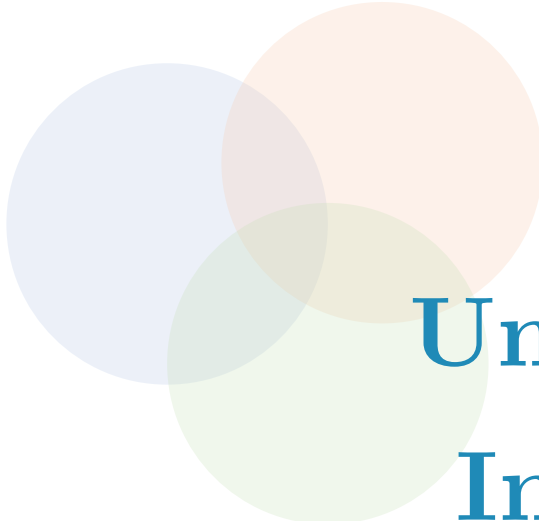


National Open Data Conference 2024

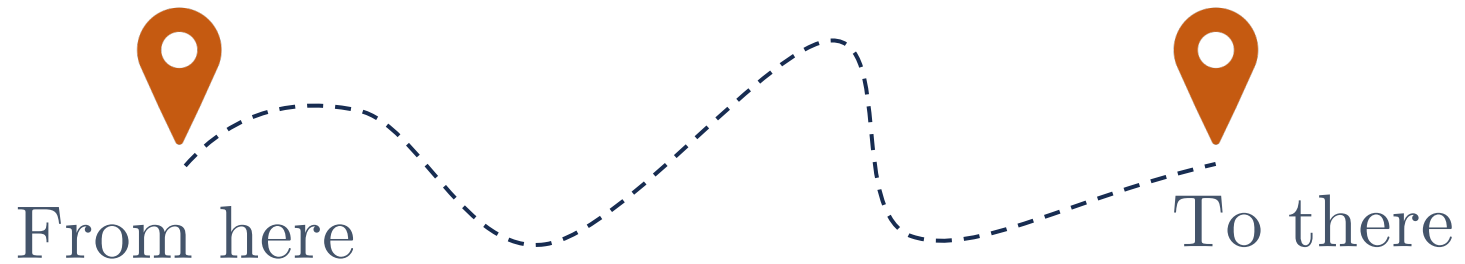


Unlocking the Power of Data: Introduction to Data-driven Storytelling

From data to story

What is a **story**?

How something got



Narration

How Russian oil is fueling American cars via **sanction loophole?**



Russian Oil Is Fueling American Cars Via Sanctions Loophole

An oil refinery in Sicily, owned by Russia's second largest oil and gas giant Lukoil, acts as a pass-through for Russian crude, which ultimately makes its way to the U.S. as gasoline and other refined oil products. Photo Illustration: Laura Kammermann

By *Wall Street Journal*

November 1, 2022 ⌚ 5:48

Why **story** matter?

Human relatable

People love to **tell**
and **listen/read** a
story



Curious to learn
Desire to **express**

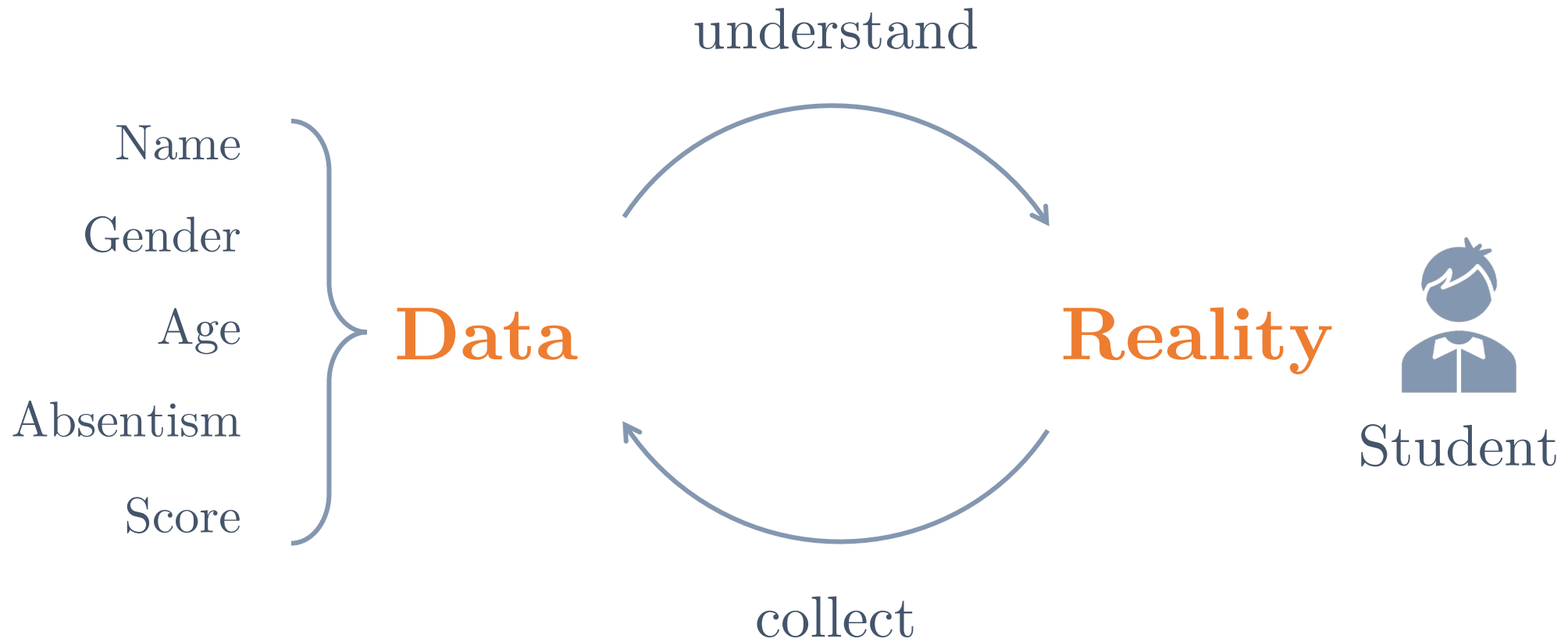
What about **Data** storytelling...?

What is

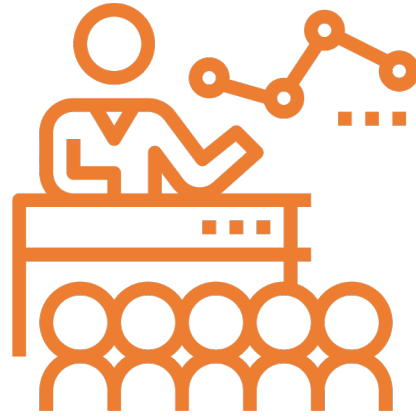
Data? a snapshot of reality

Just like a photo





So easy to look at, so hard to define



Data storytelling : telling a **thorough** and **factual** story.

Most often, the story can't be told
thoroughly **without data**.

By telling a complete factual story, high
chance of having **impact**.

But how a data story would look like?

