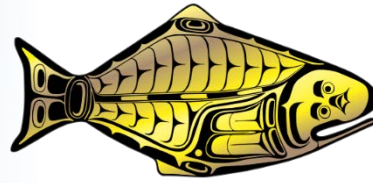


INTERNATIONAL PACIFIC



HALIBUT COMMISSION

**Pacific halibut multiregional
economic impact
assessment (PHMEIA):
update for the SRB018**

Agenda Item 8

IPHC-2021-SRB018

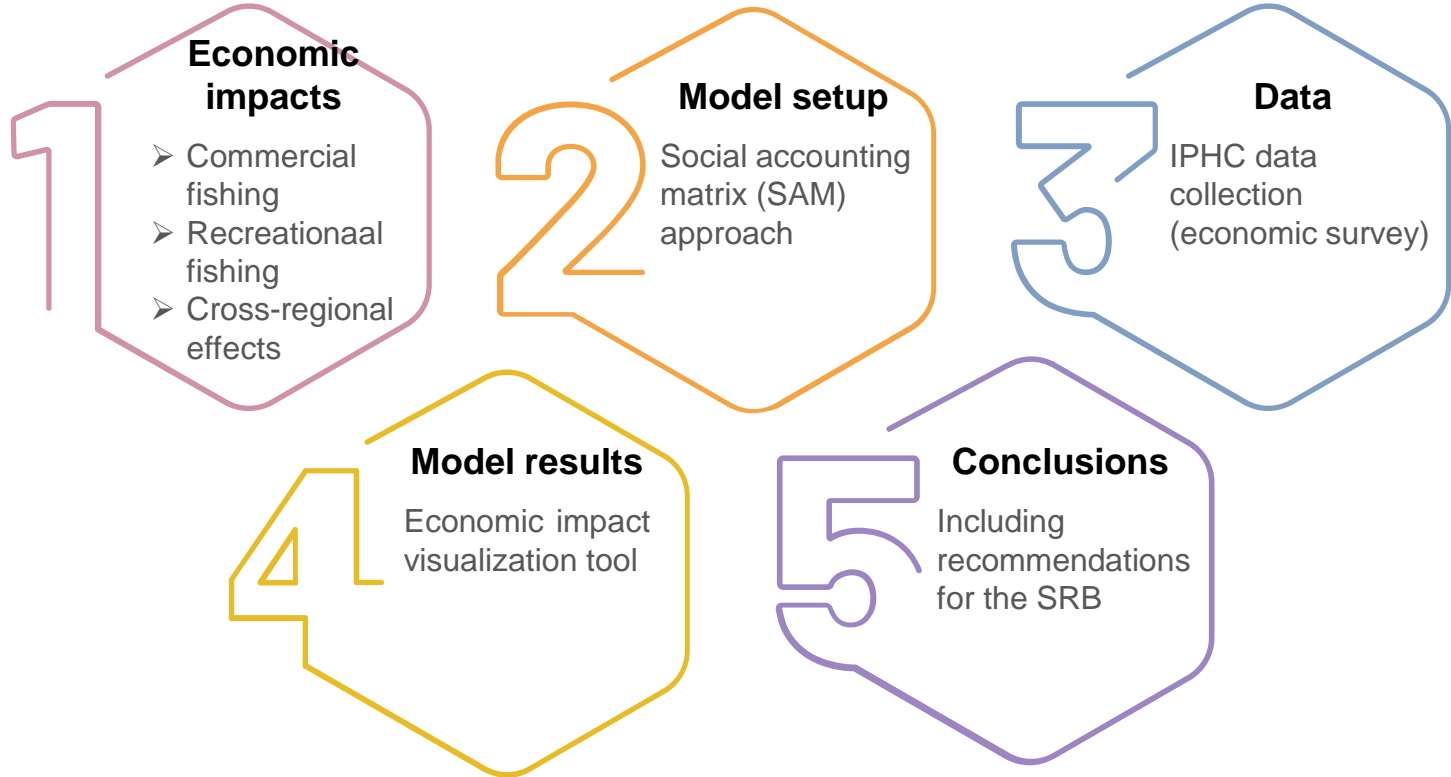
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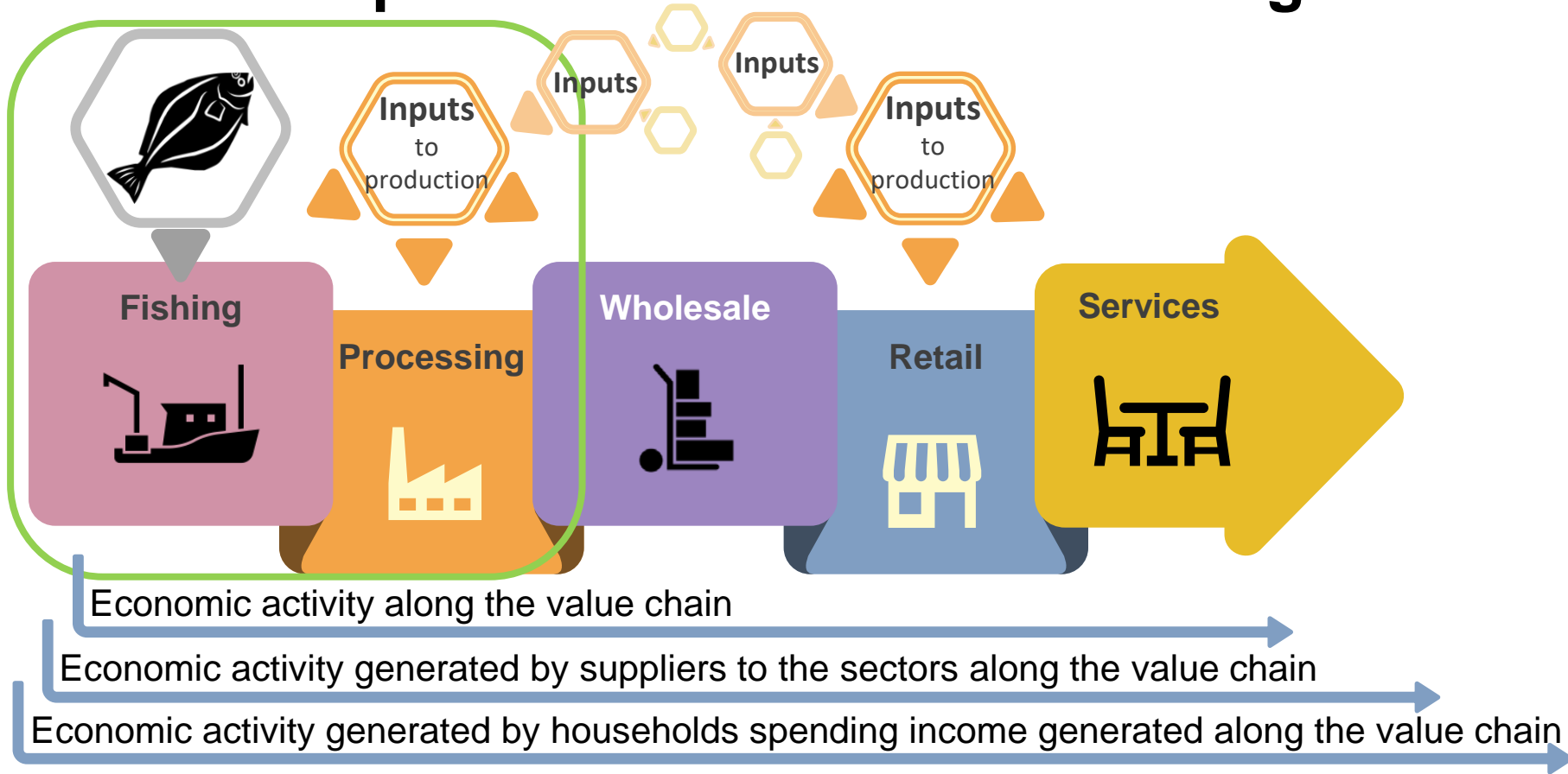
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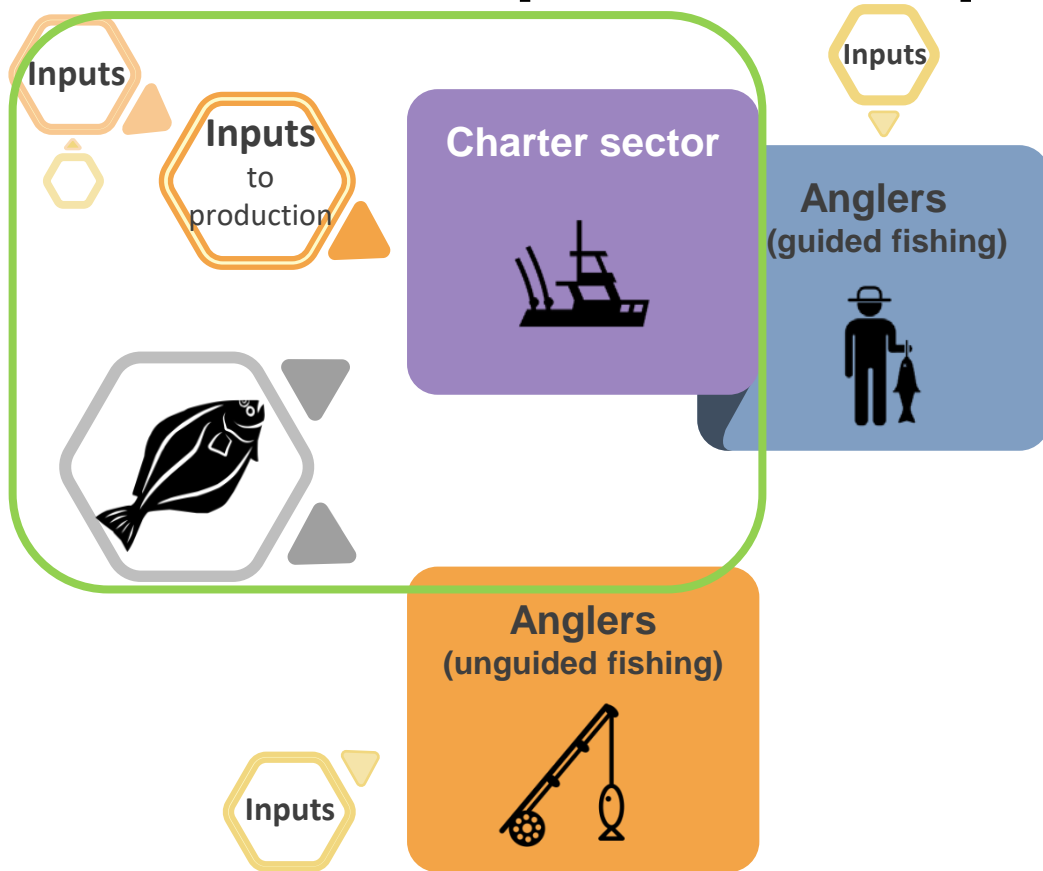
Outline



