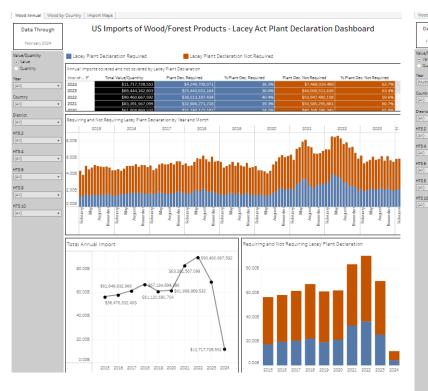
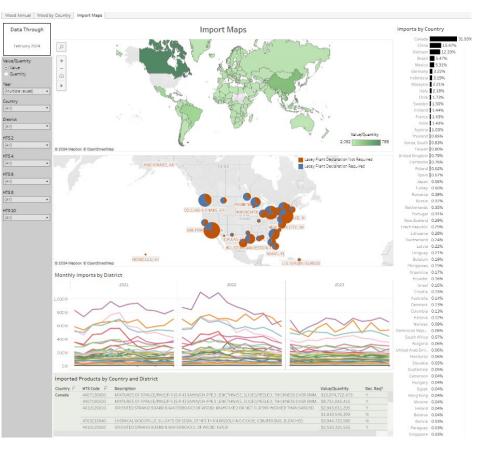
### Visualizing US Imports of Wood/Forest Products: Relevance for the Lacey Act Plant "Dec Req"



