INTERNATIONAL PACIFIC HALIBUT COMMISSION

Pacific halibut multiregional economic impact assessment (PHMEIA):

Project report

Agenda Item 9

IPHC-2022-SRB020-09

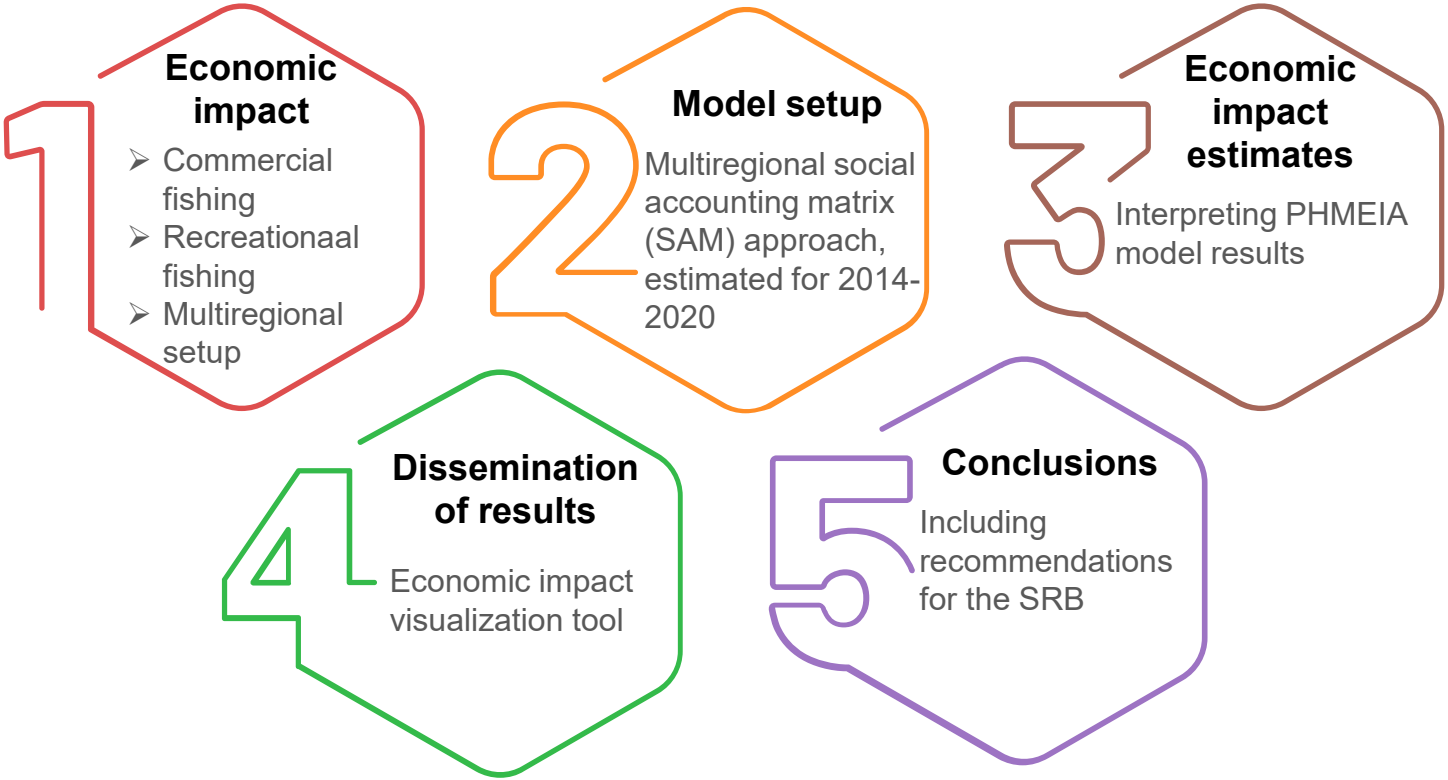
(B. Hutniczak)

Study objectives

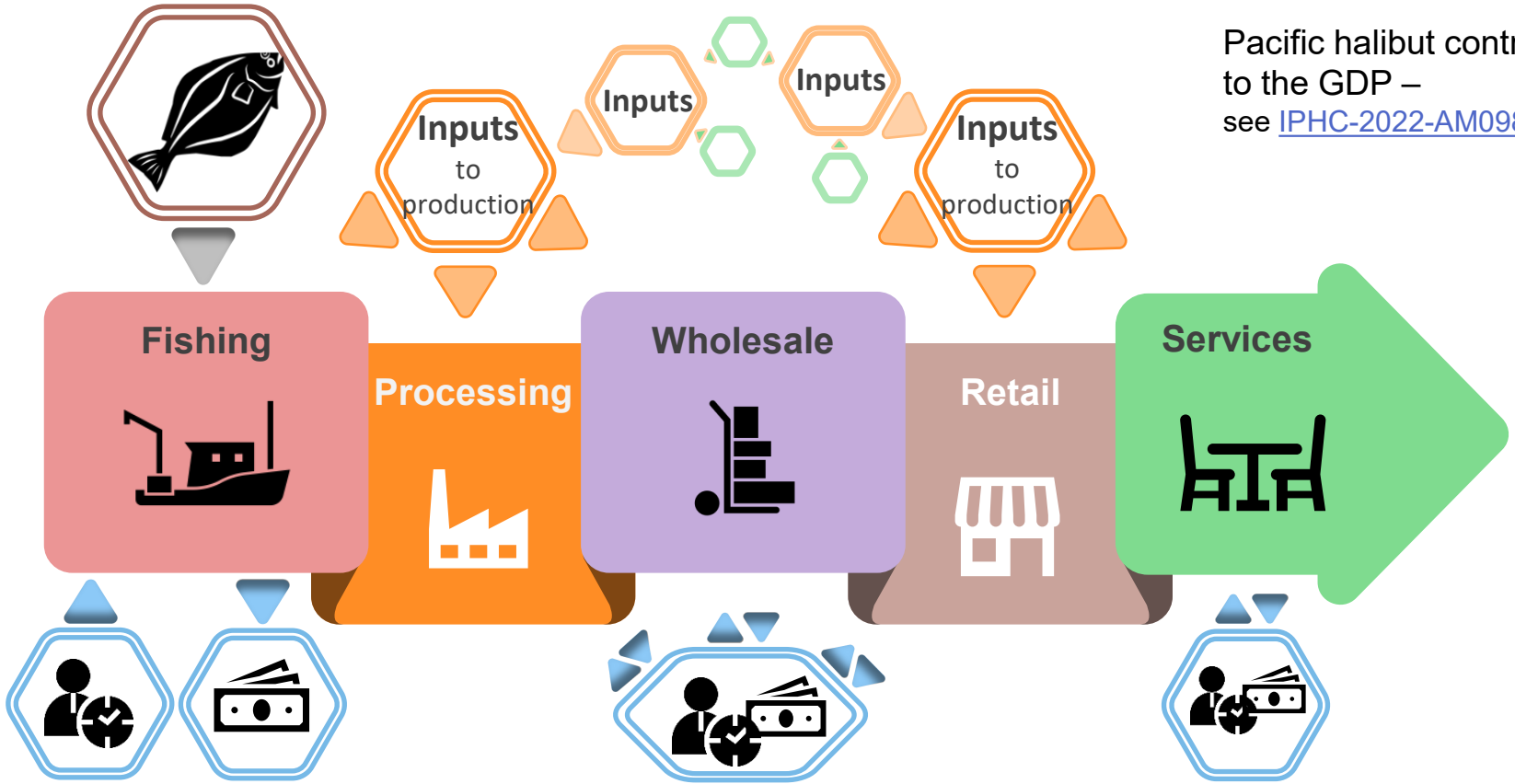
- IPHC socioeconomic study was a direct response to the Commission's "*desire for more comprehensive economic information to support the overall management of the Pacific halibut resource in fulfillment of its mandate"* (economic study terms of reference adopted at FAC095 and endorsed at AM095 in 2019)
  - Commission's objective is to develop stocks of Pacific halibut that permit "***optimum yield from the fishery*** *and to maintain the stocks at those levels*"

- Research objectives
  - Inform stakeholders about the full scope of Pacific halibut contribution to economies of Canada and the United States, and the distribution of economic benefits associated with Pacific halibut