Economic impact of the commercial fishing sector



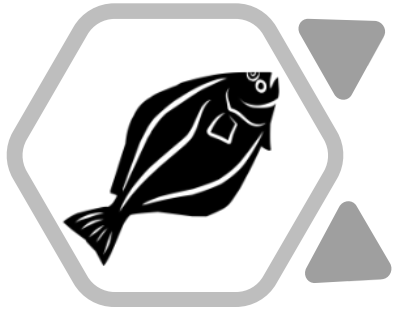
Economic impact of the sport fishing sector



- Economic activity of businesses directly dependent on the access to the resource
- Economic activity generated by suppliers to the resource-dependent businesses
- Economic activity generated by supplying anglers (guided and unguided)
- Economic activity generated by households spending income dependent on recreational fishing (guided and unguided)



Multiregional effects



Economic impact in
the area of resource
extraction



Cross-regional
impacts



➤ Monetary flows related to
inputs to production

➤ Monetary flows related to
final consumption

➤ Wages earned by residents
vs. non-residents

➤ Profit from quota owned by
residents vs. non-residents



Economic impact (EI) components

- **Direct EIs**
- **Indirect EIs**
- **Induced EIs**
- **EIs generated through forward-linked industries**



Economic impact (EI) metrics

- **Output**
- **Wages**
- **Value added/GDP**
- **Employment**
- **Household income**

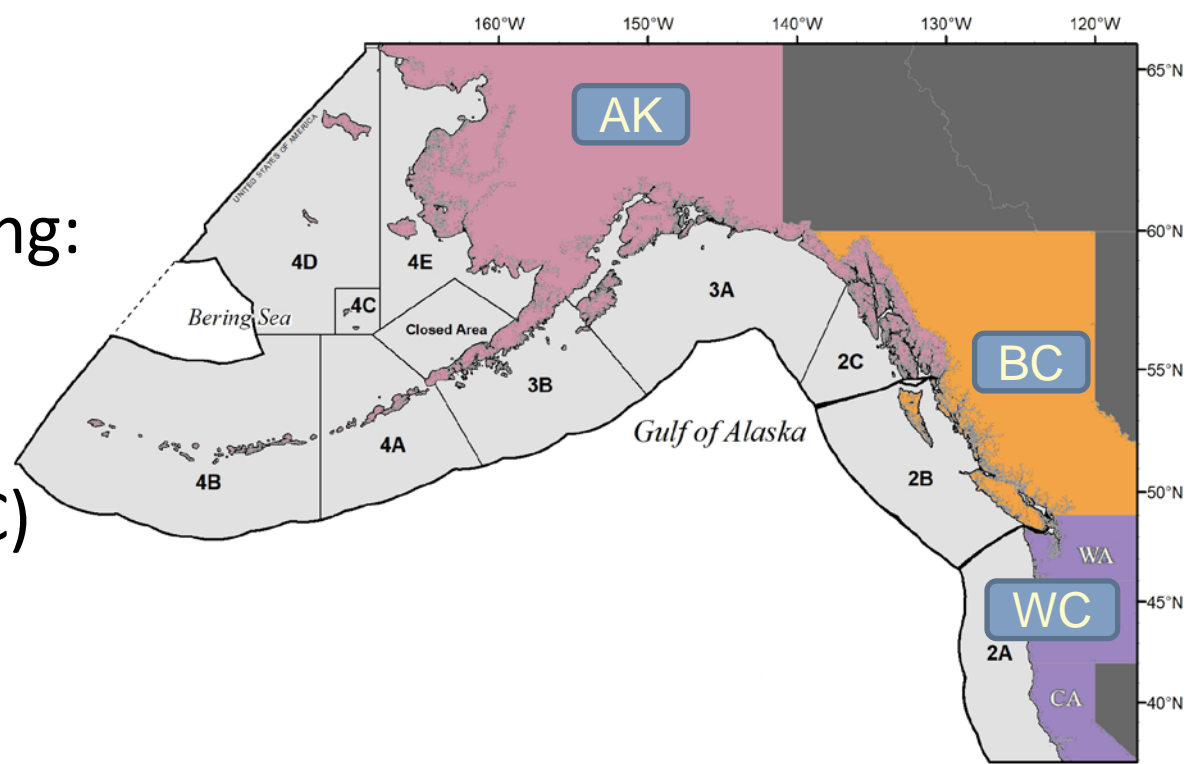
EI measured in absolute terms
vs. thinking in terms of margins



Regions

Pacific halibut producing:

- Alaska (AK)
- West Coast (WC)
- British Columbia (BC)
- Rest of the US (RUS)
- Rest of Canada (ROC)
- Rest of the world (ROW)*



The Model (1/4)

		Producers as consumers				Final demand			
		Industry 1	Pacific halibut fishing	Industry 3	Industry X	Personal consumption	Government purchases	Capital formation	Net exports
Producers	Industry 1								
	Pacific halibut fishing								
	Industry 2								
	Industry X								
Value added	Employment	Employee compensation				GROSS DOMESTIC PRODUCT (GDP)			
	Business owners	Business owners' profits							
	Government	Indirect business taxes							