Imports Cov	rered and Not Covered by L	acey Plant Declaration			
Country 1	Total Value/Quantity	Plant Dec. Required	% Plant Dec. Required	Plant Dec. Not Required	% Plant Dec. Not Requ
Canada	\$77,673,920,783	\$41,427,021,056	53.3%	\$35,246,899,717	
China	\$32,777,979,957			\$23,558,447,345	
Vietnam	\$30,000,105,619			\$25,266,631,080	
Brazil	\$13,298,298,104			\$6,928,231,784	
Mexico	\$12,908,828,858			\$10,055,140,874	
Sermany Indonesia	\$7,839,133,673 \$7,757,817,479			\$4,401,704,678 \$3,877,033,604	
Malaysia	\$7,757,817,479 \$5,382,747,734			\$4,306,324,029	
andidy518	\$3,302,747,734	\$1,070,423,703	25.04	04,300,324,025	
	roduct Imports Requiring I				
		Lacey Plant Declaration, I	HIS ranked by value/Qua	ntity	
ITS Code	Description				Value/Quantity
			WISE, SUICED/PEELED, THICKNES		
407190500			WISE, SUICED/PEELED, THICKNES		
410120010			ED OR NOT FURTHR WORKED TH		\$3,171,914,518
407120020	SPRUCE, SAWN OR CHIPPED LEF	NGTHWISE, SLICED OR PEELED, C	F A TH CKNESS OVER 6 MM (0.23	5 IN), NOT TREATED, NESOI	\$3,124,703,216
302000040	PISTOLS, SEMIAUTOMATIC, OTH	ER THAN THOSE OF HEADING 93	03 OR 9304		\$2,867,273,265
410120020	ORIENTED STRAND BOARD & W	AFERBOARD, OF WOOD: NESO			\$2,620,779,510
703900000	ORIGINAL SCULPTURE AND STA	TUARY, IN ANY MATERIAL, NOT C	FAN AGE EXCEEDING 100 YEARS		\$2,356,947,751
403608081		IRED, WITH WOODEN FRAMES, N	IESOI	Quantity	Value/Quantity \$18,965,652,741 \$11,789,613,473 \$8,093,993,850
HTS Code 9403608081 9401616011 9401614011 9403509080 9403409060	WOODEN FURNITURE, NESOI HOUSEHOLD SEATS, UPHOLSTI CHAIRS, HOUSEHOLD, UPHOLS WOODEN FURNITURE OF A KIN WOODEN KITCHEN CARINETS D	TERED, WITH WOODEN FRAMES, DIJSED IN THE BEDROOM, WESC RESIGNED FOR PERMANENT INST	ESOI NESOI ALLATION		\$18,965,652,741 \$11,789,613,473 \$8,093,993,850 \$7,472,479,151 \$6,425,858,962
9403608081 9401616011 9401614011 9403509080 9403409060 4703210040	WOODEN FURNITURE, NESO HOUSEHOLD SEATS, UPHOLST CHAIRS, HOUSEHOLD, UPHOLS WOODEN FURNITURE OF A KIN WOODEN KITCHEN CARINETS O CHEMICAL WOODPULP, SULFAL	TERED, WITH WOODEN FRAMES, DIUSED IN THE BEDROOM, WESC RESIGNED FOR PERMANENT INST TEOR SCIDA, OTHER THAN DISSO	ESOL NESOL ALLATION VING GRADE, CONTERIOUS, REE	- ACHED	\$18,965,652,741 \$11,789,613,473 \$8,093,993,850 \$7,472,479,151 \$6,475,858,967 \$5,390,707,347
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9403608081 9401616011 9401614011 9403509080 9403509080 9403409060 4703210040 4703290040	WOODEN FURNITURE, NESO HOUSEHOLD SEATS, UPHOLST CHAIRS, HOUSEHOLD, UPHOLS WOODEN FURNITURE OF A KIN WOODEN KITCHEN CARINETS O CHEMICAL WOODPULP, SULFAL	TERED, WITH WOODEN FRAMES, DIUSED IN THE BEDROOM, WESC RESIGNED FOR PERMANENT INST TEOR SCIDA, OTHER THAN DISSO	ESOL NESOL ALLATION VING GRADE, CONTERIOUS, REE	- ACHED	\$18,965,652,741 \$11,789,613,473 \$8,093,993,850 \$7,472,479,151 \$6,475,858,967 \$5,390,707,347
9403608081 9401616011 9401614011 9403509080 9403509080 4703210040 4703290040 9403509045	WOODEN FURNITURE, NESOL HOUSEHOLD SEATS, UNHOLS WOODEN LINGHOLD, UNHOLS WOODEN KITCHIN CARINE'SS CHEMICAL WOODPULP, SULFAT CHEMICAL WOODPULP, SULFAT WOODEN BEDS, NESOL	TERED, WITH WOODEN, FRAMES, DUSED IN THE REDROOM, NESC IFSIGNED FOR PERMANENT INST IF OR SODA, OTHER THAN DISSO TE OR SODA, OTHER THAN DISSO	ESON NESON AUATRON VIVIN RRACE, CONTRIBUTE, INF JUNING GRADE, NONCONTREROUS	KCHPD BLCACIED	\$18,965,652,741 \$11,769,613,473 \$8,093,993,850 \$7,472,479,151 \$6,425,858,967 \$5,390,207,847 \$4,823,523,837 \$4,372,080,174
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403608081 401616011 401614011 403509080 403409060 703210040 7032210040 703220040 403509045 ercent of in ca	WOODEN FURNITURE, INSON           HOUSENIGLD SEATS, UP-NELSTI           CHARIS, NOUSENIGL, UP-NELSTI           WOODEN FURNITURE DLA AND           WOODEN FURNITURE DLA AND           UPODEN FURNITURE DLA AND           UPOD	TERED, WITH WOODOK FRAMES, UNDER THE REPORTS, WED UNDER THE REPORTS, WED UNDER THE REPORTS AND	ESOI	Inchero BILGAO IED SILGAO IED SPitent Dec. Next Required Signal The Acquired Signal The Acquired Signal The Acquired Signal The Acquired Signal Signa	\$18.865.662,741           \$11.796.532,473           \$11.796.532,473           \$8.003,075,860           \$7,477,473,131           \$8.475,886,0707,887           \$4.023,203,077,887           \$4.023,203,071,487           \$4.023,203,0174           \$10,223,203,0174           \$60,096,097,887           \$60,096,097,897           \$60,096,097,897           \$60,096,097,897           \$60,096,097,897           \$60,096,097           \$60,096,097           \$60,096,097           \$60,096,097           \$6