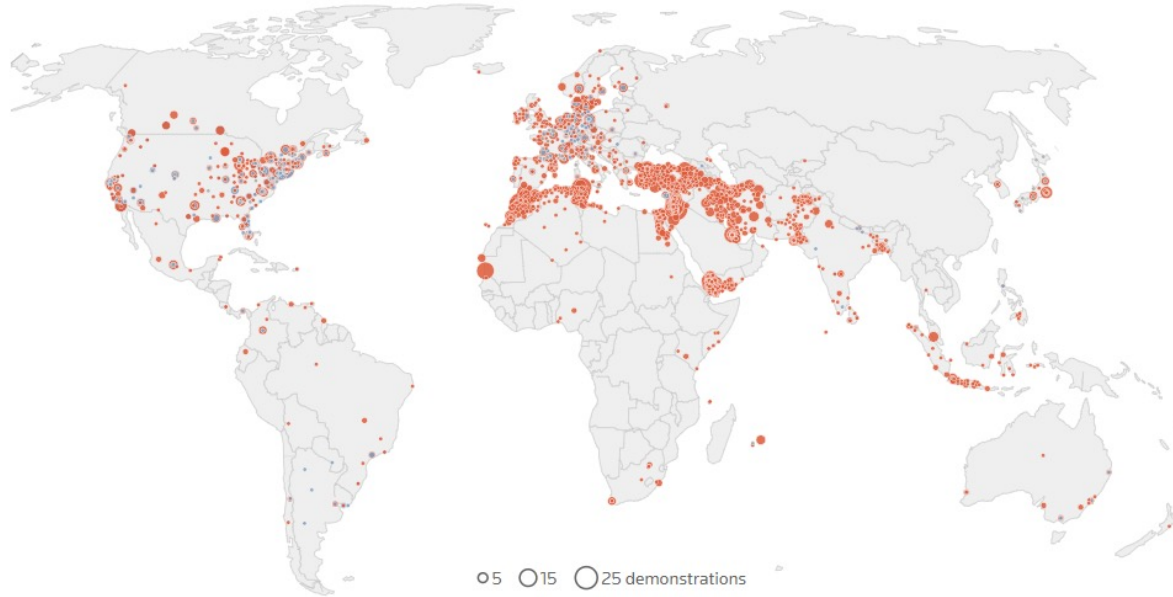
Article

NOV. 14, 2023 12:30 AM GMT+7

Protests sweep around the globe as Israel's war in Gaza grinds on

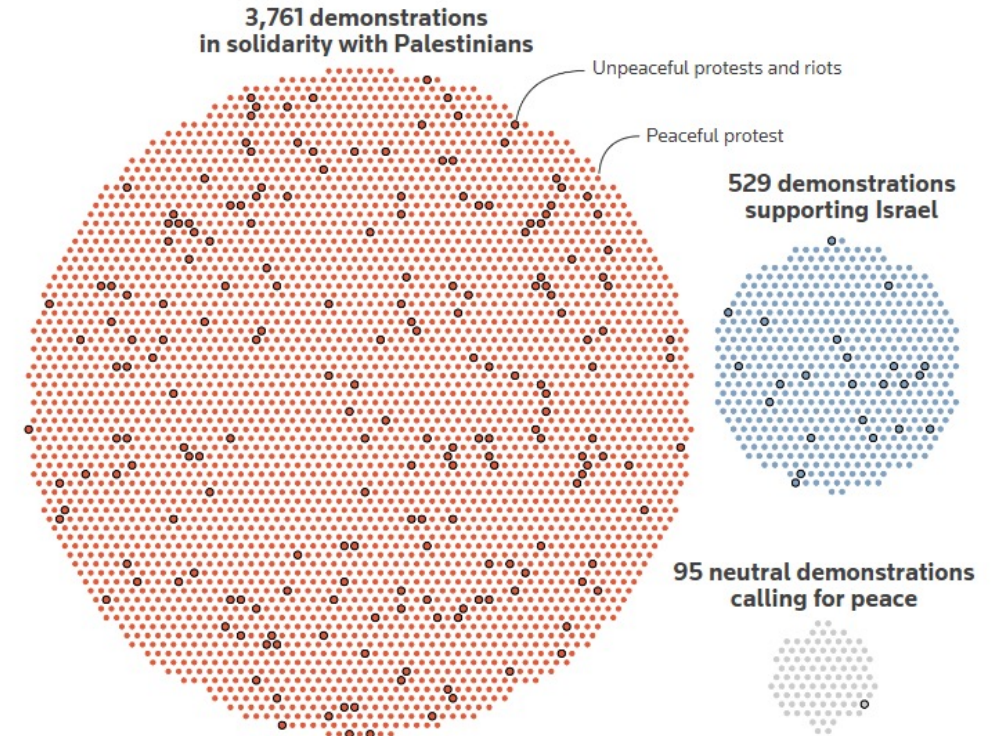
By Prasanta Kumar Dutta

● pro-Palestinian ● pro-Israel ● neutral



Note: Shows protests and riots between Oct. 7 and 27.
Source: Armed Conflict Location & Event Data Project (ACLED)

ACLED's data, which covers demonstrations between Oct. 7 and 27, records that most demonstrations have been peaceful, but about 5% have turned violent or been broken up by police or other security agencies.



Note: Analysis includes peaceful protests, protests with intervention, protests with excessive force used against protesters and violent demonstrations as categorised by ACLED. Data from Oct. 7 to 27.
Source: Armed Conflict Location & Event Data Project (ACLED)

The majority of demonstrations — about 86% — recorded by ACLED were pro-Palestinian, while a small minority were neutral, calling for peace and a ceasefire without taking an explicit pro-Israel or pro-Palestinian stance

Video



How China and India Help Russia's Economy by Buying Oil

As the West scrambles to move away from Russian energy sources and imposes sanctions on Moscow, China and India have stepped in to fill the gap. WSJ examines how those countries have boosted Russia's revenue from oil sales, supporting its economy. Photo illustration: Sharon Shi

By Wall Street Journal

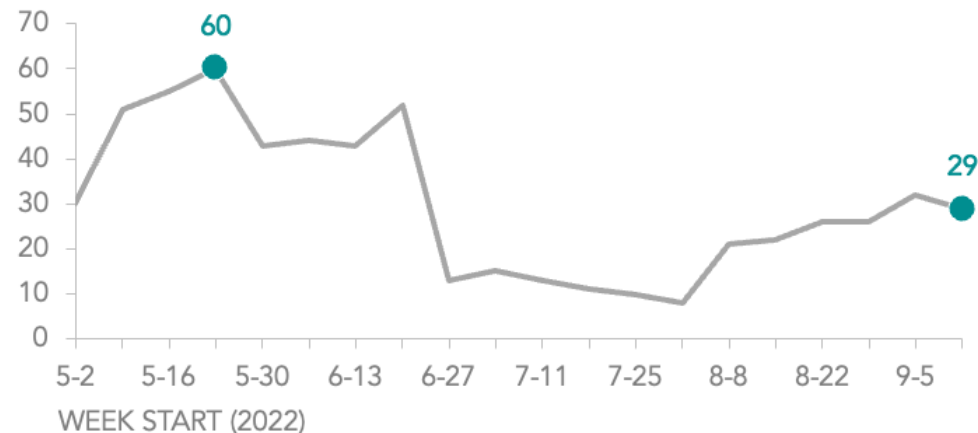
Presentation

Opportunity: **expand our training program**

Our summer promotion was effective at getting clients to register for the program, but our latest weekly training program **registrations are 50% lower** compared to the highest week in May.

RECOMMENDATION: Review current awareness and promotion strategies to drive additional registrations.

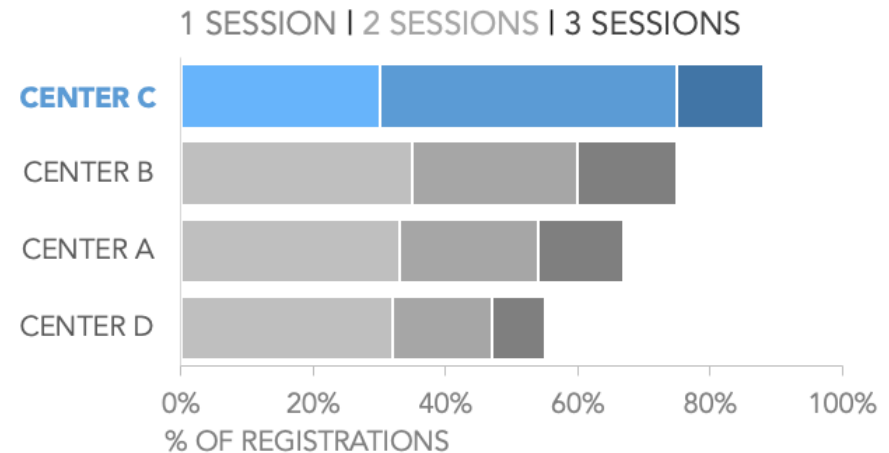
Weekly training program registrations



The volume of training sessions attended has also tapered off since May. **Center C has the highest percentage of registrations** participating in personal training sessions.

LET'S DISCUSS: What can we learn from **Center C's** success with program engagement?

Session engagement level by center



How a data story could be
produced?

Start with a **topic** and...



Explore



Explain



Explore

Context -----> What is the **gap/problem**?

Purpose -----> What you want **know**?

Explore data -----> What you have **found**?

Synthesize data -----> What you have **learn**?

findings



Explain

- ➡ Who is your audience? What is your point? How you communicate your story?
- ➡ Choose the right visual
- ➡ Remove unnecessary clutters
- ➡ Organize your story

Telling a Covid-19 story in Cambodia

How Covid-19 cases rose and faded away in
Cambodia?