Manufacturing (e.g., vessel building)

Seafood processing

Private buyers

Services (vessel insurance)

Value added



The Model (2/4)

		Producers as consumers				Final demand			
		Industry 1	Sport fishing sector	Industry 3	Industry X	Personal consumption	Government purchases	Capital formation	Net exports
Producers	Industry 1								
	Sport fishing sector								
	Industry 2								
	Industry X								
Value added	Employment	Employee compensation				GROSS DOMESTIC PRODUCT (GDP)			
	Business owners	Business owners' profits							
	Government	Indirect business taxes							

Manufacturing (e.g. vessel building)

Anglers "consuming" fishing trips

Retail (e.g. trip supplies)

Value added



The Model (3/4)

		Region 1		Region 2			
		industries	commodities	industries	commodities		
Region 1	ind		Make matrix – V1 (reg 1)				Total industry output (reg 1) – x1
	com	Use matrix – U1 (reg 1)			Transaction matrix T12 (reg 1 to reg 2)	Final demand (reg 1) – FD1	Total commodity output (reg 1) – q1
Region 2	ind				V2 (reg 2)		Total industry output (reg 2) – x2
	com		Transaction matrix T21 (reg 2 to reg 1)	U2 (reg 2)		Final demand (reg 2) – FD2	Total commodity output (reg 2) – q2
		Value added (reg 1) – VA1		Value added (reg 2) – VA2			
Total inputs		x1	q1	x2	q2		

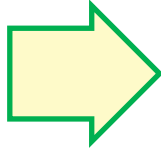


The Model (4/4)

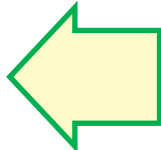
➤ Exported production outputs

➤ Services offered by the charter sector to nonresidents

		Region 1 (R1)					
		Industries	Commodities	LAB	PROP	Earnings	Households
Region 1 (R1)	I		V1				
	C	U1					Households' expenditure (R1)
	LAB	Employee compensation (R1) - LAB1					
	PROP	Proprietor income (R1) - PROP1					
	EARN			Net income from LAB1	Net income from PROP1		
	HH					Net earnings by place of residence (R1)	