John Simeone Simeone Consulting, LLC www.simeoneconsulting.com

Forest Governance and Policy Conference 2024 – Washington, D.C. April 30, 2024

- Background
  - HS & HTS Codes
  - Types of Trade Data
  - US Lacey Act Plant Declaration Requirement ("Dec Req") and Implementation Schedule
  - Process of Joining US Import HTS Data with Lacey Plant Dec Implementation Schedule
- Creating and Using Dashboards
  - Developing an Automated Pipeline to Retrieve, Process, Join, and Visualize Data
  - Overview of Current Dashboards
  - Interactive Demo and Dashboard Exploration
  - Design Updates and Functionality is Continual and Iterative Open to Feedback
- Discussion and Q&A

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- Discussion and Q&A

# Background: HS & HTS Codes

- HS = "Harmonized System"
  - Nomenclature/Codes have 6-digit Hierarchical Structure Classified by the WCO
  - Common Source of Data: UN COMTRADE
    - Typically > 1-year data availability time lag and not all countries report to UN
    - Derived/Processed Data Sources/Visualizations:
      - Chatham House's ResourceTrade.Earth Dashboard
      - Mirror flows reconciled = CEPII BACI Database; EFI's Forest Products and Trade Flow Database and Dashboard

### • HTS = "Harmonized Tariff Schedule"

- Country-specific 10-digit Code Structure (possible increases to 12-digits)
- HTS US = "Harmonized Tariff Schedule of the United States"
- Official Source of HTS US International Trade Data: US Census (USA Trade Online & API)
  - Data Fields: Month, Year, HTS US, HTS Description, Foreign Trade Partner, US Port District, Value, Weight
  - Monthly data release schedule runs ~5 week time lag e.g., March 2024 data to be released 5/2/2024
- Various US Agencies have their own access points (some with additional processing):
  - E.g., US International Trade Commission (US ITC) Dataweb, NOAA NMFS / FOSS

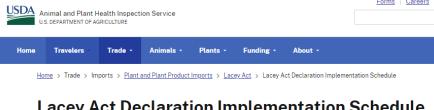
# Background: Types of Available Trade Data

- Aggregated "HS/HTS Code" Trade Data/Statistics
- Bill of Lading (BoL) Transaction-level Data
  - Includes B2B trade relationships (Companies and Addresses), Ports of Lading/Unlading, Goods Shipped/Commodity Description, HS/HTS, Value/Volume; Carrier and Container Number
  - Dirty and large: extensive cleaning required across millions of rows w/ > 50 columns
  - Data are expensive w/ country-specific dataset resolution differences & third-party data providers
- BoL data provide information that can not be identified from lower-resolution aggregated "HS/HTS Code Trade Data"
  - Examples of working with Bill of Lading data:
    - TimberSleuth → TradeSweep cleaning & TradeSleuth analysis modules
      - Virginia Tech, WWF, TRAFFIC, and Simeone Consulting developed proof-of-concept anomaly detection algorithms
      - Virginia Tech, World Forest ID, and Simeone Consulting have further developed methods to clean, join, and analyze BoL datasets to look for emerging/shifting trends suggesting an elevated risk of false or fraudulent origin claims that may be at risk for evasion of taxes, regulations and trade policies, and sanctions
    - Trase.Earth Team (Stockholm Environment Institute and Global Canopy)
    - US Federal Reserve: <u>https://doi.org/10.17016/FEDS.2021.066</u>

### Background: US Lacey Act Plant Declaration Requirement ("Dec Req") and Implementation Schedule

- US Lacey Act (16 U.S.C. §§ 3371-3378) applies to all US imports of plants and plant products
- Unlawful to import certain products ٠ without a Plant Declaration
- Plant Declaration requires US importers to • declare plant taxonomy (scientific name = genus and species), country of harvest, and corresponding quantities
- Q: How to evaluate the coverage of US imports of wood and forest products that require Plant Declarations?

E.g., How do US imports of the HTS in Ch. 94 that currently require Plant Declarations compare to imports of the other remaining wooden furniture HTS codes that do not require Plant Declarations?