Context

- 👉 Covid-19 emerged at the end 2019 in China.
- 👉 Cambodia recorded first case of Covid-19 by early March 2020.
- 👉 Four Chinesees were released from the quarantine center on 20th Feb 2021.
- 👉 Cambodia imposed lockdown between 14th and 28th April 2021.
- 👉 Second wave of Covid-19 with Omicron variant at the end of 2022.

Covid-19 cases dataset

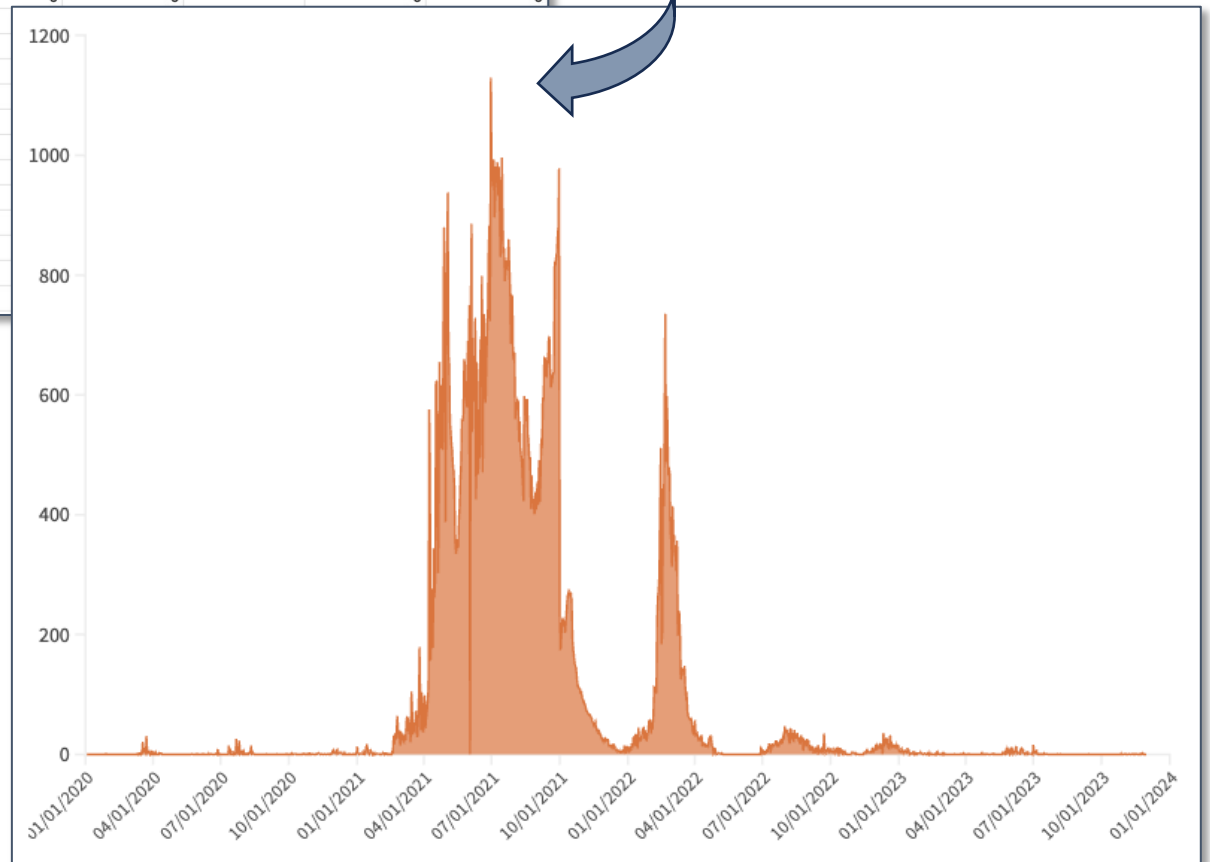
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2	KHM	Asia	Cambodia	1/3/2020		0			0			0	
3	KHM	Asia	Cambodia	1/4/2020		0			0			0	
4	KHM	Asia	Cambodia	1/5/2020		0			0			0	
5	KHM	Asia	Cambodia	1/6/2020		0			0			0	
6	KHM	Asia	Cambodia	1/7/2020		0			0			0	
7	KHM	Asia	Cambodia	1/8/2020		0	0		0	0		0	0
8	KHM	Asia	Cambodia	1/9/2020		0	0		0	0		0	0
9	KHM	Asia	Cambodia	1/10/2020		0	0		0	0		0	0
10	KHM	Asia	Cambodia	1/11/2020		0	0		0	0		0	0
11	KHM	Asia	Cambodia	1/12/2020		0	0		0	0		0	0
12	KHM	Asia	Cambodia	1/13/2020		0	0		0	0		0	0
13	KHM	Asia	Cambodia	1/14/2020		0	0		0	0		0	0
14	KHM	Asia	Cambodia	1/15/2020		0	0		0	0		0	0
15	KHM	Asia	Cambodia	1/16/2020		0	0		0	0		0	0
16	KHM	Asia	Cambodia	1/17/2020		0	0		0	0		0	0
17	KHM	Asia	Cambodia	1/18/2020		0	0		0	0		0	0
18	KHM	Asia	Cambodia	1/19/2020		0	0		0	0		0	0
19	KHM	Asia	Cambodia	1/20/2020		0	0		0	0		0	0
20	KHM	Asia	Cambodia	1/21/2020		0	0		0	0		0	0
21	KHM	Asia	Cambodia	1/22/2020		0	0		0	0		0	0
22	KHM	Asia	Cambodia	1/23/2020		0	0		0	0		0	0