Export of commodities from region 1



Inflow of earnings to region 1

➤ Wages earned by nonresidents

➤ Profit from quota owned by nonresidents



Import of commodities by region 1

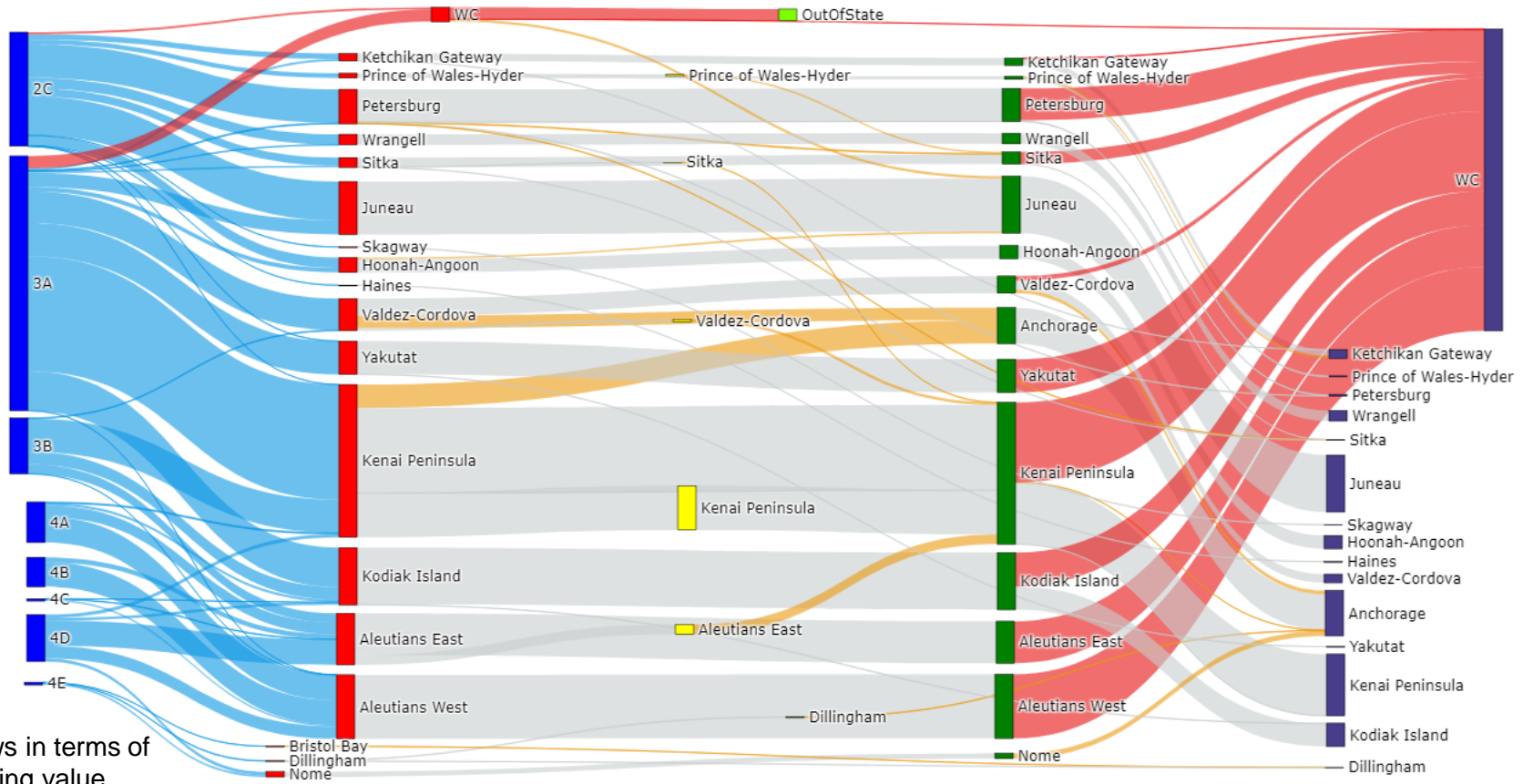


Leakage/outflow of earnings from region 1

➤ Imported inputs to production



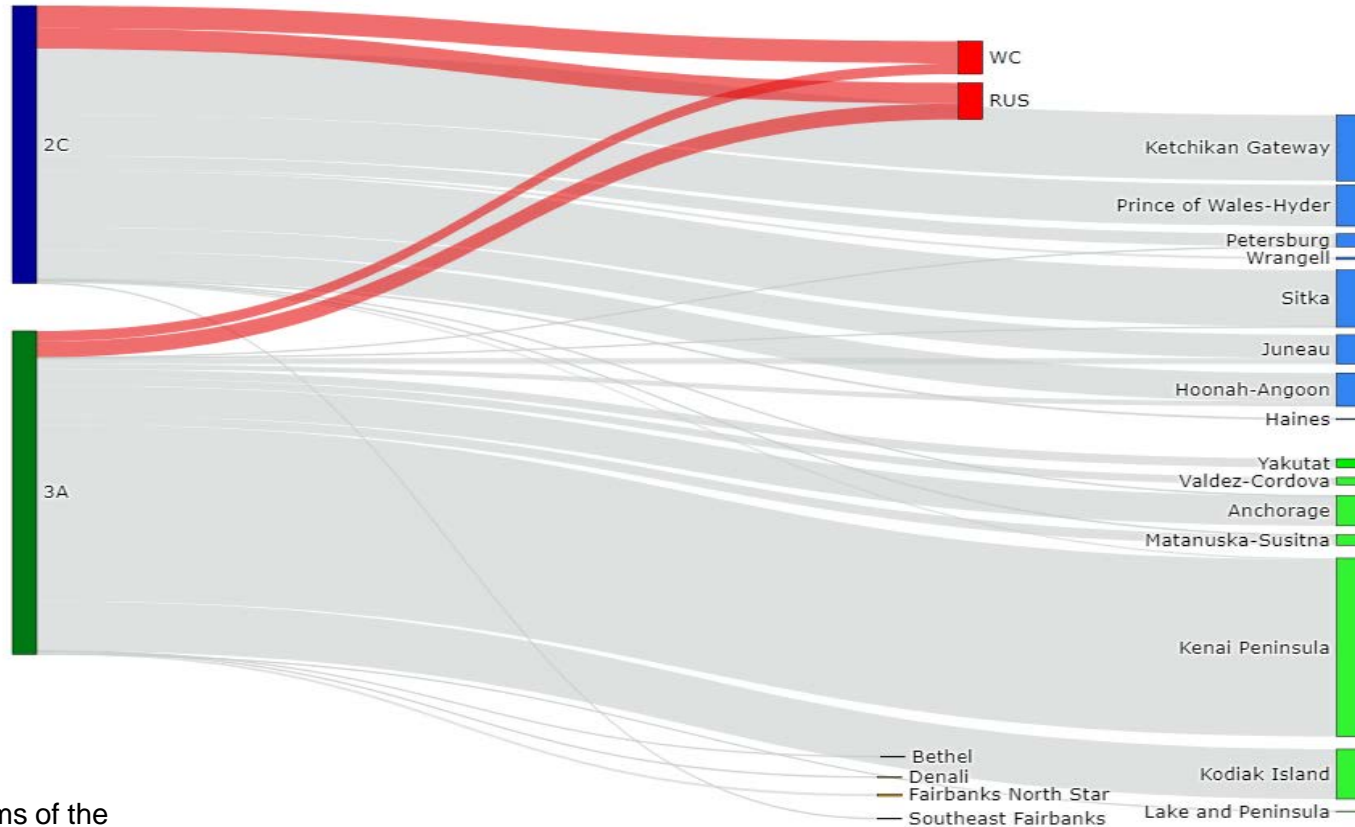
Flows in the commercial sector



Flows in terms of landing value



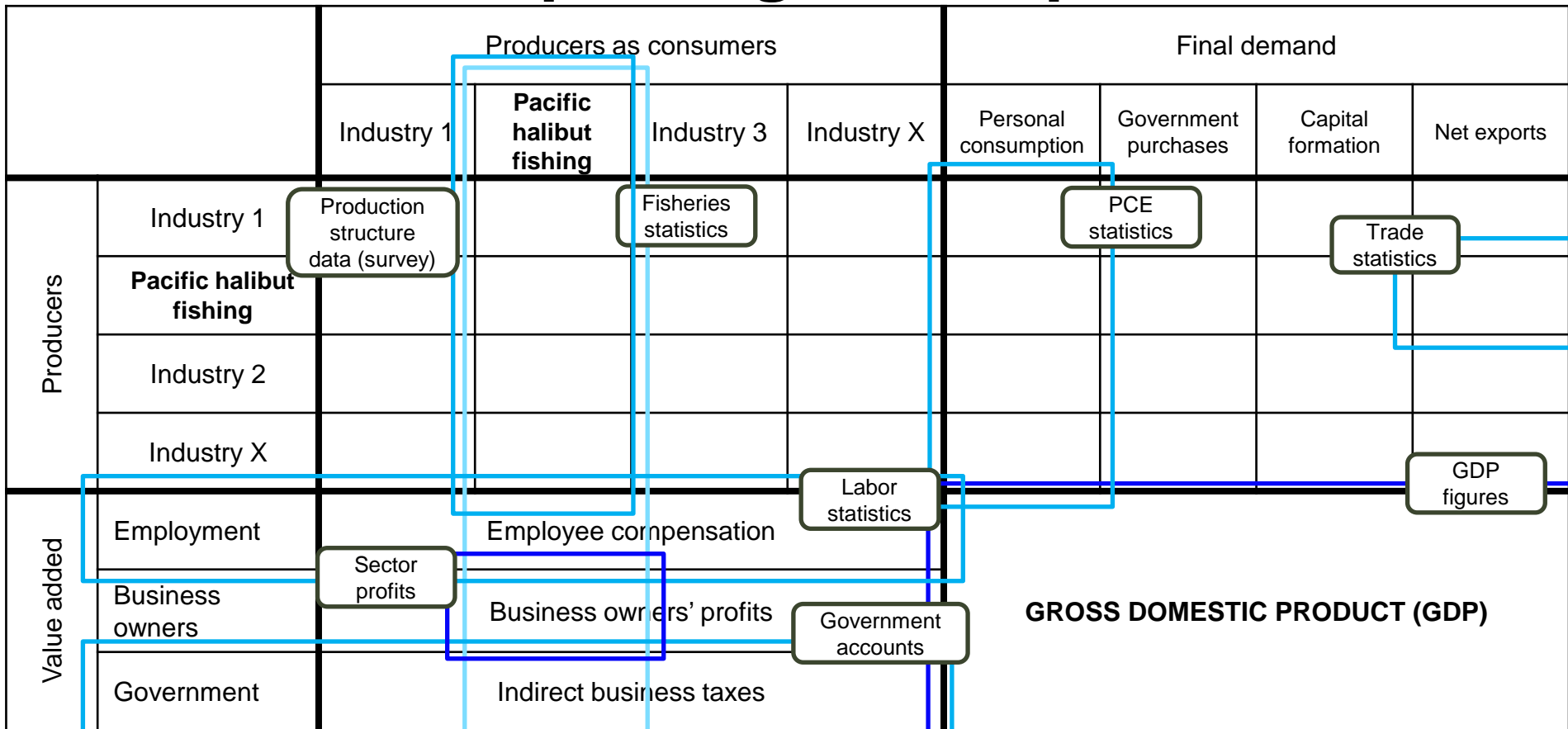
Flows in the charter sector



Flows in terms of the number of endorsed anglers



Note on the updating technique