Outline

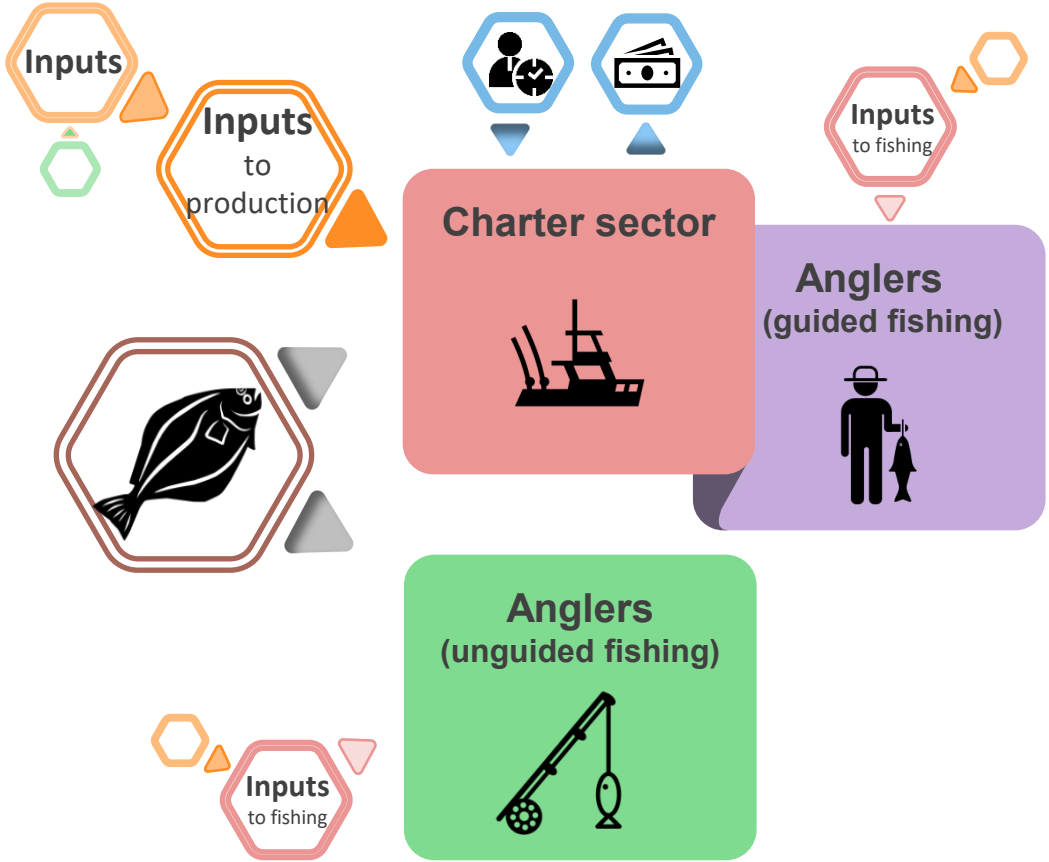

1
Economic impact
Commercial fishing
Recreationaal fishing
Multiregional setup
2
Model setup
Multiregional social accounting matrix (SAM) approach, estimated for 2014-2020
3
Economic impact estimates
Interpreting PHMEIA model results
4
Dissemination of results
Economic impact visualization tool
5
Conclusions
Including recommendations for the SRB

Economic impact of the commercial fishing sector



Pacific halibut contribution to the GDP –
see IPHC-2022-AM098-INF05

Economic impact of the sport fishing sector



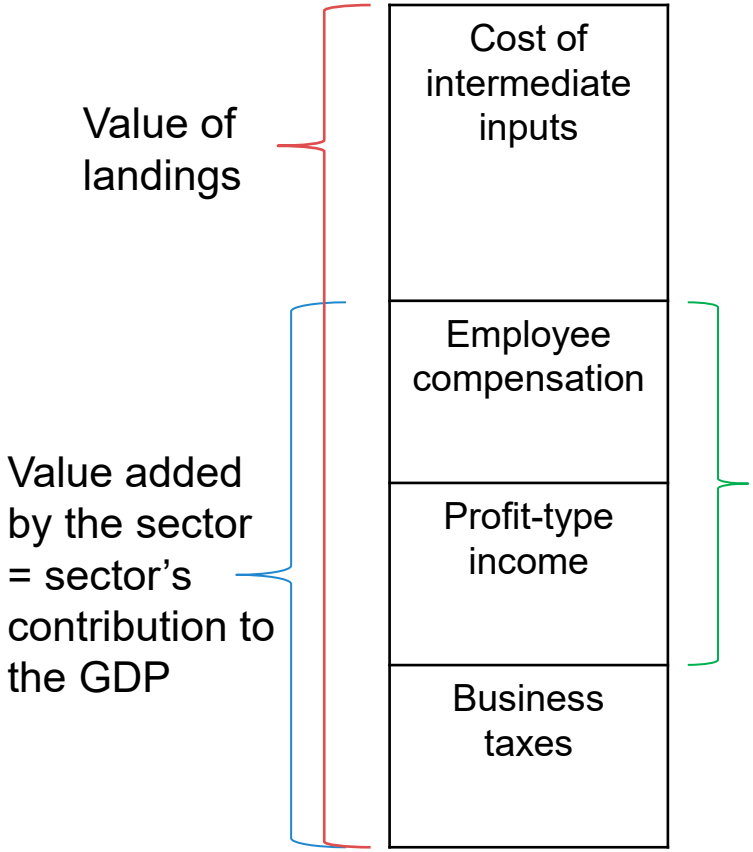
Multiregional impact assessment

Economic impact in the area of resource extraction

Cross-regional impacts

- Import of inputs to production
- Export of production outputs (including services)
- Earnings by non-residents (wages, profit-type income)

Direct earnings & income



Earnings by place of work
Here: earnings where the fishing occurs

Household income in the area of resource extraction

Household income elsewhere (leakage)

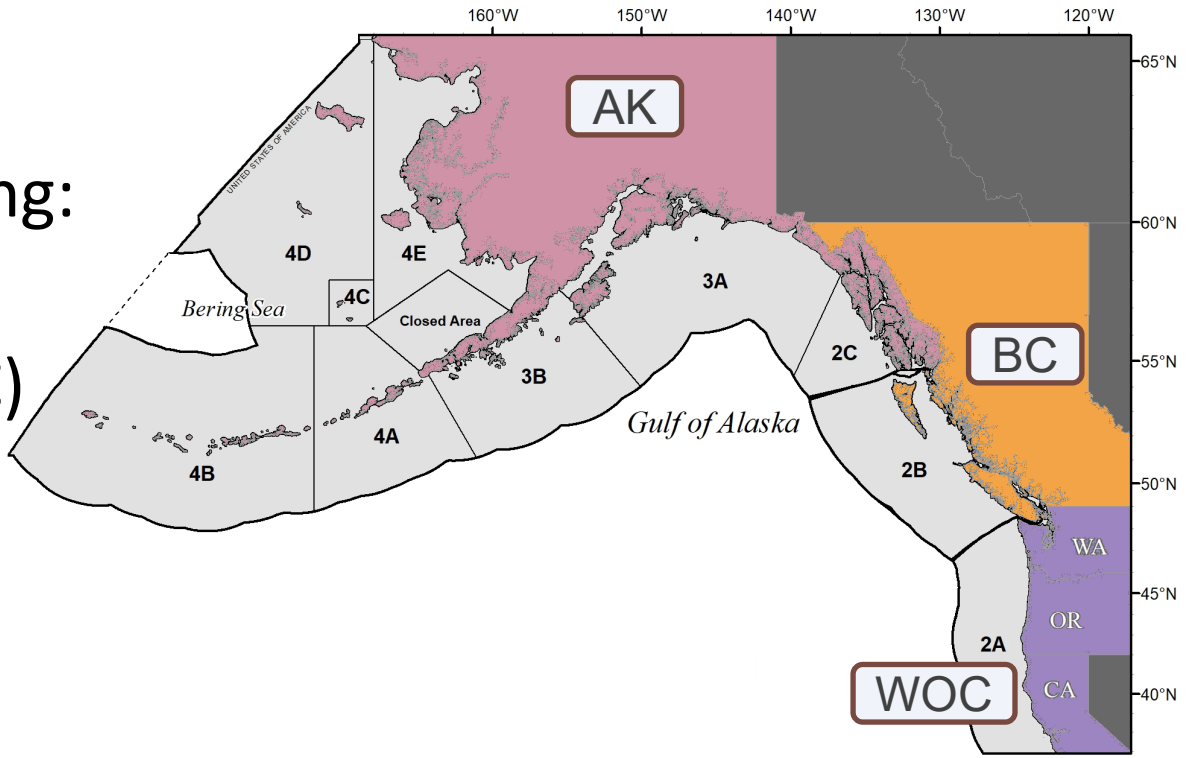
Regions

Pacific halibut producing:

- Alaska (AK)
- British Columbia (BC)
- West Coast (WOC)
  (WA, OR, and CA)

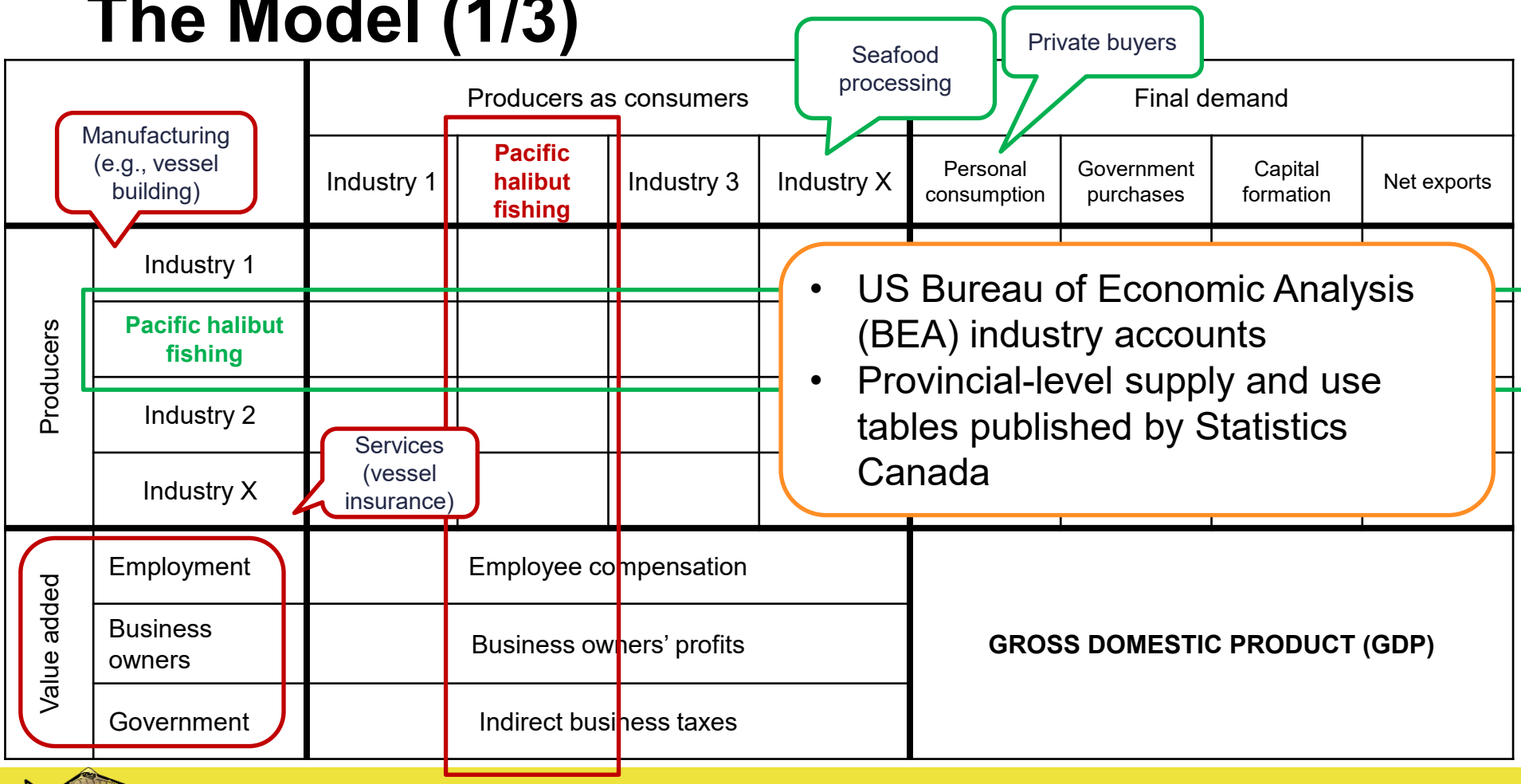
- Rest of the US (US-r)
- Rest of Canada (CA-r)
- Rest of the world (ROW)*

*treated as exogenous



Multiregional social accounting matrix/SAM-based approach
Estimated for 2014-2020

The Model (1/3)



- US Bureau of Economic Analysis (BEA) industry accounts
- Provincial-level supply and use tables published by Statistics Canada

The Model (2/3)

Manufacturing (e.g. vessel building)

Anglers "consuming" fishing trips

Retail (e.g. trip supplies)

		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						

The Model (3/3)

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

- US Trade database provided by the U.S. Census Bureau
- Canadian International Merchandise Trade Database

➢ Exported production outputs

➢ Services offered by the charter sector to nonresidents

Export of commodities from region 1

Inflow of earnings to region 1

➢ Wages earned by nonresidents

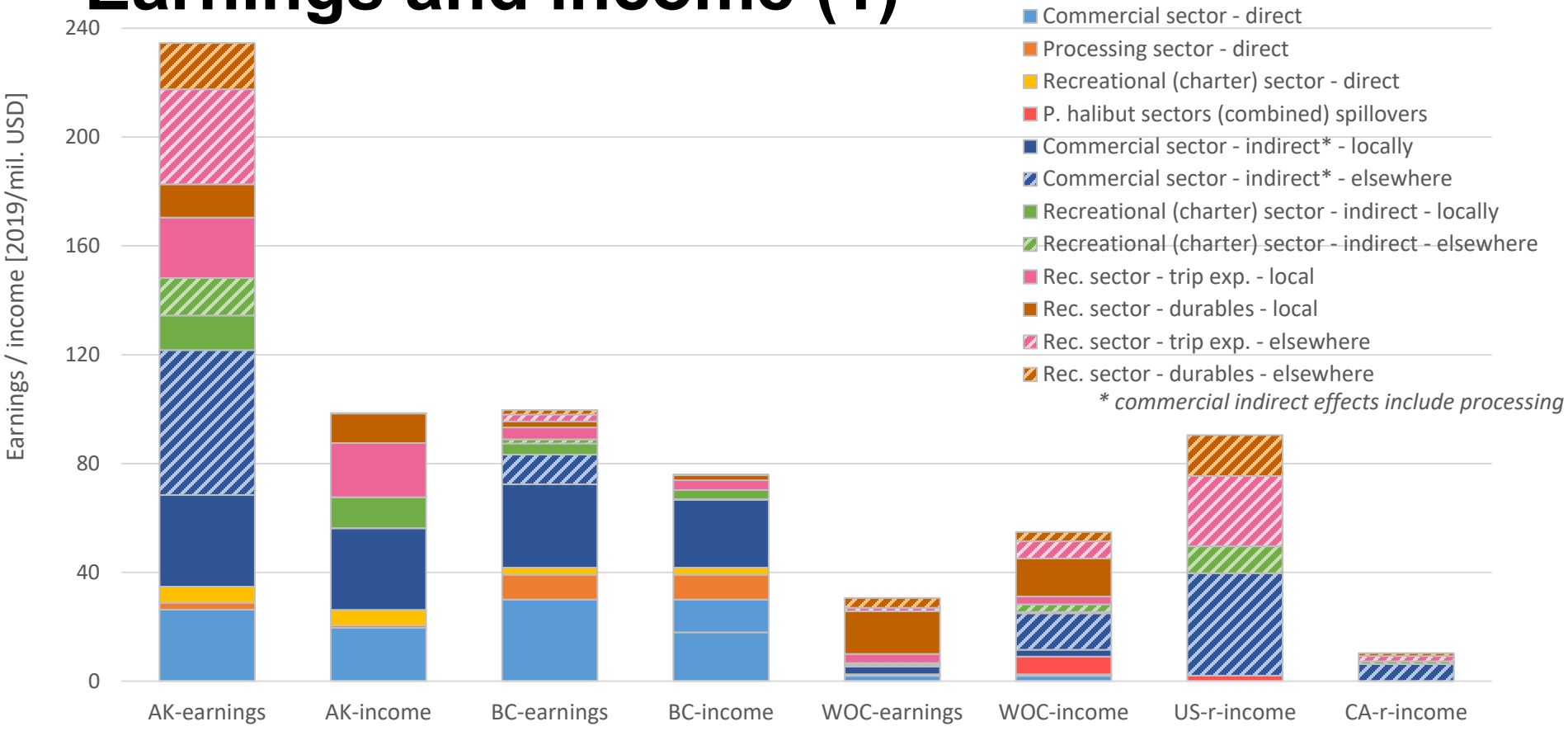
➢ Profit from quota owned by nonresidents