Vaccination dataset

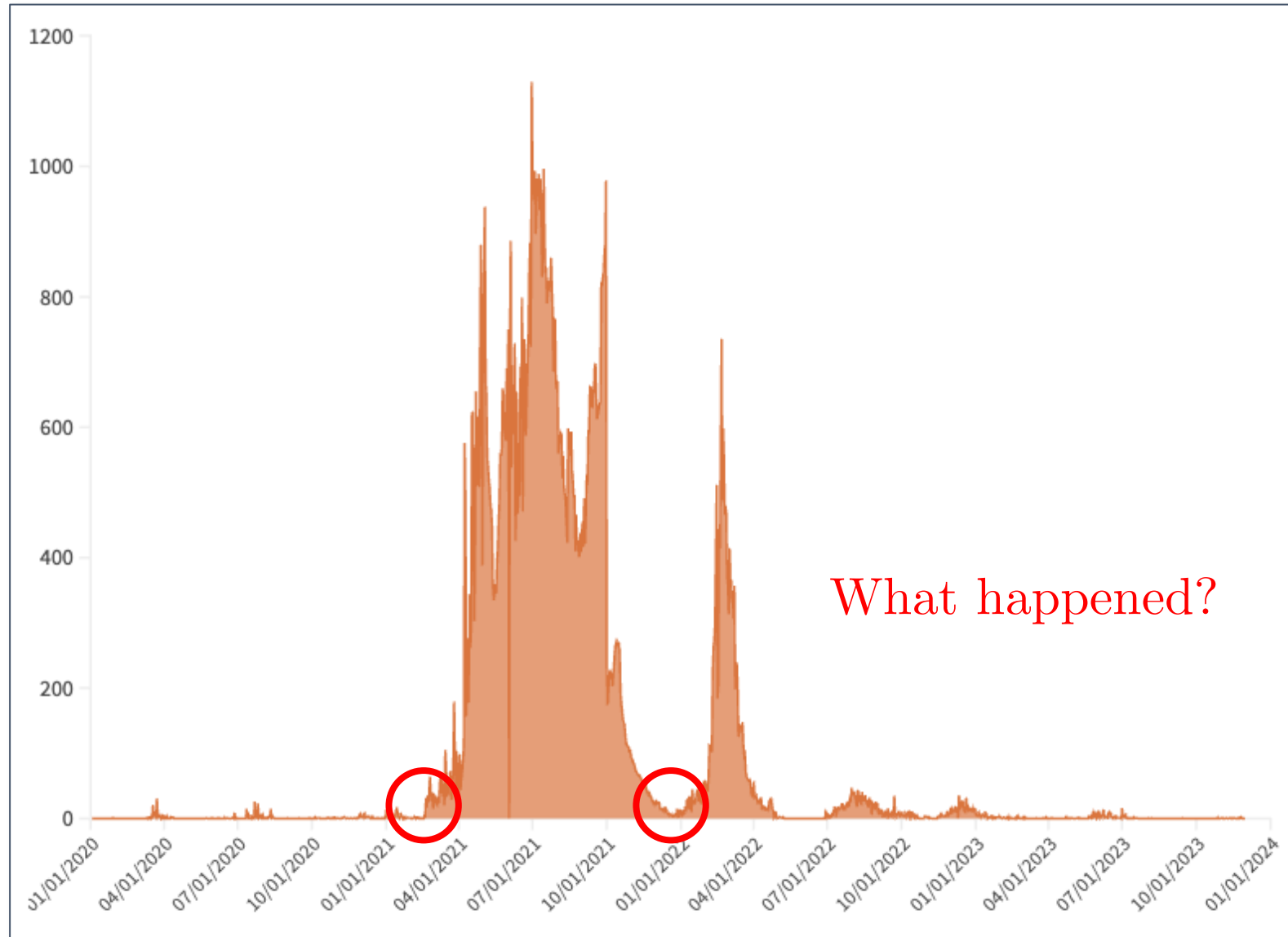
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	location	iso_code	date	total_vaccinatio	people_vaccina	people_fully_va	total_boosters	daily_vaccinatic	daily_vaccinatic	total_vaccinatio	people_vaccina	people_fully_va	total_boosters
2	Cambodia	KHM	2/9/2021	0	0					0	0		
3	Cambodia	KHM	2/10/2021	339	339			339	339	0	0		
4	Cambodia	KHM	2/11/2021						458				
5	Cambodia	KHM	2/12/2021	1492	1492				497	0.01	0.01		
6	Cambodia	KHM	2/13/2021						840				
7	Cambodia	KHM	2/14/2021						1045				
8	Cambodia	KHM	2/15/2021	7091	7091				1182	0.04	0.04		
9	Cambodia	KHM	2/16/2021	11016	11016			3925	1574	0.07	0.07		
10	Cambodia	KHM	2/17/2021	12167	12167			1151	1690	0.07	0.07		
11	Cambodia	KHM	2/18/2021	16612	16612			4445	2242	0.1	0.1		
12	Cambodia	KHM	2/19/2021	21660	21660			5048	2881	0.13	0.13		
13	Cambodia	KHM	2/20/2021						3077				
14	Cambodia	KHM	2/21/2021	28134	28134				3273	0.17	0.17		
15	Cambodia	KHM	2/22/2021	37379	37379			9245	4327	0.22	0.22		
16	Cambodia	KHM	2/23/2021	44505	44505			7126	4784	0.27	0.27		
17	Cambodia	KHM	2/24/2021	54350	54286	64		9845	6026	0.32	0.32	0	
18	Cambodia	KHM	2/25/2021	60270	59928	342		5920	6237	0.36	0.36	0	
19	Cambodia	KHM	2/26/2021	63825	63217	608		3555	6024	0.38	0.38	0	
20	Cambodia	KHM	2/27/2021						5986				
21	Cambodia	KHM	2/28/2021	69777	68299	1478			5949	0.42	0.41	0.01	
22	Cambodia	KHM	3/1/2021	87069	84736	2333		17292	7099	0.52	0.51	0.01	
23	Cambodia	KHM	3/2/2021	114283	108409	5874		27214	9968	0.68	0.65	0.04	
24	Cambodia	KHM	3/3/2021	135543	125668	9875		21260	11599	0.81	0.75	0.06	
25	Cambodia	KHM	3/4/2021	151231	140096	11135		15688	12994	0.9	0.84	0.07	
26	Cambodia	KHM	3/5/2021	167773	153718	14055		16542	14850	1	0.92	0.08	
27	Cambodia	KHM	3/6/2021	178910	162927	15983		11137	16016	1.07	0.97	0.1	
28	Cambodia	KHM	3/7/2021	185052	167487	17565		6142	16468	1.1	1	0.1	

Covid-19 cases dataset

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	iso_code	continent	location	date	total_cases	new_cases	new_cases_smc	total_deaths	new_deaths	new_deaths_sm	total_cases_per	new_cases_per	new_cases_smc
2	KHM	Asia	Cambodia	1/3/2020		0			0			0	
3	KHM	Asia	Cambodia	1/4/2020		0			0			0	
4	KHM	Asia	Cambodia	1/5/2020		0			0			0	
5	KHM	Asia	Cambodia	1/6/2020		0			0			0	
6	KHM	Asia	Cambodia	1/7/2020		0			0			0	
7	KHM	Asia	Cambodia	1/8/2020		0	0		0	0		0	
8	KHM	Asia	Cambodia	1/9/2020		0	0		0	0		0	0
9	KHM	Asia	Cambodia	1/10/2020		0	0		0	0		0	0
10	KHM	Asia	Cambodia	1/11/2020		0	0		0	0		0	0
11	KHM	Asia	Cambodia	1/12/2020		0	0		0	0		0	0
12	KHM	Asia	Cambodia	1/13/2020		0	0		0	0		0	0
13	KHM	Asia	Cambodia	1/14/2020		0	0		0	0		0	0
14	KHM	Asia	Cambodia	1/15/2020		0	0		0	0		0	0
15	KHM	Asia	Cambodia	1/16/2020		0	0		0	0		0	0
16	KHM	Asia	Cambodia	1/17/2020		0	0		0	0		0	0
17	KHM	Asia	Cambodia	1/18/2020		0	0		0	0		0	0
18	KHM	Asia	Cambodia	1/19/2020		0	0		0	0		0	0
19	KHM	Asia	Cambodia	1/20/2020		0	0		0	0		0	0
20	KHM	Asia	Cambodia	1/21/2020		0	0		0	0		0	0
21	KHM	Asia	Cambodia	1/22/2020		0	0		0	0		0	0
22	KHM	Asia	Cambodia	1/23/2020		0	0		0	0		0	0