Data

Secondary data use vs. collecting primary data

IPHC economic surveys:

- [Commercial Vessel Expenditures Survey](#)
- [Processing Plant Expenditures Survey](#)
- [Charter Sector Expenditures Survey](#)



Latest survey results – tool

[Result summary app](#)

Last updated: April 21, 2021

Revenue/cost results for the commercial sector - Alaska

Select region and management program

AK all

Select year

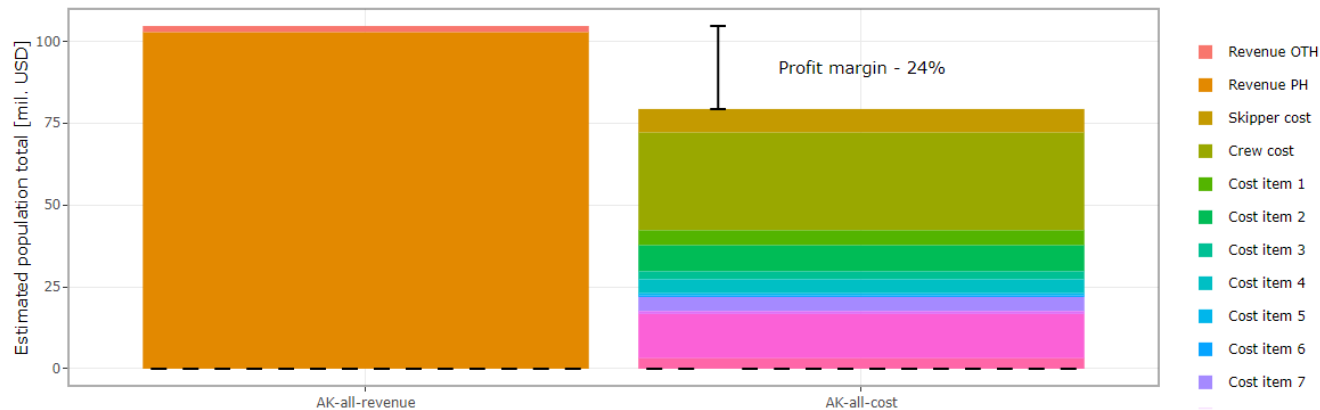
2019

Select statistics to display

Vessel average

Population total

Comparison of revenue and cost (profitability)



