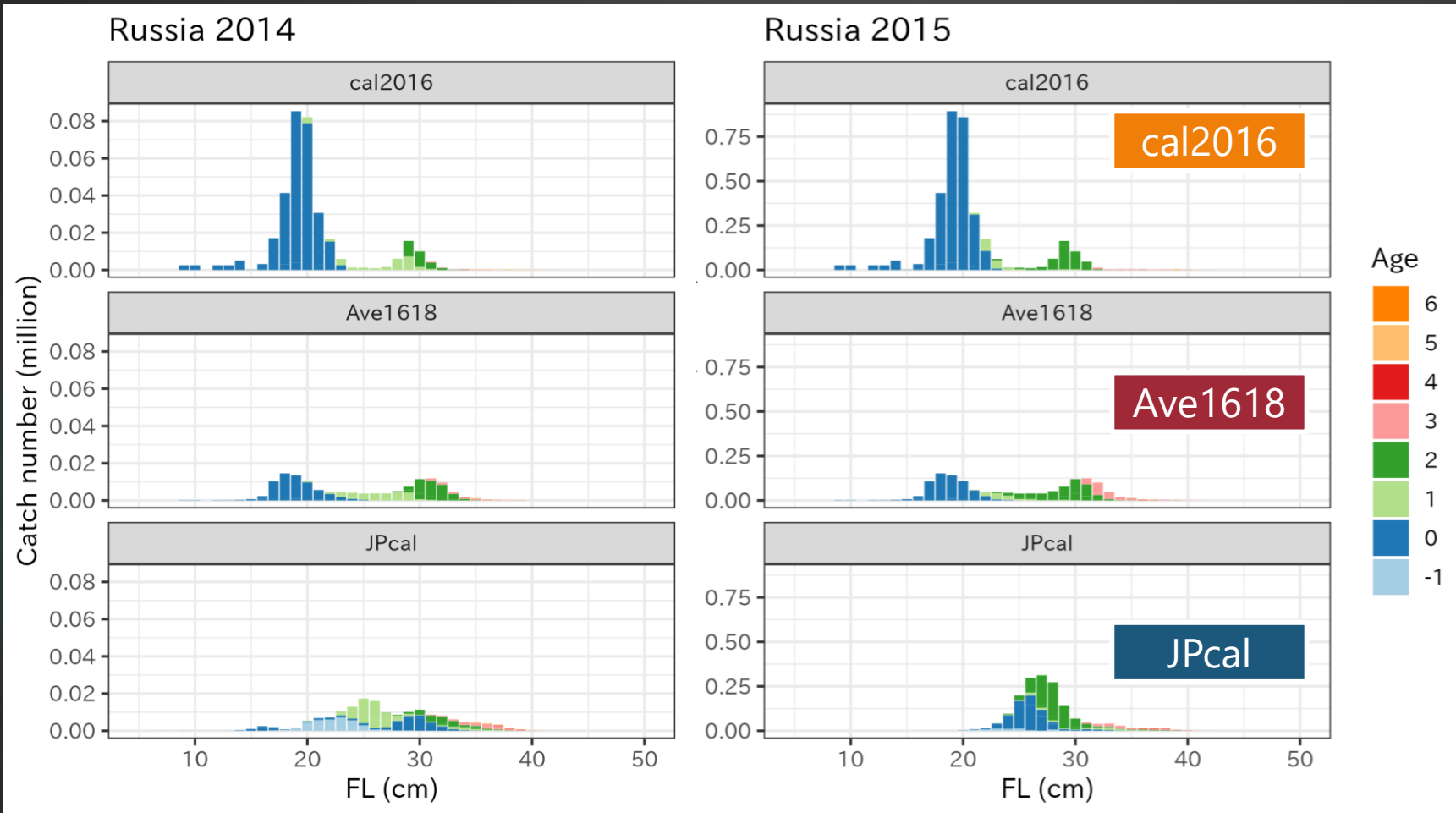


# Chinese CAA for 2015



- ▶ **Cal 2016** and **Ave1618** both catch age-0 and age-1 and 2
- ▶ **Ave1618** has more CAA with >20cm FL
- ▶ **JPcal** is densely packed into 20-30cmFL with long tail to the right
- ▶ Total number of **JPcal** is low, due to heavier Japanese WAA, which affect during the calculation of ratio between Chinese and Japanese catches

# Russian CAA for 2014



- ▶ The size composition is the same for 2014 and 2015 under cal2016 and Ave1618
- ▶ CAA of 2014 is very little (owing to 44 tons of catch)
- ▶ Cal2016 has prominent peaks in age-0

# Recommendation for CAA

- ▶ Considering the effect of different WAA, Jpcal should be avoided
- ▶ Since 2016 has distinct pattern in age-0 peak, utilization of the sole 2016 catch-at-length may skew the catch in 2014-2015
- ▶ It is recommended to use Ave1618 scenario to estimate the catch in 2014-2015 for China and Russia