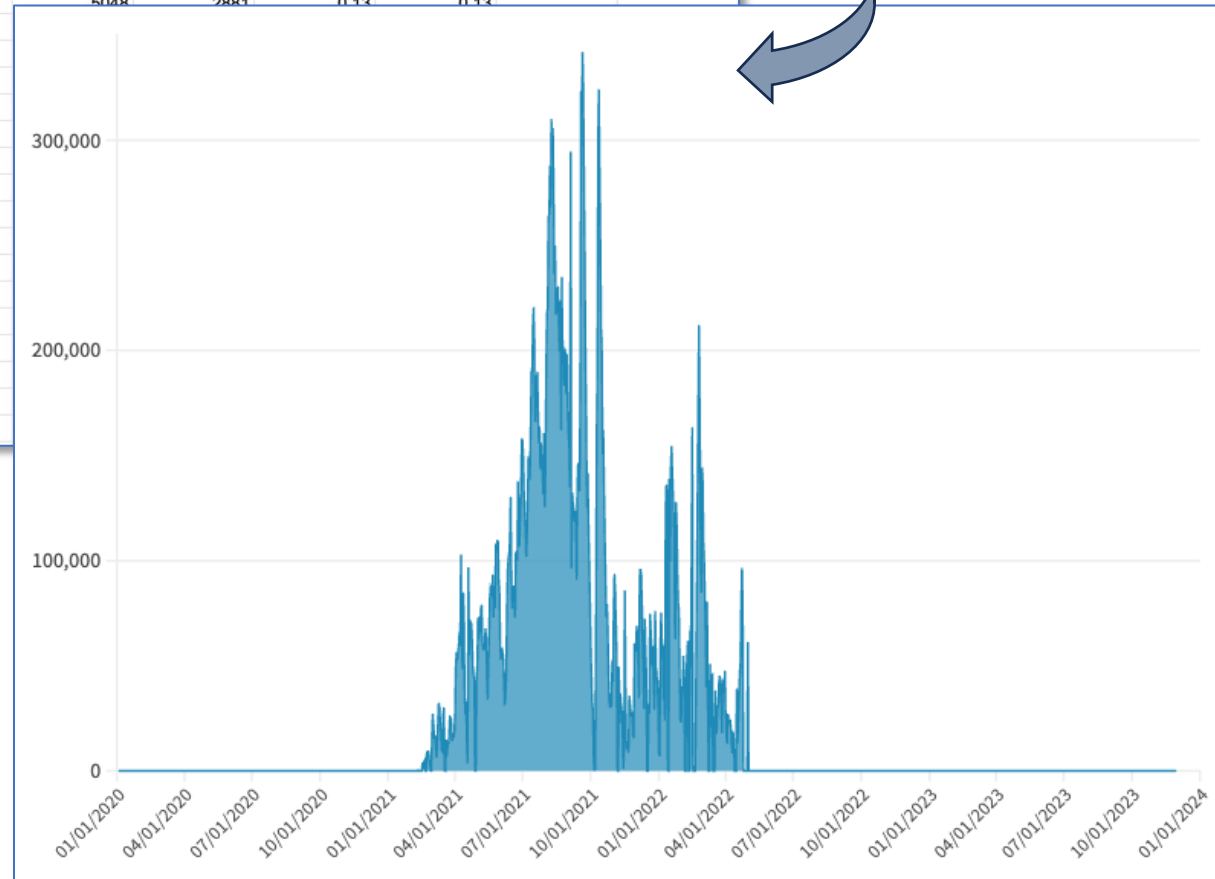


EXPLORE Covid-19 cases dataset

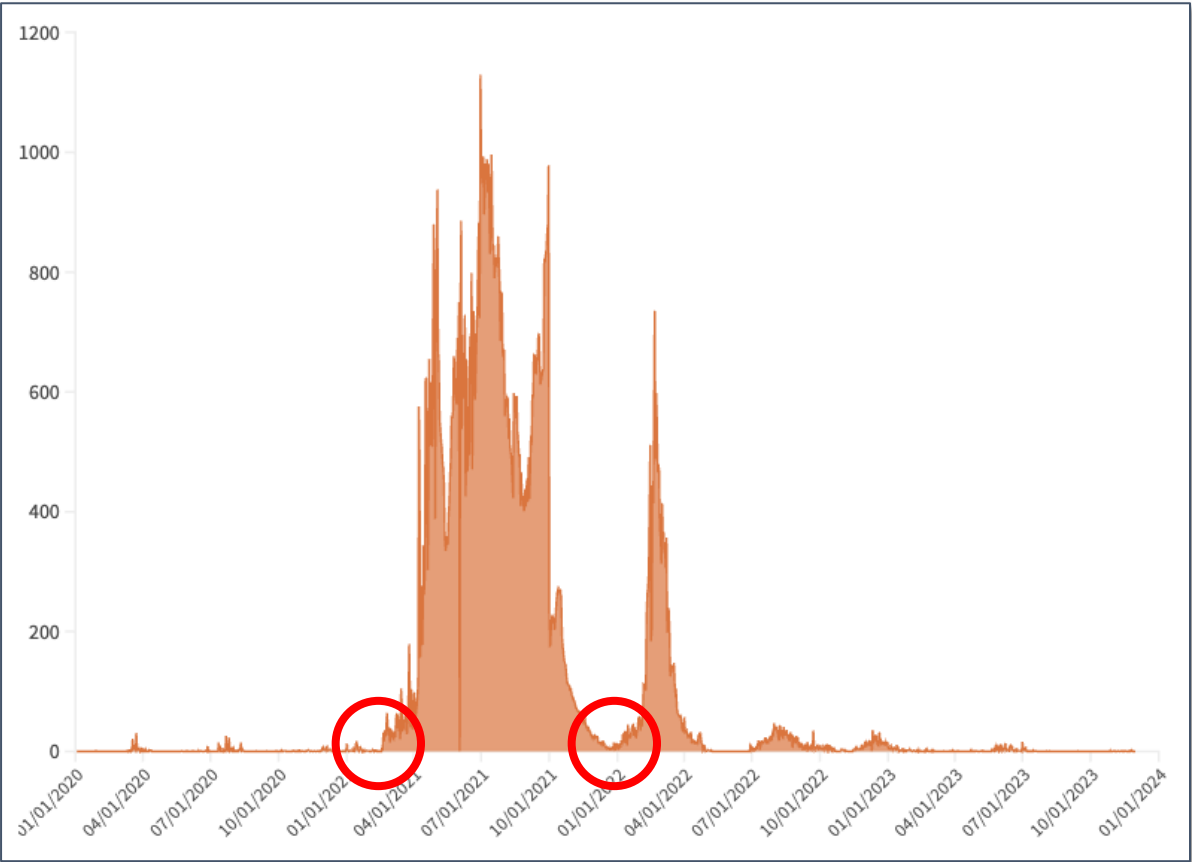


Vaccination dataset

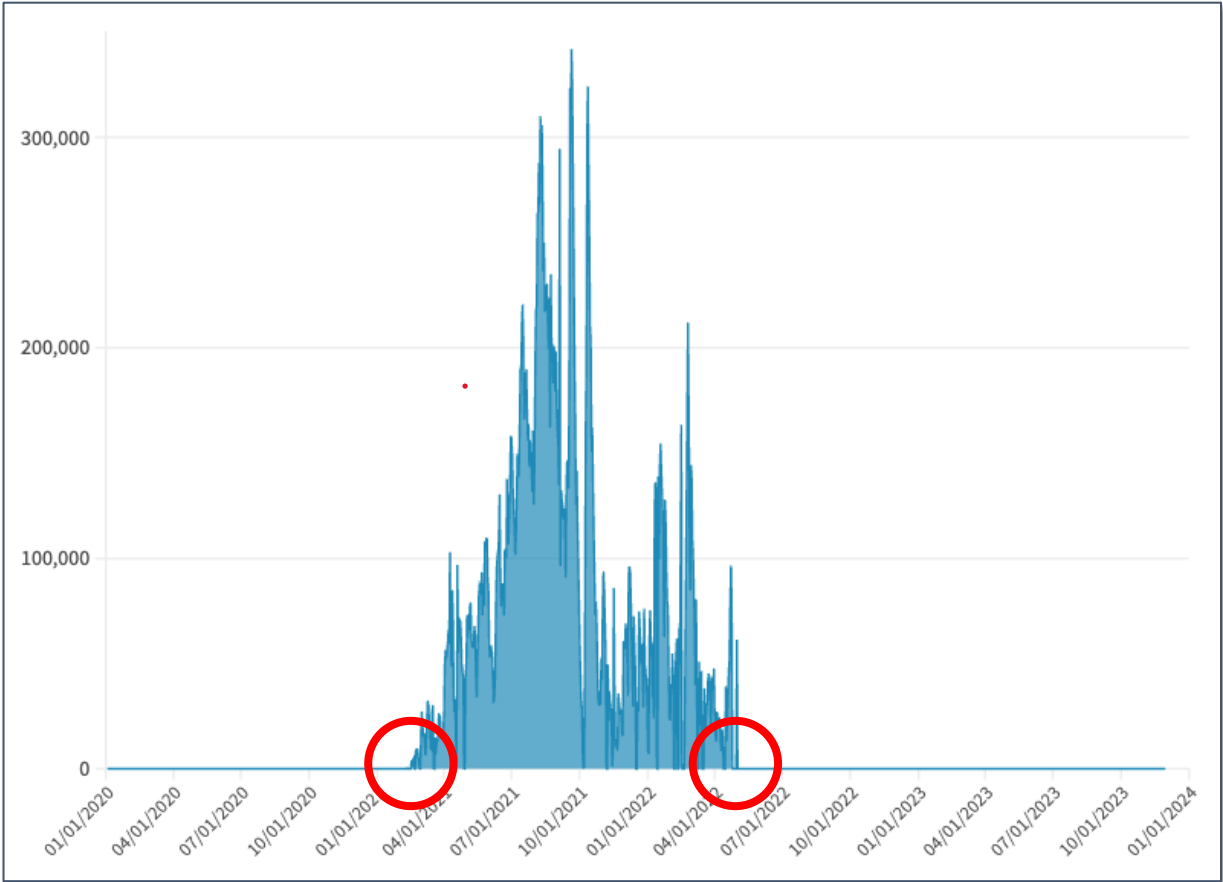
	A	B	C	D	E	F	G	H	I	J	K	L	M
1	location	iso_code	date	total_vaccinatio	people_vaccina	people_fully_va	total_boosters	daily_vaccinatic	daily_vaccinatic	total_vaccinatio	people_vaccina	people_fully_va	total_boosters
2	Cambodia	KHM	2/9/2021	0	0					0	0		
3	Cambodia	KHM	2/10/2021	339	339			339	339	0	0		
4	Cambodia	KHM	2/11/2021						458				
5	Cambodia	KHM	2/12/2021	1492	1492				497	0.01	0.01		
6	Cambodia	KHM	2/13/2021						840				
7	Cambodia	KHM	2/14/2021						1045				
8	Cambodia	KHM	2/15/2021	7091	7091				1182	0.04	0.04		
9	Cambodia	KHM	2/16/2021	11016	11016			3925	1574	0.07	0.07		
10	Cambodia	KHM	2/17/2021	12167	12167			1151	1690	0.07	0.07		
11	Cambodia	KHM	2/18/2021	16612	16612			4445	2242	0.1	0.1		
12	Cambodia	KHM	2/19/2021	21660	21660			5048	2881	0.13	0.13		
13	Cambodia	KHM	2/20/2021										
14	Cambodia	KHM	2/21/2021	28134	28134								
15	Cambodia	KHM	2/22/2021	37379	37379								
16	Cambodia	KHM	2/23/2021	44505	44505								
17	Cambodia	KHM	2/24/2021	54350	54286	64							
18	Cambodia	KHM	2/25/2021	60270	59928	342							
19	Cambodia	KHM	2/26/2021	63825	63217	608							
20	Cambodia	KHM	2/27/2021										
21	Cambodia	KHM	2/28/2021	69777	68299	1478							
22	Cambodia	KHM	3/1/2021	87069	84736	2333							
23	Cambodia	KHM	3/2/2021	114283	108409	5874							
24	Cambodia	KHM	3/3/2021	135543	125668	9875							
25	Cambodia	KHM	3/4/2021	151231	140096	11135							
26	Cambodia	KHM	3/5/2021	167773	153718	14055							
27	Cambodia	KHM	3/6/2021	178910	162927	15983							
28	Cambodia	KHM	3/7/2021	185052	167487	17565							