Covid-19 impact on primary data collection

Benefits of filling for:

2019 – pre-COVID-19, baseline year, suitable to draw conclusions under normal circumstances

2020 – abnormal year, assessment of incurred losses and sectors' resilience

2021 – post-crisis, path to recovery



Results for the commercial sector (1/2)

Value of landings [2019]	USD 126.4 mil. / CAD 167.7 mil.	Value per 1 mil. USD of output
Economic impact - output	USD 665.2 mil. / CAD 882.6 mil	5.3
Economic impact – contribution to the GDP*	USD 194.2 mil. / CAD 257.7 mil.	1.5
Economic impact – wages	USD 134.3 mil. / CAD 178.2 mil.	1.1
Economic impact - employment	4,326 jobs	34
Household income	USD 178.4 mil / CAD 236.7 mil.	1.4

*in this setting, equivalent to earnings



Results for the commercial sector (2/2)

Effect of incorporating Pacific halibut specific outflows - impact on households per 1 USD of Pacific halibut output in Alaska [2019]

	Model with no Pacific halibut specific outflows	Model with Pacific halibut specific outflows
Households in Alaska	0.71	0.58
WC households	0.11	0.21
RUS households	0.41	0.42

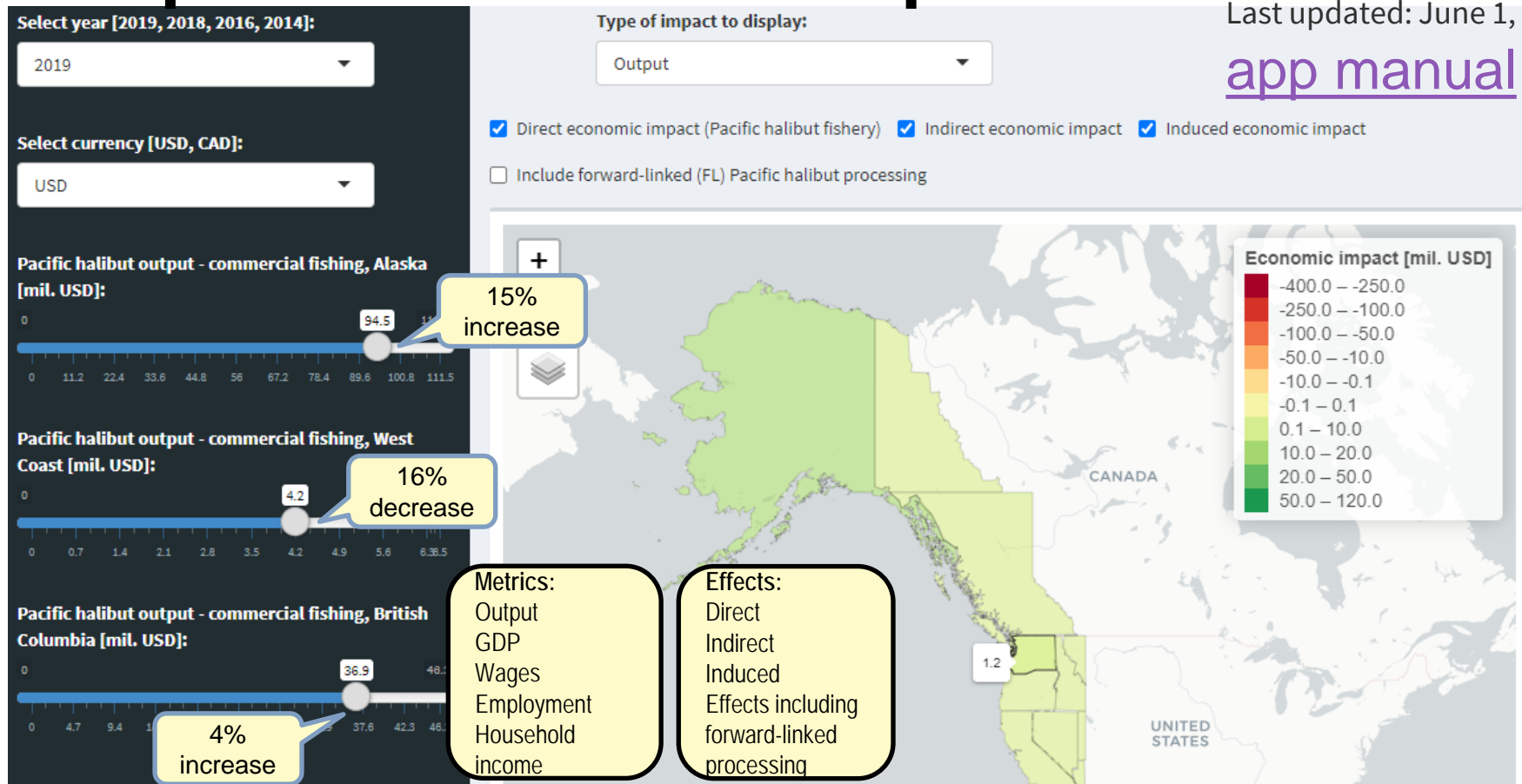


Map of the economic impact

[web-based tool](#)

Last updated: June 1, 2021

[app manual](#)