Leakage/outflow of earnings from region 1

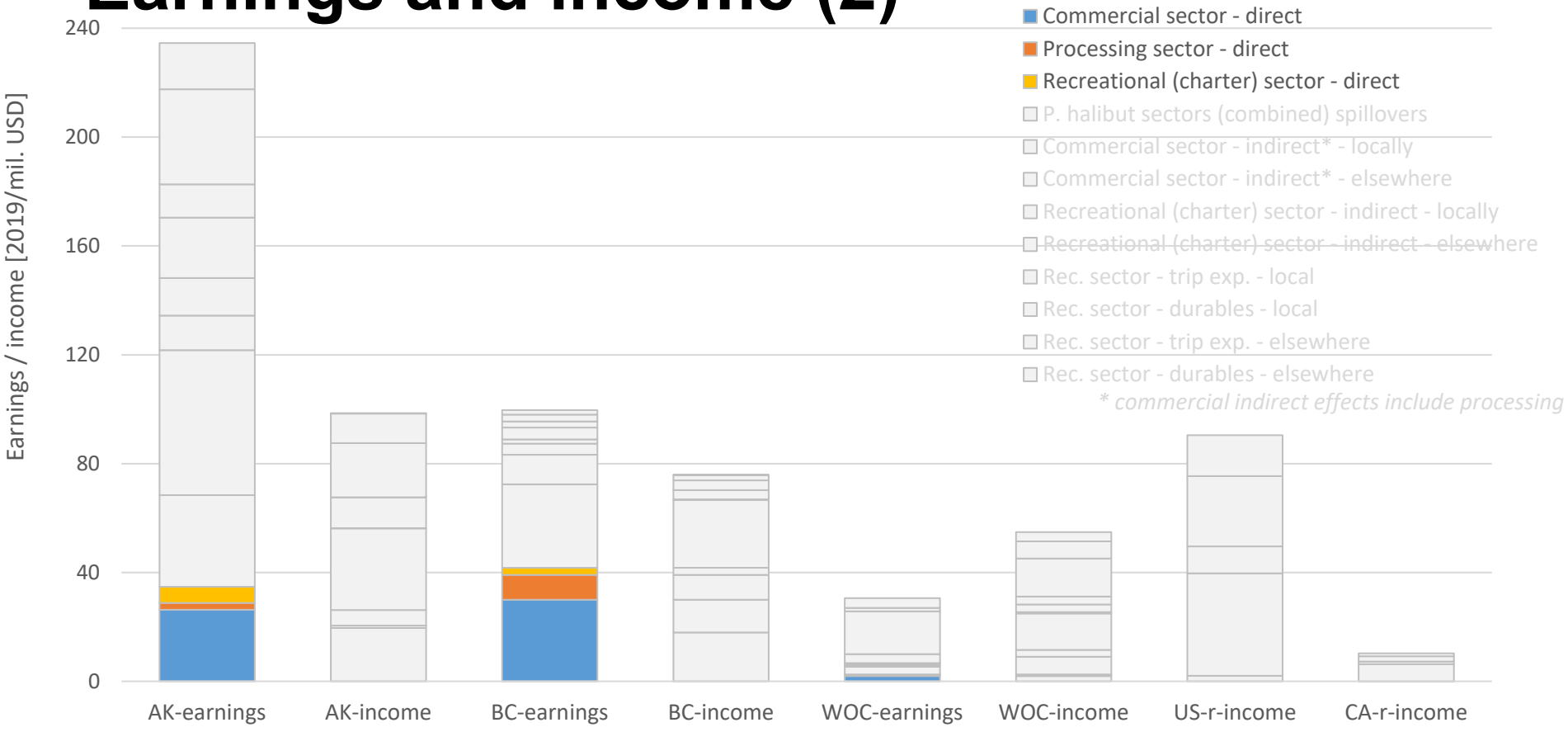
Import of commodities by region 1

➢ Imported inputs to production

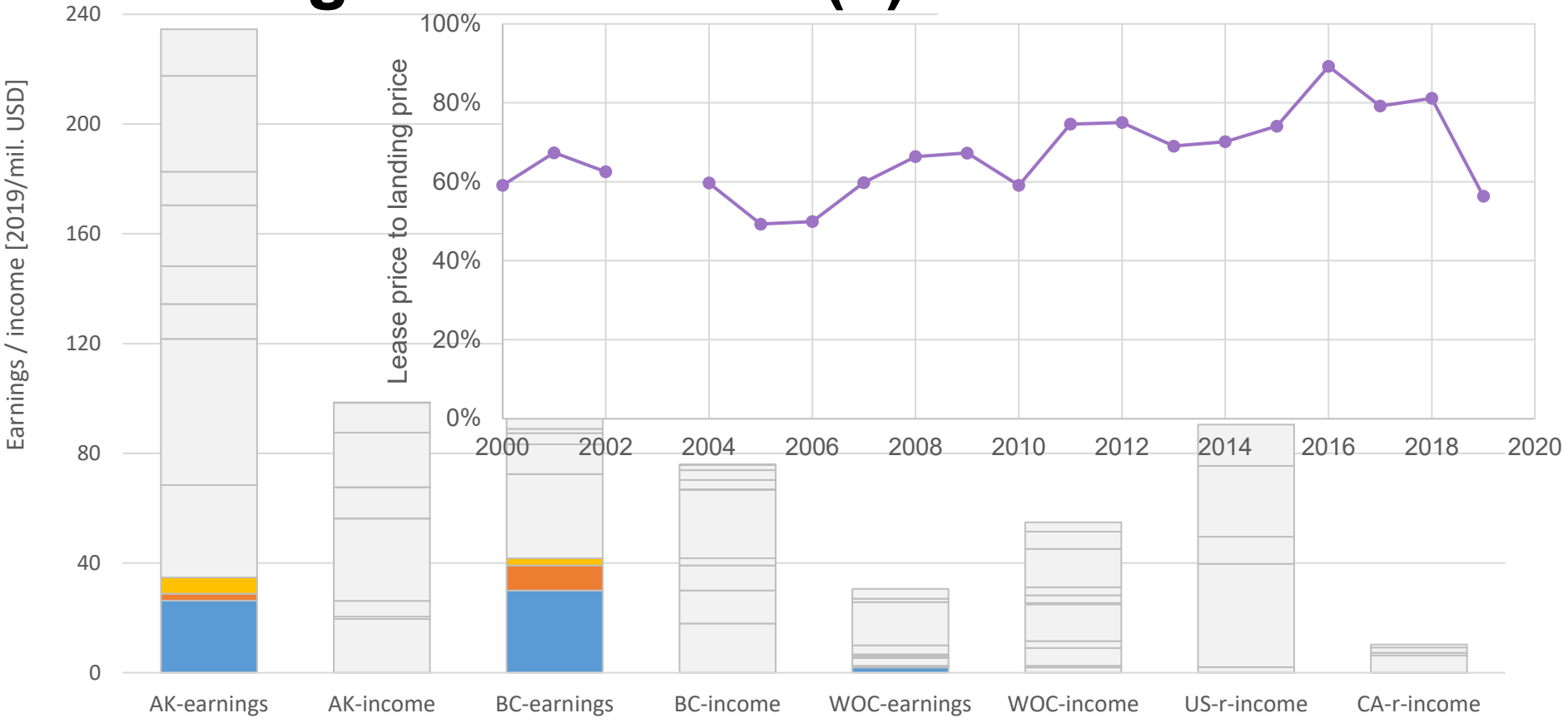
Earnings and income (1)