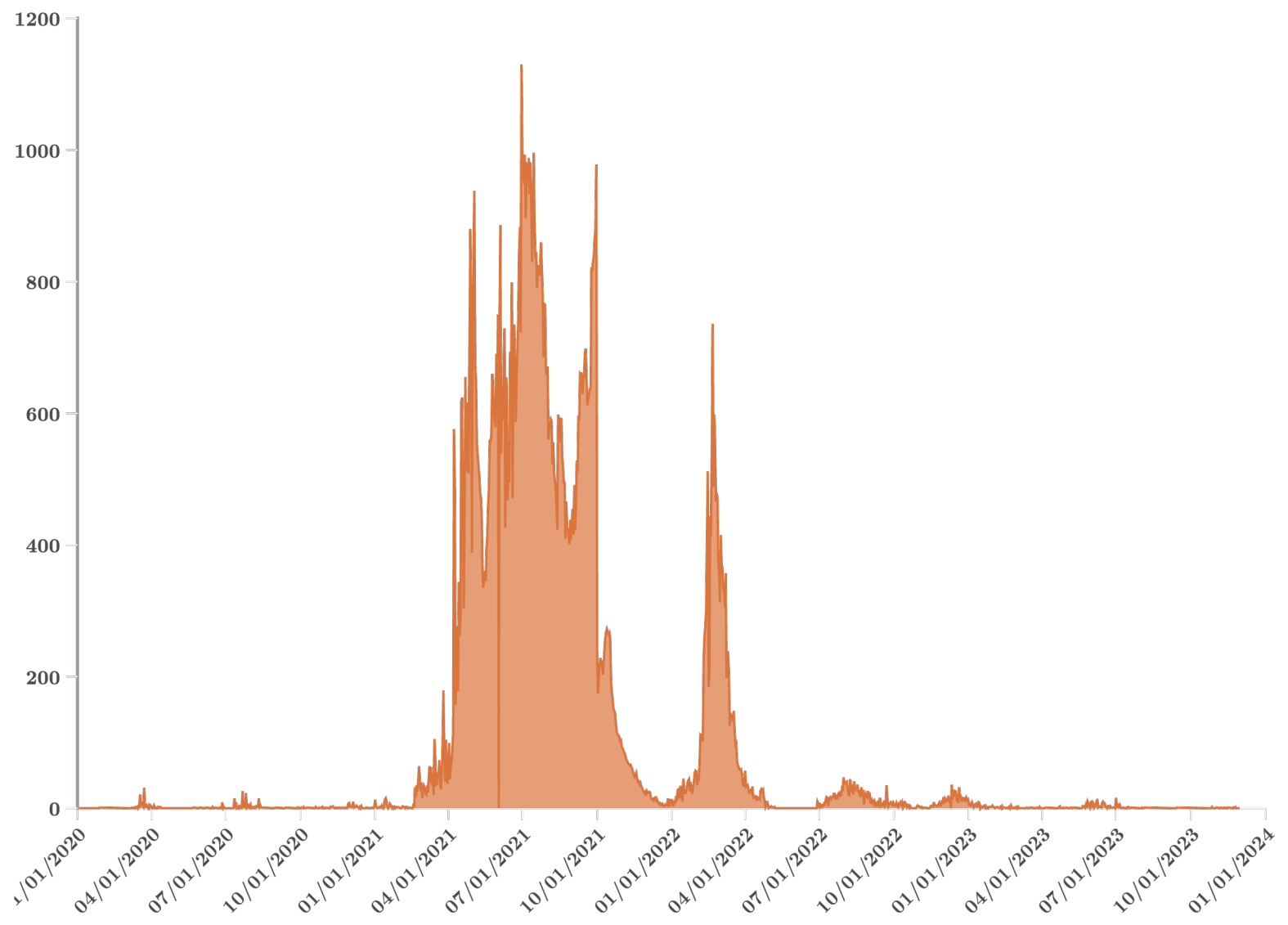


Covid-19 cases dataset

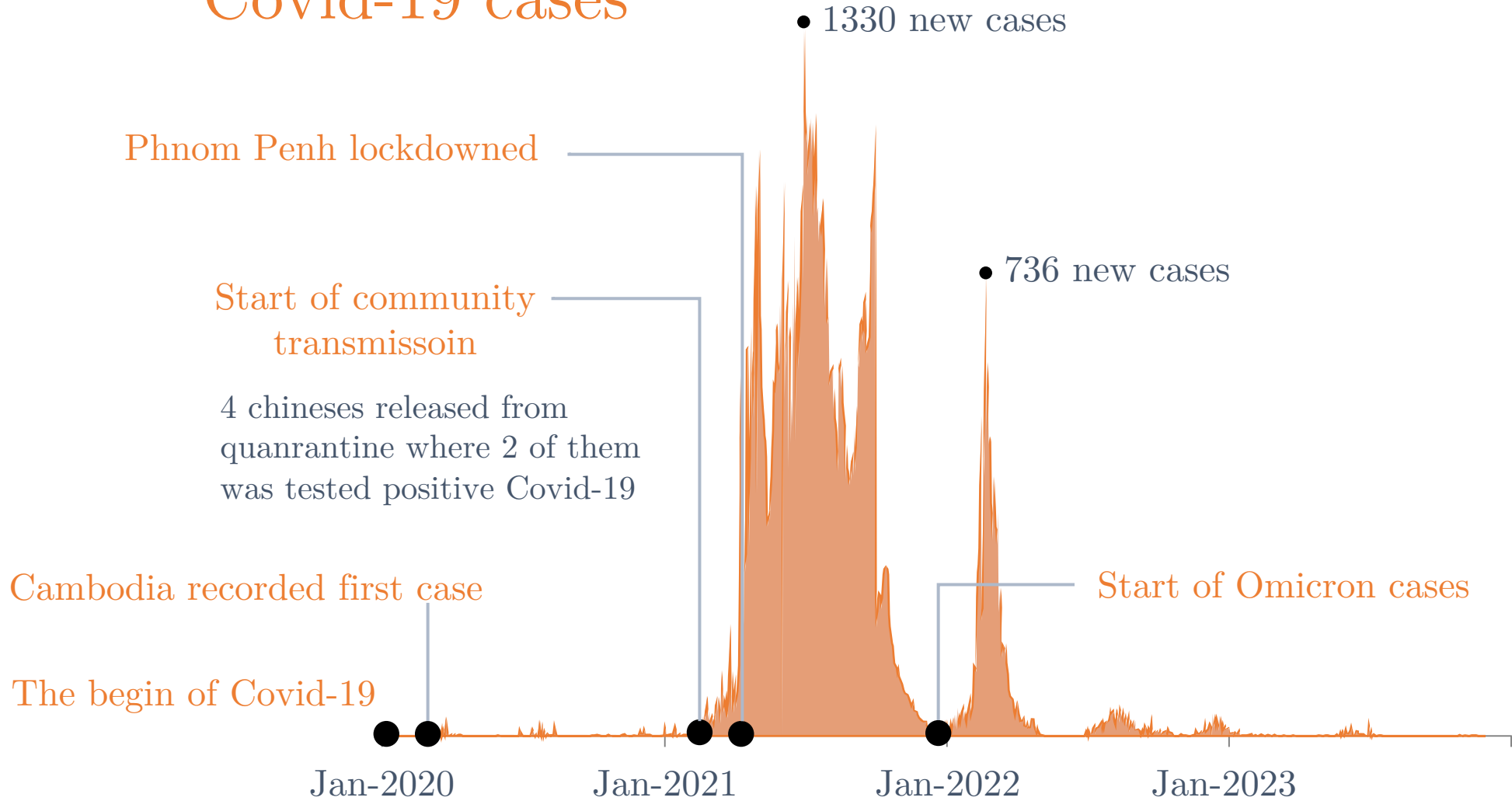


Vaccination dataset

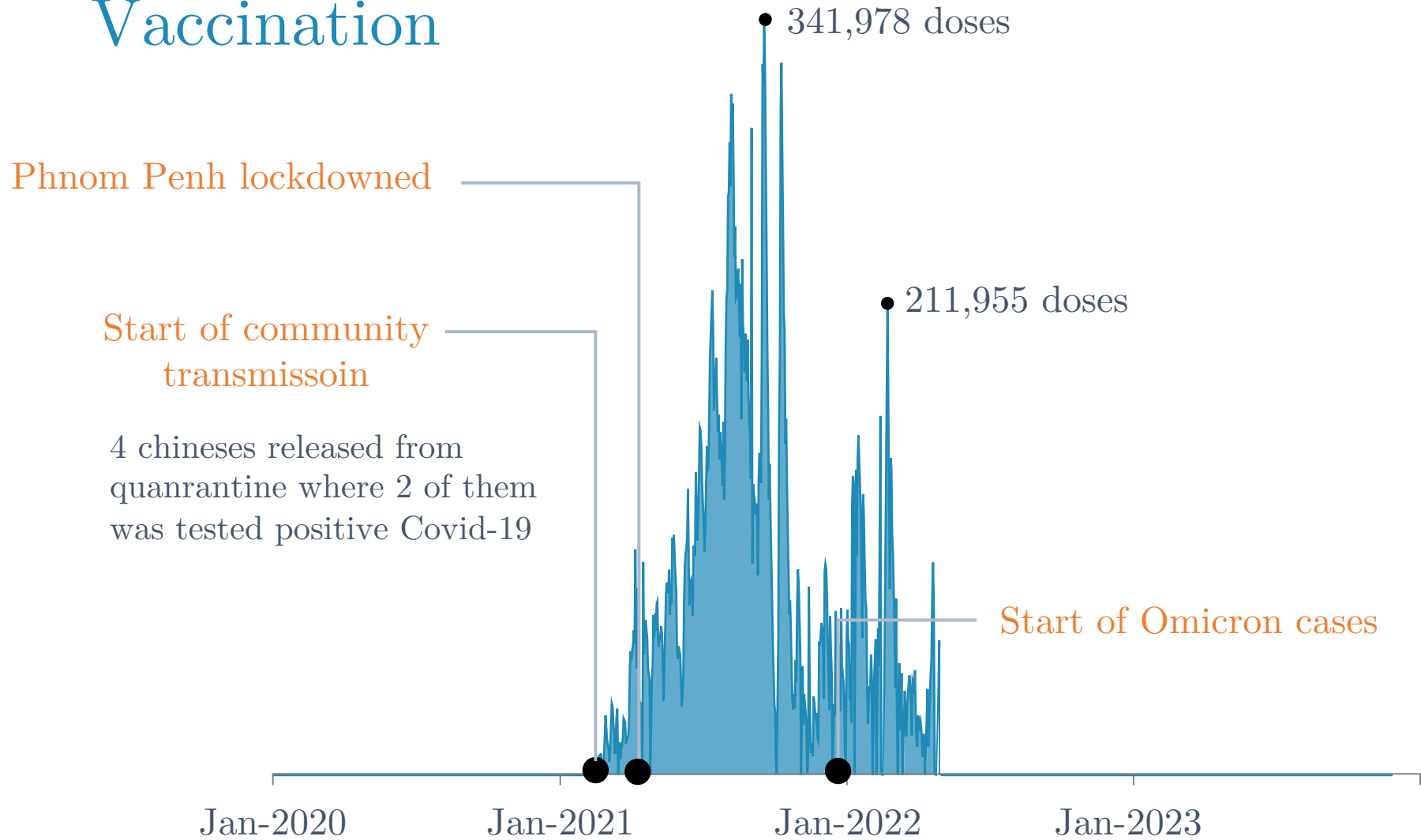


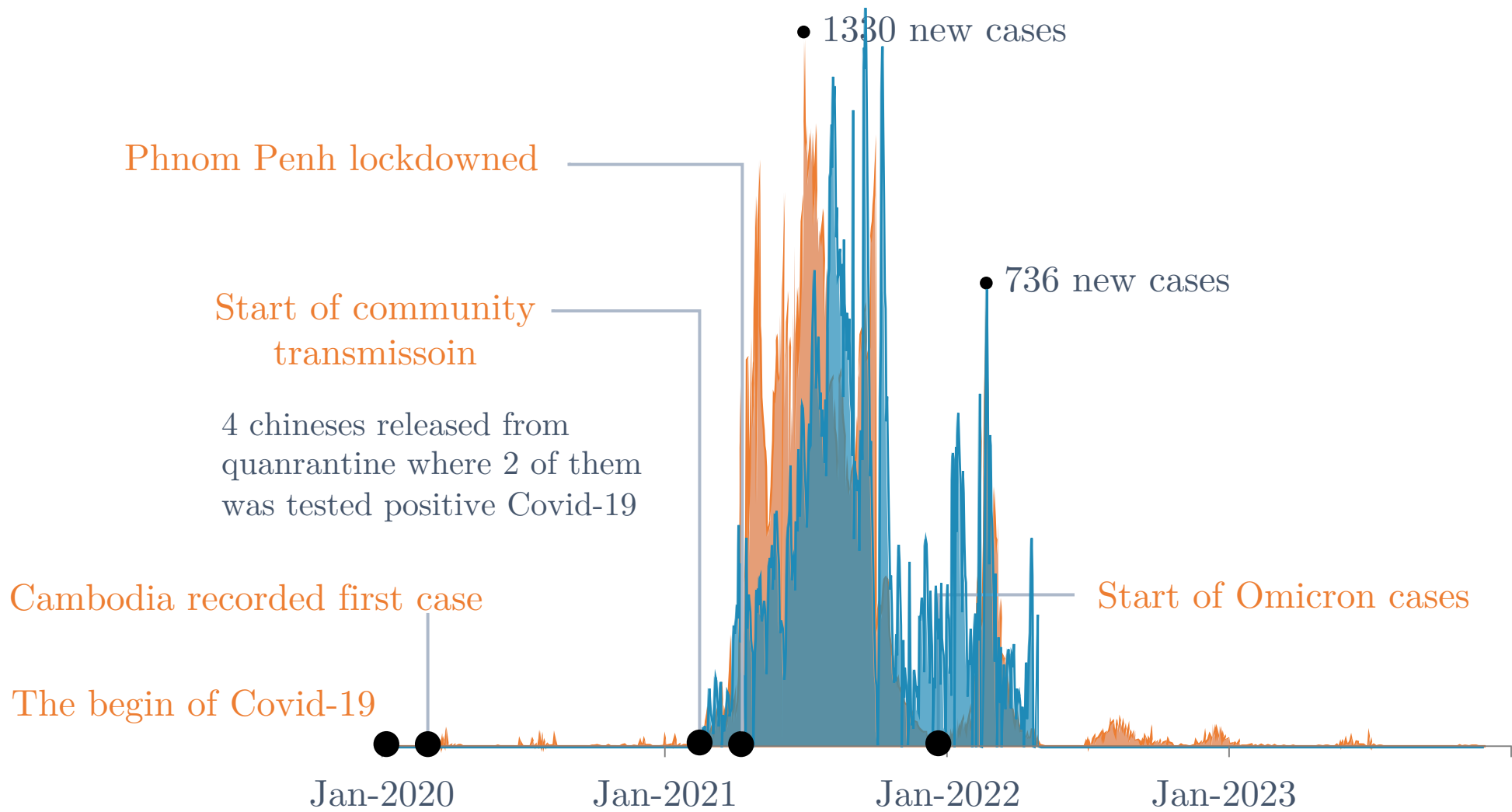