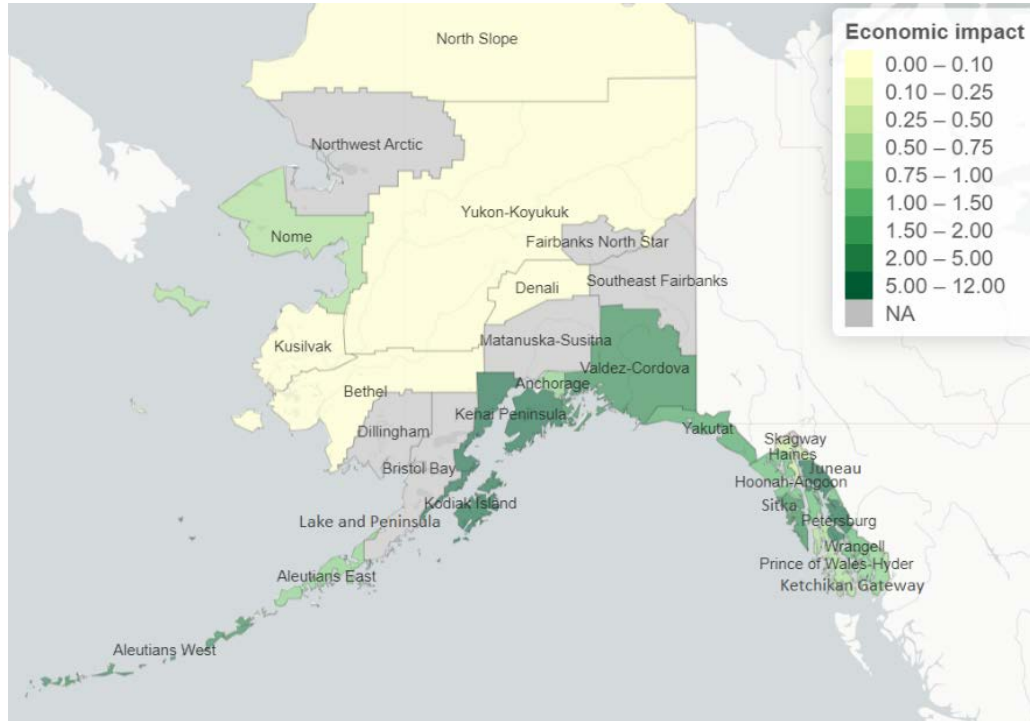


Results for the charter sector

	Unit	Charter	Commercial
El on households	Total in mil. USD	27.08	105.45
El on households in Alaska	Total in mil. USD	14.2	49.56
El on households	USD per 1 USD of output	1.05	1.23
El on households in Alaska	USD per 1 USD of output	0.55	0.58
El on households	USD per 1 lb of removals	9.54	5.75
El on households in Alaska	USD per 1 lb of removals	5.01	2.70



Community impacts



County-level economic impact estimates for Alaska [2019]



Conclusions

- Comprehensive understanding of the impact of the Pacific halibut resource
- The results suggest that the revenue generated by Pacific halibut at the harvest stage accounts for only a fraction of economic activity that would be forgone if the resource was not available to fishers
- Economic impacts are highly heterogenous, vary significantly by region and sector
- PHMEIA model results can inform the community impacts of the Pacific halibut resource throughout its range and highlight communities particularly dependent on Pacific halibut fishing-related economic activities
- PHMEIA results can be used as economics performance metrics in the MSE framework



Way forward

- Refining the model with IPHC-collected data
- Working with the MSE team to develop economics performance metrics
- Impact of COVID-19 on the assessed values

- Better spatial resolution of the assessment
- Pacific halibut value along the supply chain
- Analysis of subsistence fishing
- Study of recreational demand
- Dynamic approach to the EI assessment (computable general equilibrium, demand-adjusted prices)
- Uncertainty in the PHMEIA model



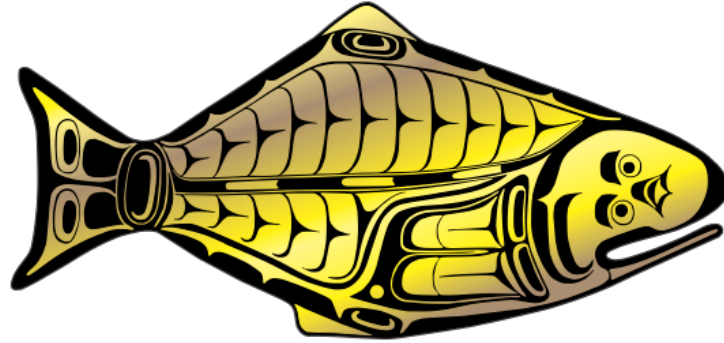
Recommendations

That the SRB:

- 1) **NOTE** paper IPHC-2021-SRB018-09 which provides an update on the IPHC economic study, including progress on the development of the economic impact assessment model, state of the collection of primary economic data from Pacific halibut dependent sectors, and the most recent set of results on regional and community impacts;
- 2) **RECOMMEND** the use of the PHMEIA model results as supplementary performance metrics in the MSE framework;
- 3) **RECOMMEND** improvements to the PHMEIA and PHMEIA-r framework, including methodological approach and model assumptions.
- 4) **NOTE** that improving the accuracy of economic impact assessment of the Pacific halibut resource depends on broader stakeholders' active participation in developing the necessary data for analysis and **RECOMMEND** additional outreach activities.



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