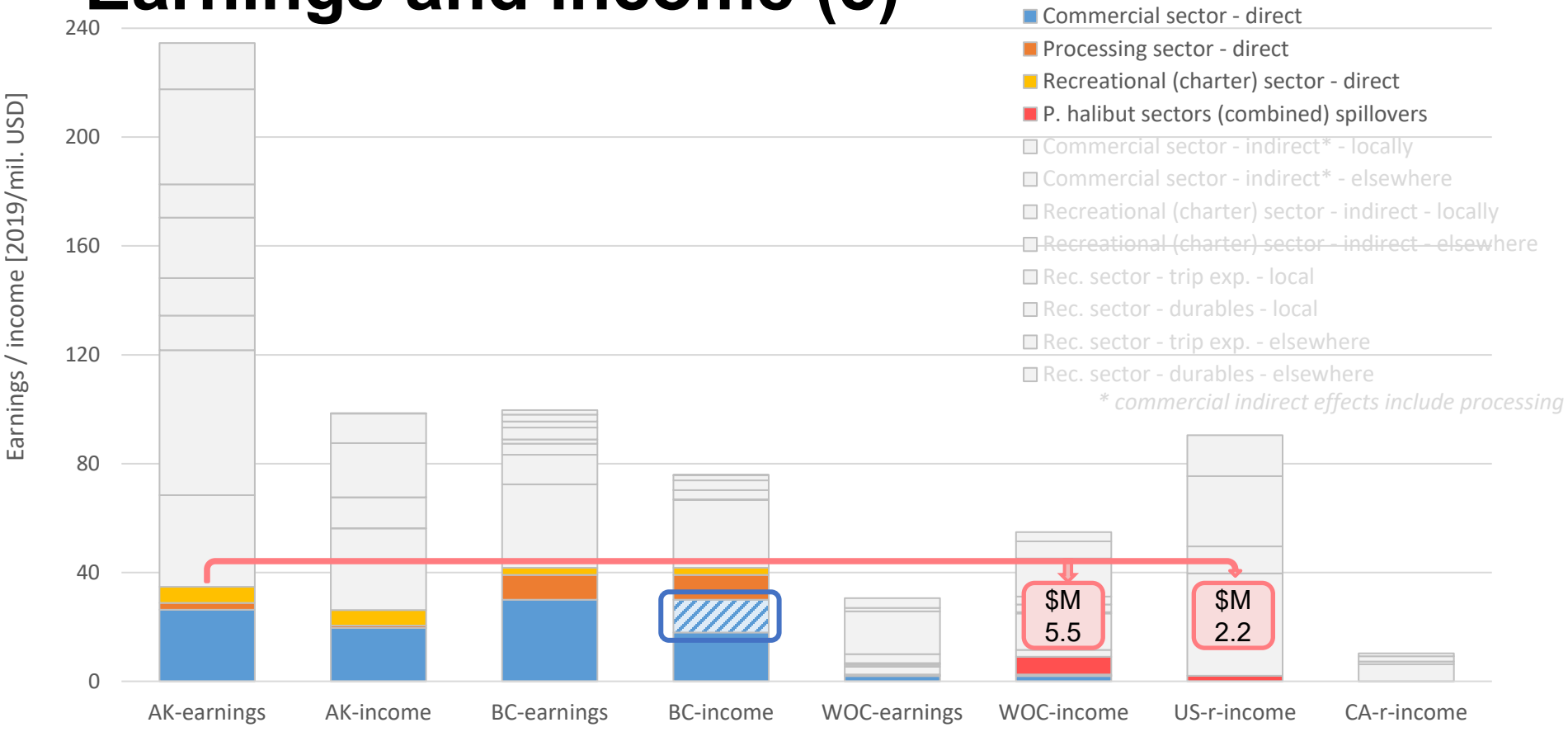
Earnings and income (2)



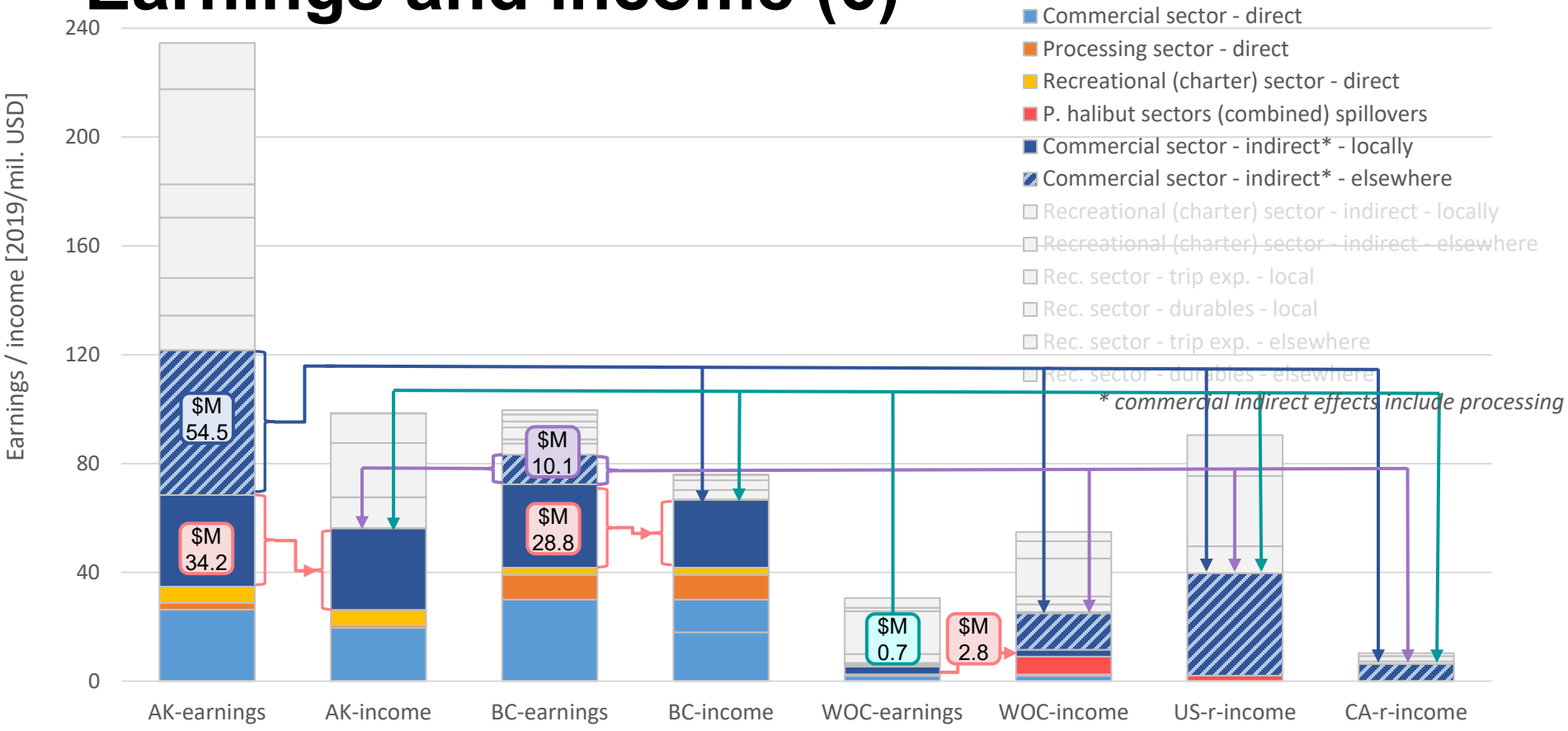
Earnings and income (4)