Covid-19 cases

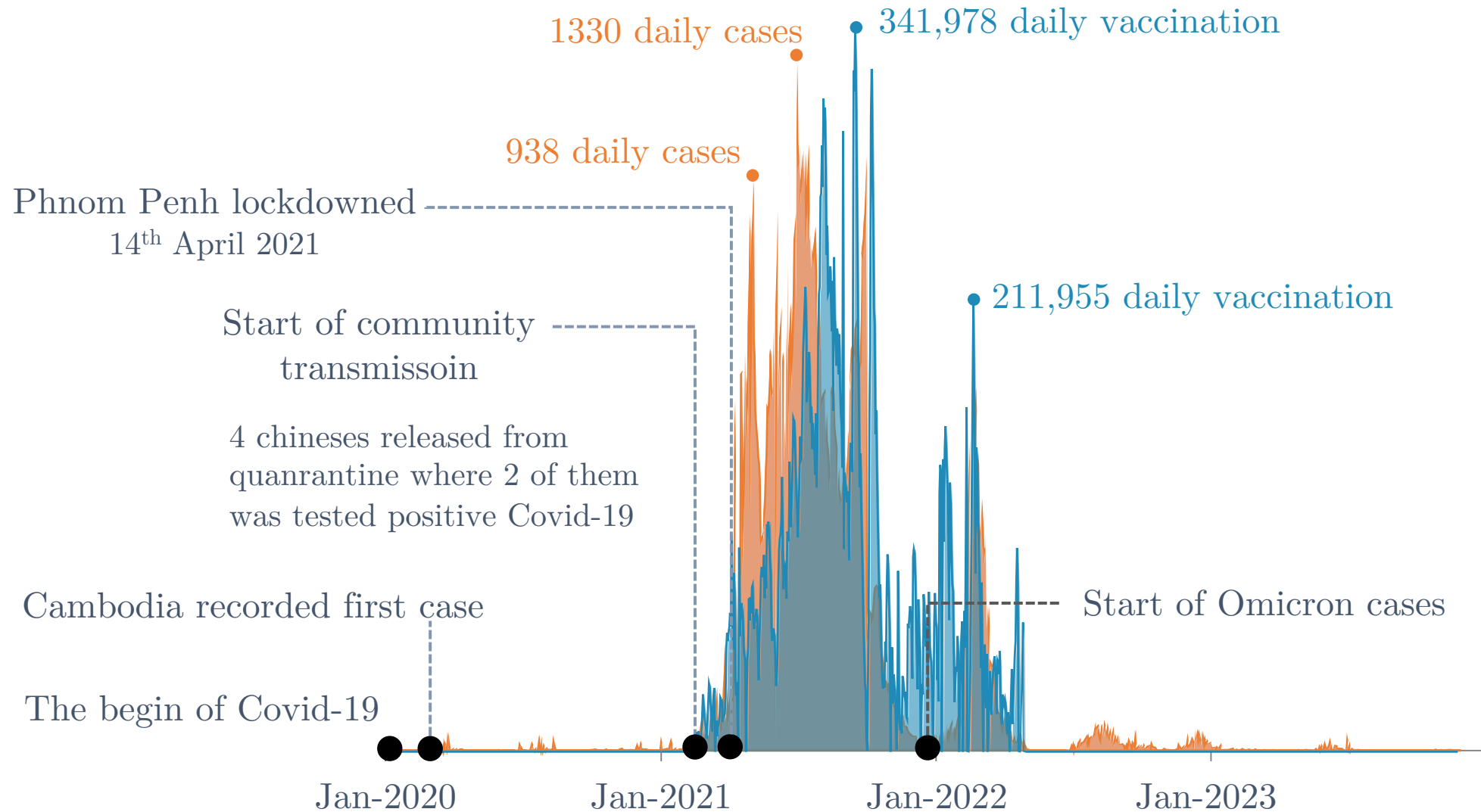


Vaccination





Covid-19 rose through the community transmission and fade away with the help of stricted Covid-19 measures and vaccination