#### Lacey Act Declaration Implementation Schedule

Last Modified: March 25, 2024

Print

Since 2009, APHIS has been phasing in the Lacey Act declaration requirement. APHIS continues to evaluate products to include in future phases and will publish notices in the Federal Register to keep stakeholders and the public informed

Use the links below to see which Harmonized Tariff Schedule chapters and headings require a Lacey Act declaration

Chapter 33				
Chapter 42				
Chapter 44				
Heading	Article/Component of Article	Effective Date		
4401	Fuel wood	April 1, 2009		
4402	Wood charcoal	October 1, 2009		
4403	Wood in the rough	April 1, 2009		
4404	Hoopwood; poles, piles, stakes	April 1, 2009		
4406	Railway or tramway sleepers	April 1, 2009		

Chapter 33			+
Chapter 42			+
Chapter 44			+
Chapter 66			+
Chapter 82			+
Chapter 92			+
Chapter 93			+
Chapter 94			-
Heading	Article/Component of Article	Effective Date	
9401612010	Upholstered teak chair, household	August 6, 2015	
9401612030	Upholstered teak chairs, other	August 6, 2015	
940169	Seats with wood frames	April 1, 2010	
9401901500	Parts of bent-wood seats	August 6, 2015	
9403304000	Bent-wood office furniture	August 6, 2015	
9403404000	Bent-wood kitchen furniture	August 6, 2015	
9403504000	Bent-wood bedroom furniture	August 6, 2015	
9403604000	Other bent-wood furniture	August 6, 2015	
Chapter 95			+

https://www.aphis.usda.gov/plant-imports/lacey-act/implementation-schedule

Chapter 96 Chapter 97

Coming Soon: APHIS Lacey Act Phase VII Declaration Implementation

# Background: Process of Joining US Import HTS Data with Lacey Plant Declaration Implementation Schedule

<u>1<sup>st</sup> iteration = Excel</u>: 10+ years ago manually downloaded US import data from US ITC Dataweb, manually identified which HTS2-HTS10 required Plant Declarations, and manually created a join in Excel with a new column "DecReq" identifying whether a given row of data required a Plant Declaration

2<sup>nd</sup> iteration = R scripts: Partially funded by WWF and EIA to improve on the initial process. Wrote R scripts which, when manually executed, pulled US import data via US Census API and joined with APHIS Plant Declaration Implementation Schedule. R scripts remain publicly posted on GitHub for others to use: <u>https://github.com/jcsimeone/US WoodForestProduct HTS TradeData</u>

<u>3<sup>rd</sup> iteration = Current dashboards:</u> Automatically updated and visualized, lag of ~1 day after monthly release from US Census (e.g., Mar 2024 data is being released by US Census on May 2 and will show up on dashboard on May 3).

- Background
  - HS & HTS Codes
  - Types of Trade Data
  - US Lacey Act Plant Declaration Requirements and Implementation Schedule
  - Process of Joining US Import HTS Data with Plant Declaration Implementation Schedule
- Creating and Using Dashboards
  - Developing an Automated Pipeline to Retrieve, Process, Join, and Visualize Data
  - Overview of Current Dashboards
  - Example Use-case Interactive Demo and Exploration
  - Design Updates and Functionality is Continual and Iterative Open to Feedback
- Discussion and Q&A

## Creating and Using Dashboards

• Developing an Automated Pipeline to Retrieve, Process, Join, and Visualize Data

### AWS $\rightarrow$ Google Drive $\rightarrow$ Tableau Public

### Simeone Consulting, LLC together with A4 Data Consulting:

- AWS (Backend Data Retrieval and Processing written in Python):
  - Data storage: S3
  - Lambda functions and AWS Glue jobs (Extract, Transform, Load)
  - Crawler functions to build tables
  - Athena as a SQL editor to query Glue data and tables
- Google Drive (Intermediate Data File Storage)
  - Place to write/save output tables from AWS
  - Place to pull same tables and read as input tables into Tableau Public
- Tableau Public (Visualization)
  - All data used is public data (not proprietary) and therefore can use Tableau Public
  - Open access for anyone to use dashboards