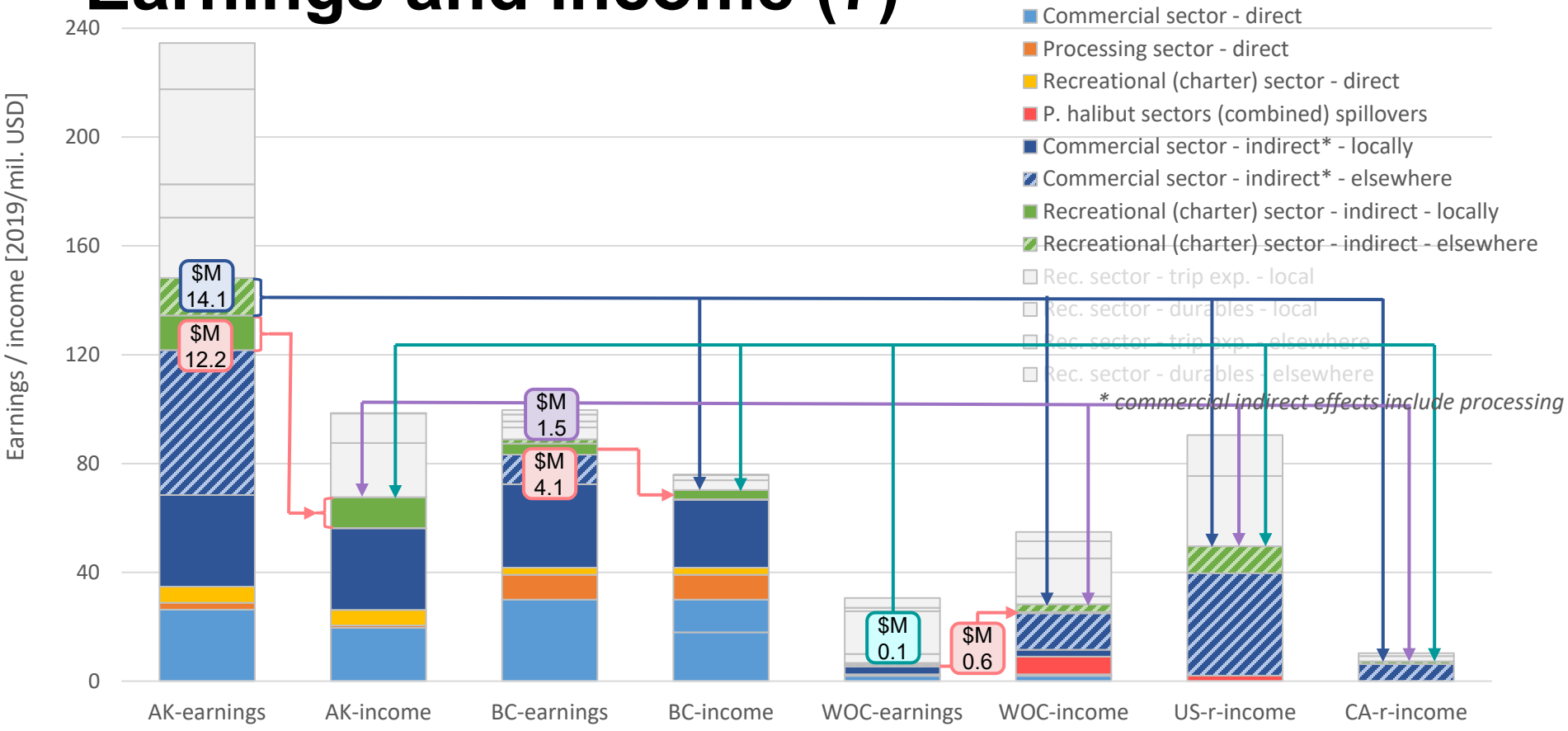
Earnings and income (5)



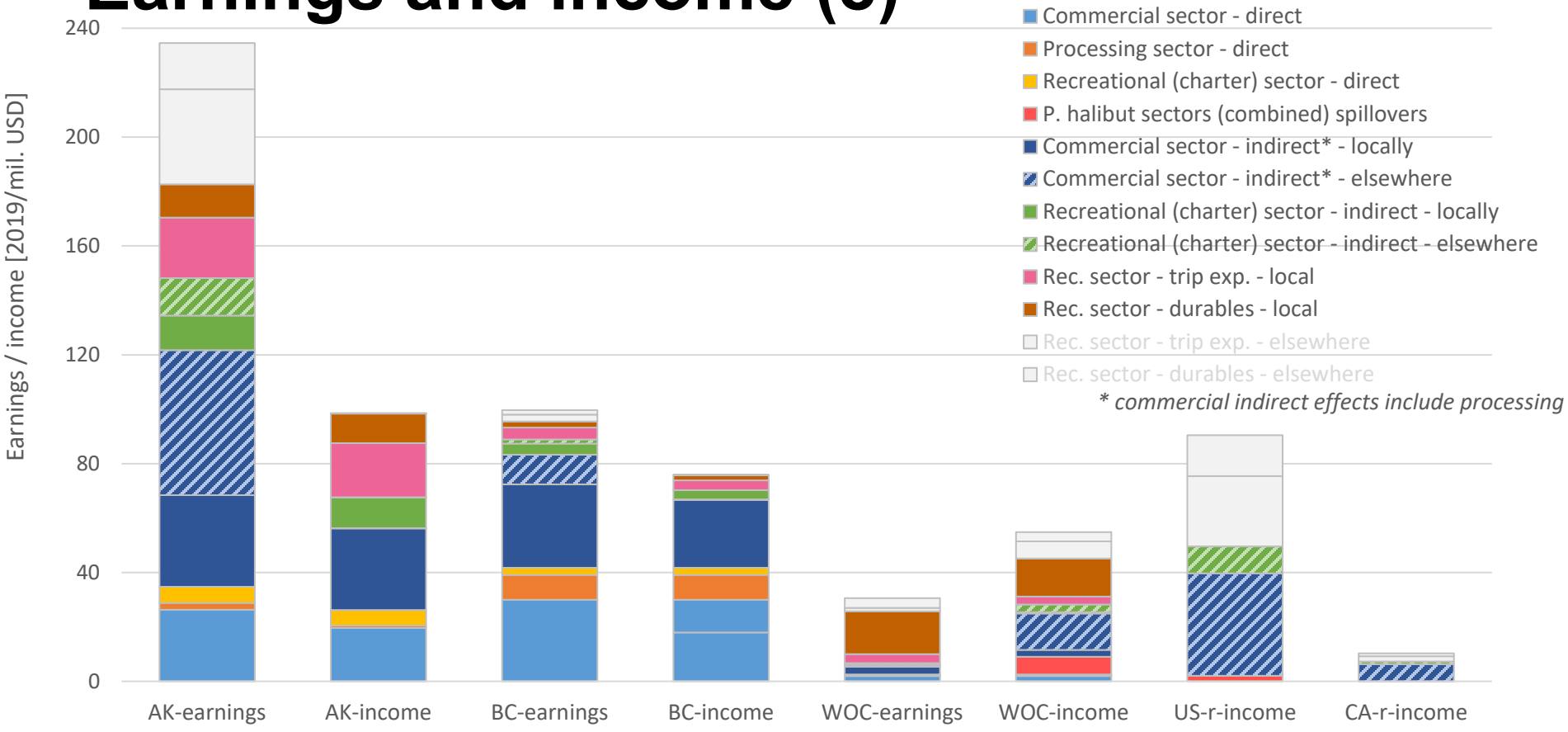
Earnings and income (6)



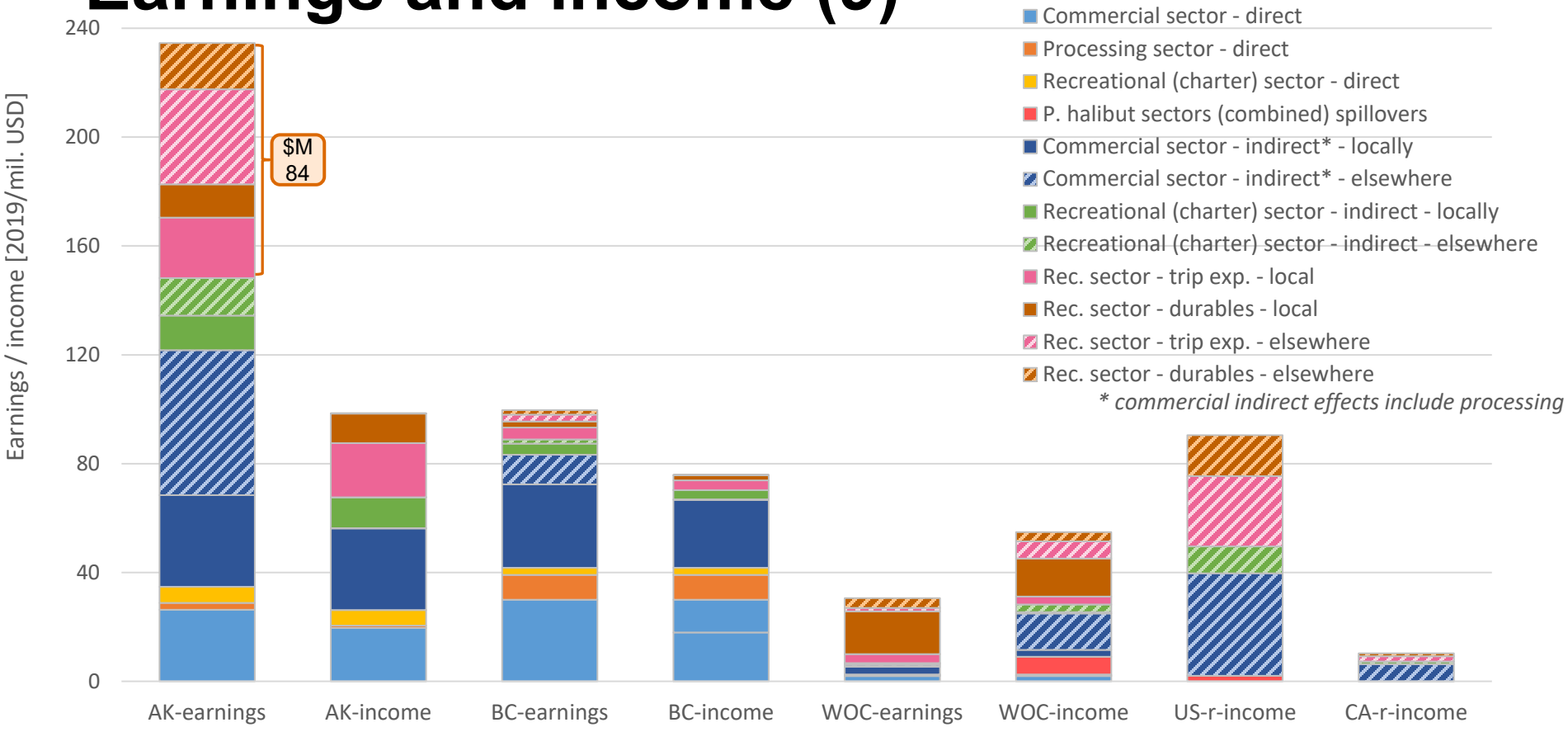
Earnings and income (7)



Earnings and income (8)



Earnings and income (9)



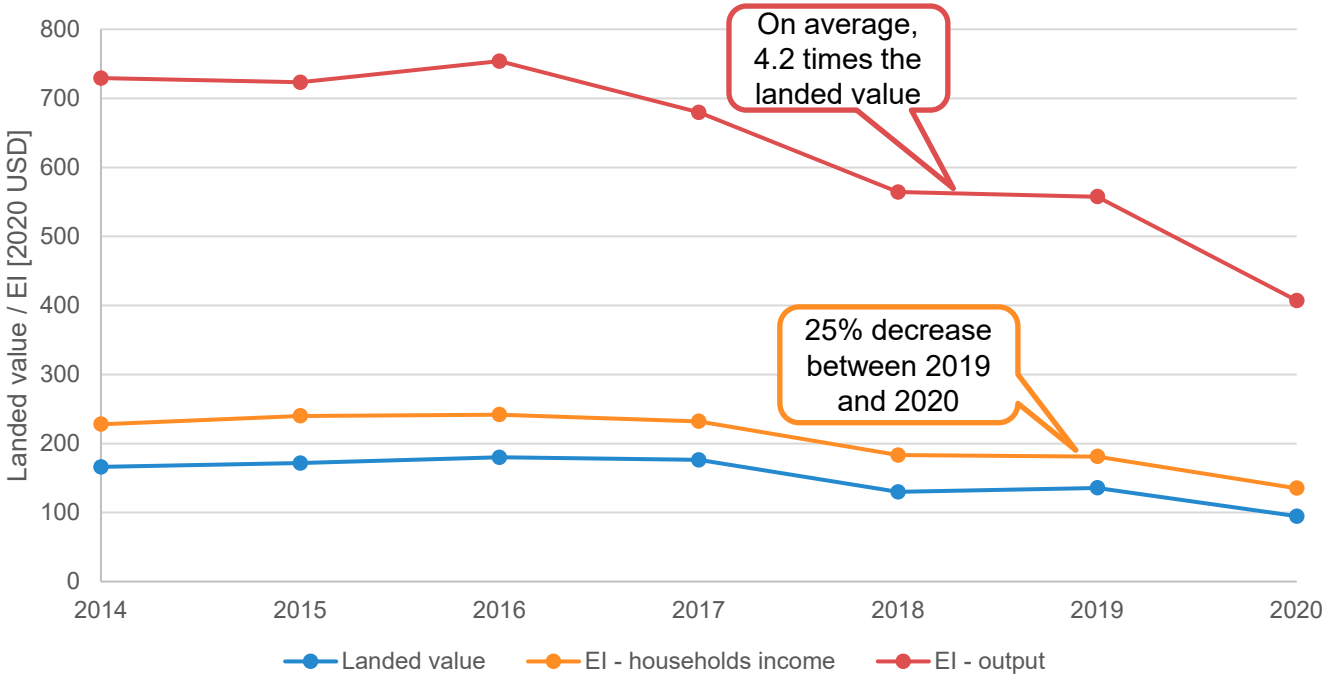
Comparison of the results between sectors (2019)

Economic impact (EI)	Unit	Commercial	Charter	Recreational (incl. charter)
EI on households	Total in mil. USD	179.1	42.4	146.9
EI locally (excludes spillovers)	Total in mil. USD	114.1	27.6	79.0
EI on households	USD per 1 USD of landed value/USD spent	1.34	1.08	0.74
EI locally (excludes spillovers)	USD per 1 USD of landed value/USD spent	0.85	0.71	0.40
EI on households	USD per 1 lb of removals	7.4	12.0*	20.9
EI locally (excludes spillovers)	USD per 1 lb of removals	4.7	7.3*	11.2

*impact calculated based on EI on households for Alaska

Note sensitivity to assumption about the share of the sector dependent on Pacific halibut

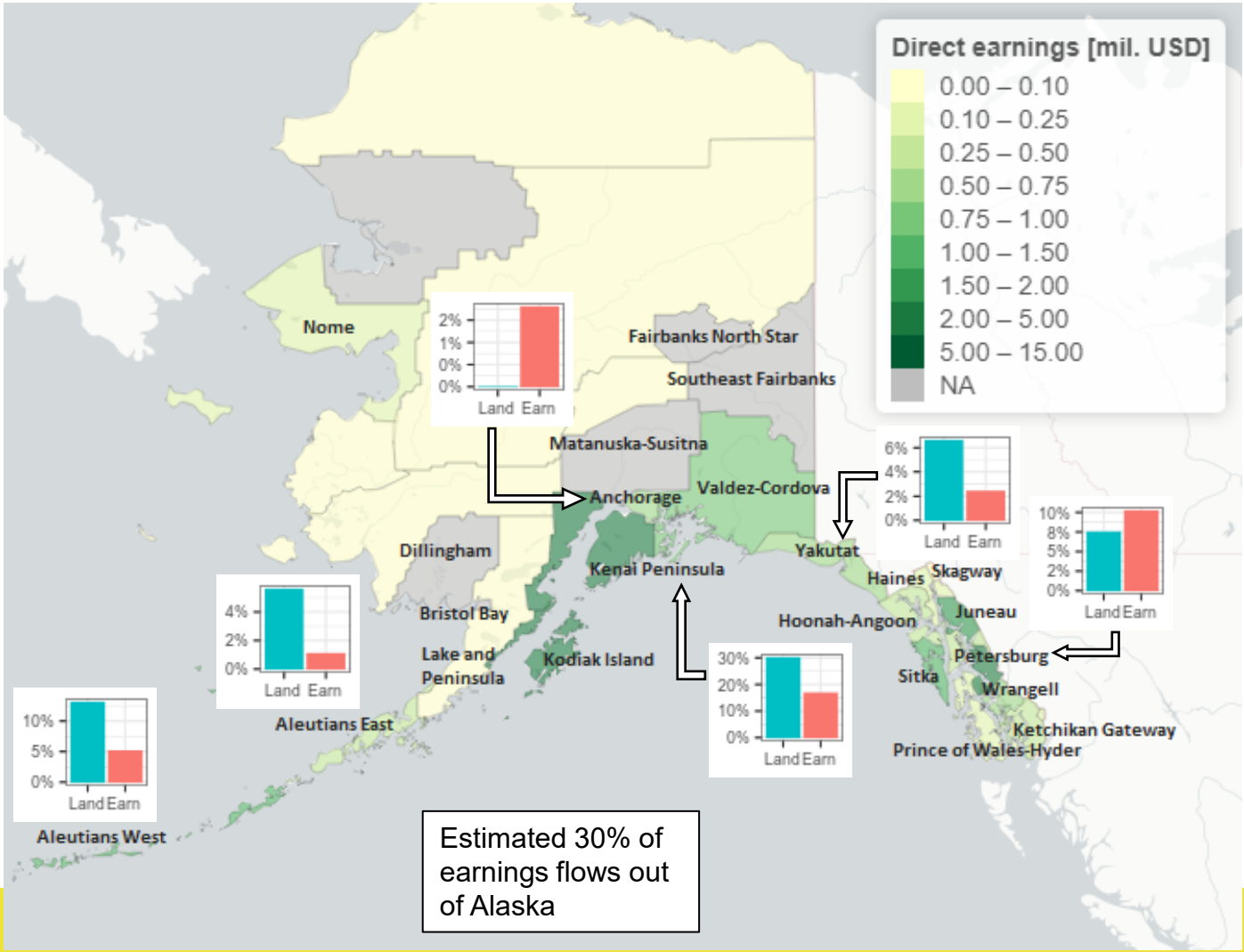
EI time series



Pacific halibut commercial fishing EI estimates for 2014-2020 in comparison with landed value in mil 2020 USD.