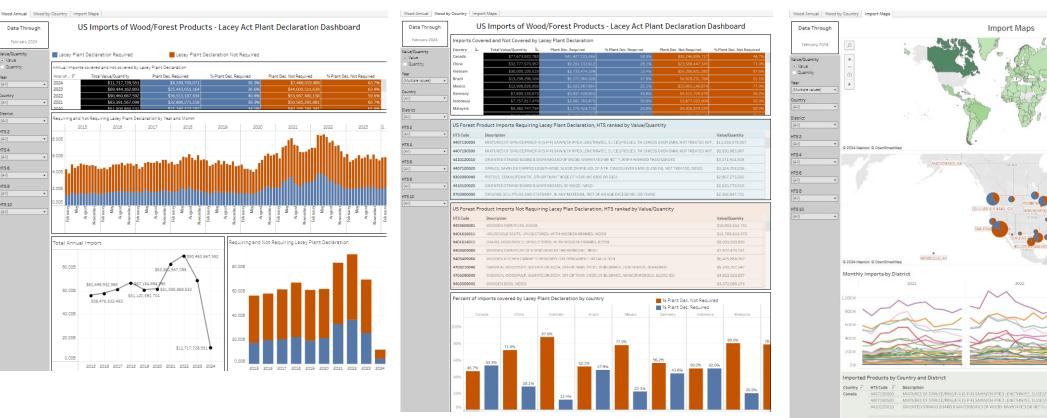
### **Overview of Current Dashboards**

#### Wood Annual

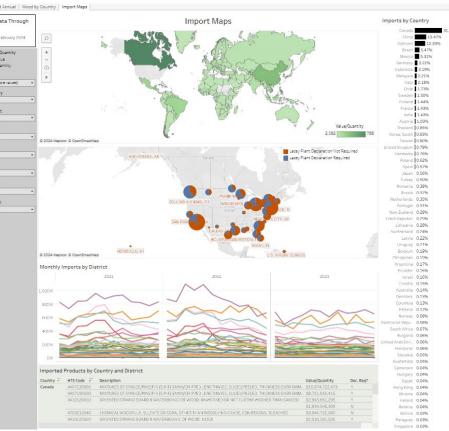
Value

Quantity

#### Wood Country



Import Maps



**Grey filter bar on left side:** Toggle: Value or Quantity; Multiselect: Year, Partner Country, US Port District, HTS2 – HTS10

- Clicking on chart elements results in data filtering and produces metrics based on user selections
- Each sheet filters independently

### **Overview of Current Dashboards**

- Dashboards include by default:
  - "Standard wood and forest products" HTS (Ch. 44, 47, 48, and wood furniture in Ch. 94)
  - + Wood and forest product specialty products that are included in US Lacey Act Plant Declaration Implementation Schedule
    - some of which also contain wood (e.g., woodwind musical instruments)
    - some may/may not, but are included on the implementation schedule for the Lacey Act Plant Declaration (e.g., Ch. 93: firearms, such as revolvers and pistols)
- User can select a subset of HS/HTS based on individual use-case and interest

### Interactive Demo and Dashboard Exploration

https://www.simeoneconsulting.com/dashboards

Example User Questions:

1) Evaluating coverage of US imports of wood and forest products that require Lacey Act Plant Declarations: How does the value of US imports of wood furniture products in HTS Ch. 94 that currently require Plant Declarations compare to the value of imports of the other remaining HTS Ch. 94 wooden furniture HTS codes that do not require Plant Declarations?

2) Exploring the dynamics of US imports of wood and forest products:

- a) Identify the highest value HTS imported from China between Jan 23 Feb 24 and whether the HTS requires a Lacey Plant Declaration
- b) Identify whether certain US ports districts import more forest products from China than other districts
- c) Where else does the US import from under the same HTS that is the highest value wood HTS imports from China (94036080801)? How have imports changed since 2015 between the US' top partner countries for imports of this HTS?

### Design Updates & Functionality is Continual and Iterative

- Current intended users: developed for my own use and trade-policy analysis
  Requires knowledge of HTS
- Developing ideas for additional functionality, visualizations, and analysis
- Some design choices were intentional, others neglected inadvertently
- Open to feedback to help make it more useful to others

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### Discussion and Q&A

www.simeoneconsulting.com/dashboards

Thank you!

John Simeone Simeone Consulting, LLC <u>simeoneconsulting@gmail.com</u>