Community impacts

Bar plots represent selection of county-level comparison between the value of landings and direct earnings [as % of total, 2019]

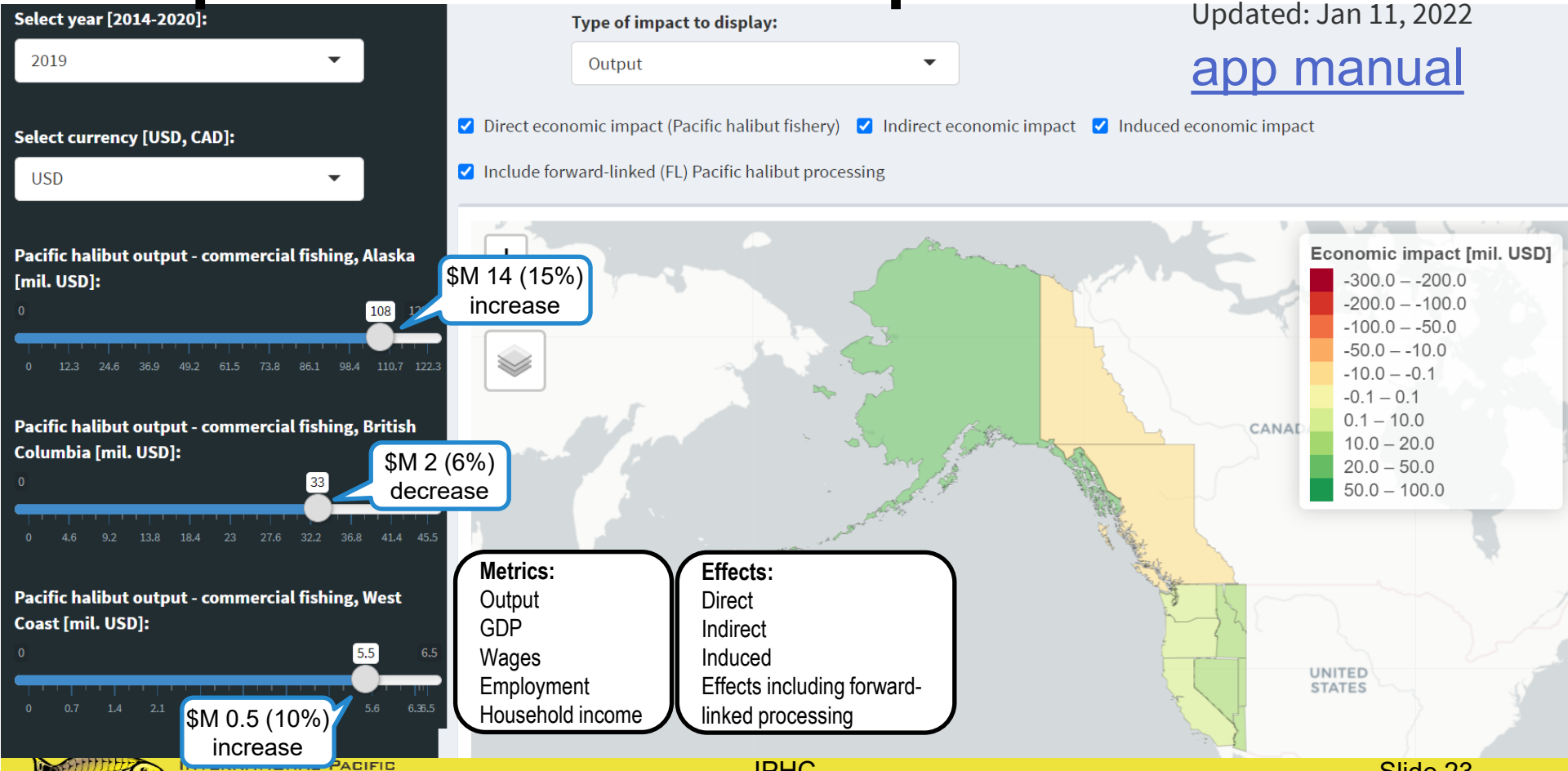


Map of the economic impact

web-based tool

Updated: Jan 11, 2022

app manual



Conclusions

- PHMEIA is a core product of the IPHC socioeconomic study undertaken to provide comprehensive economic information to support the overall management of the Pacific halibut resource in fulfillment of Commission's mandate

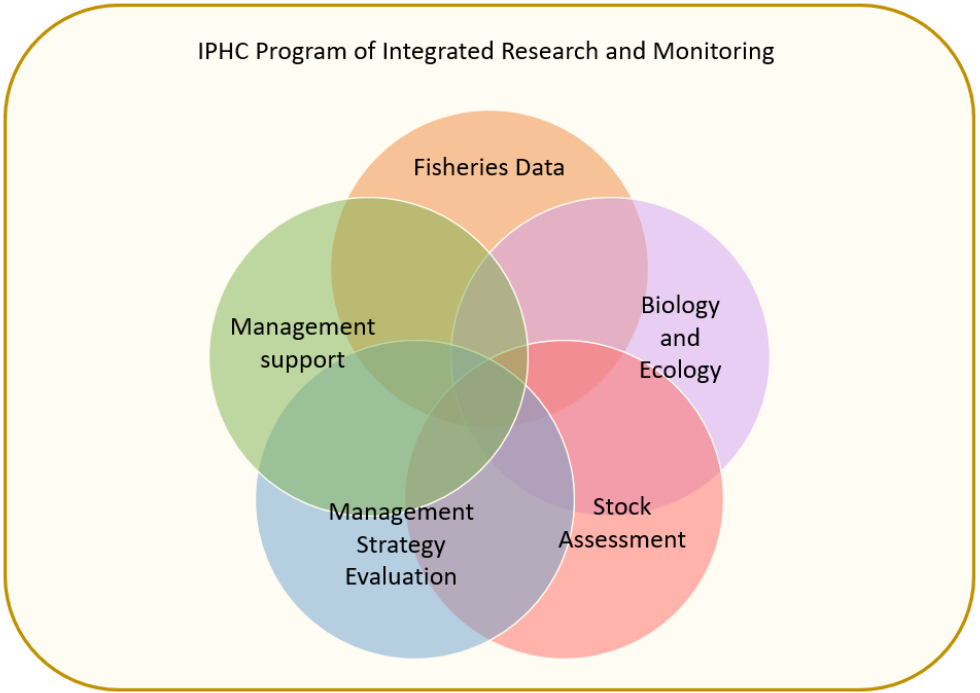
- PHMEIA provides a better understanding of a broad scope of impacts of the Pacific halibut resource at various spatial scales

- Revenue generated by direct Pacific halibut sectors accounts for only a fraction of economic activity that would be forgone if the resource was not available to fishers

- Understanding the complex interactions between sectors and regions is particularly important in the context of globalization and exposure to external factors beyond stock condition

- PHMEIA informs on the vulnerability of communities to changes in the state of the Pacific halibut stock throughout its range, highlighting regions particularly dependent on economic activities that rely on Pacific halibut

Integrated management support



- Integrated management support that incorporates human dimension contributes to a wholesome approach to Pacific halibut management that is optimal from both biological and socioeconomic perspective

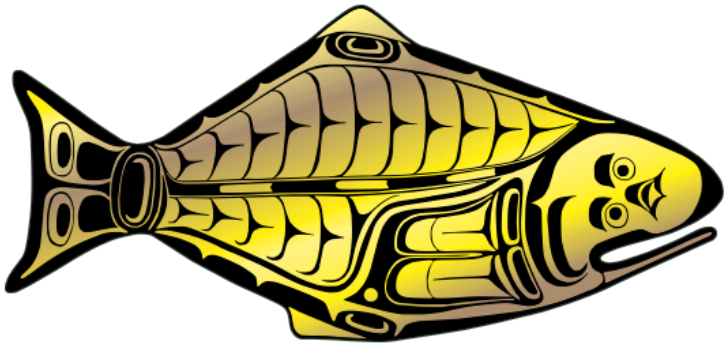
IPHC 5-year Program of Integrated Research and Monitoring (2021-26)

Recommendations

That the SRB:

a) **NOTE** paper IPHC-2022-SRB020-09 which provides the status of the Pacific halibut multiregional economic impact assessment (PHMEIA), now concluded.

INTERNATIONAL PACIFIC



HALIBUT COMMISSION