Cambodia electricity generation in progress

How Cambodia has been developing its electricity
production plant?

And

How it benefit to the citizens?

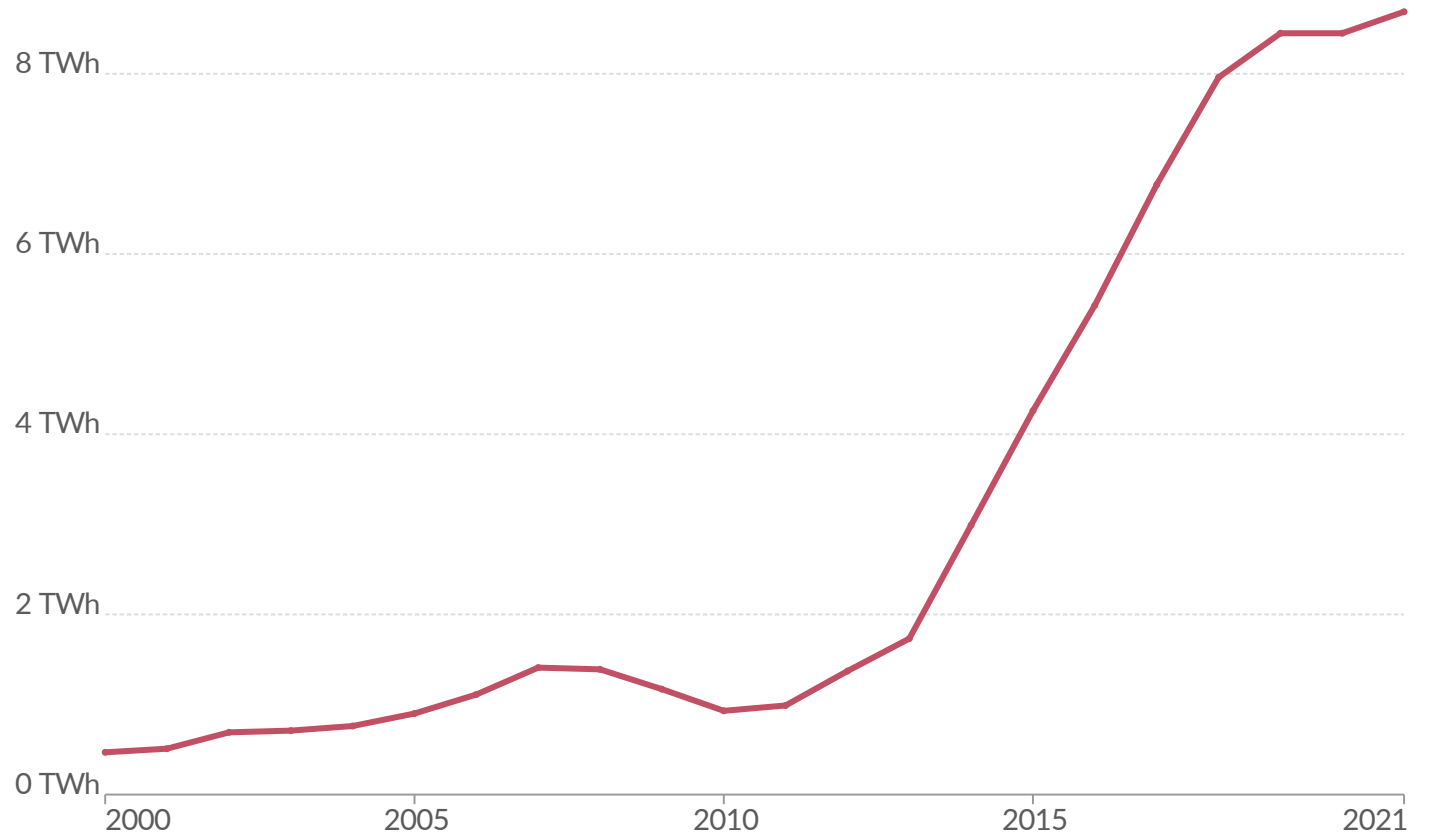
Electricity generation dataset

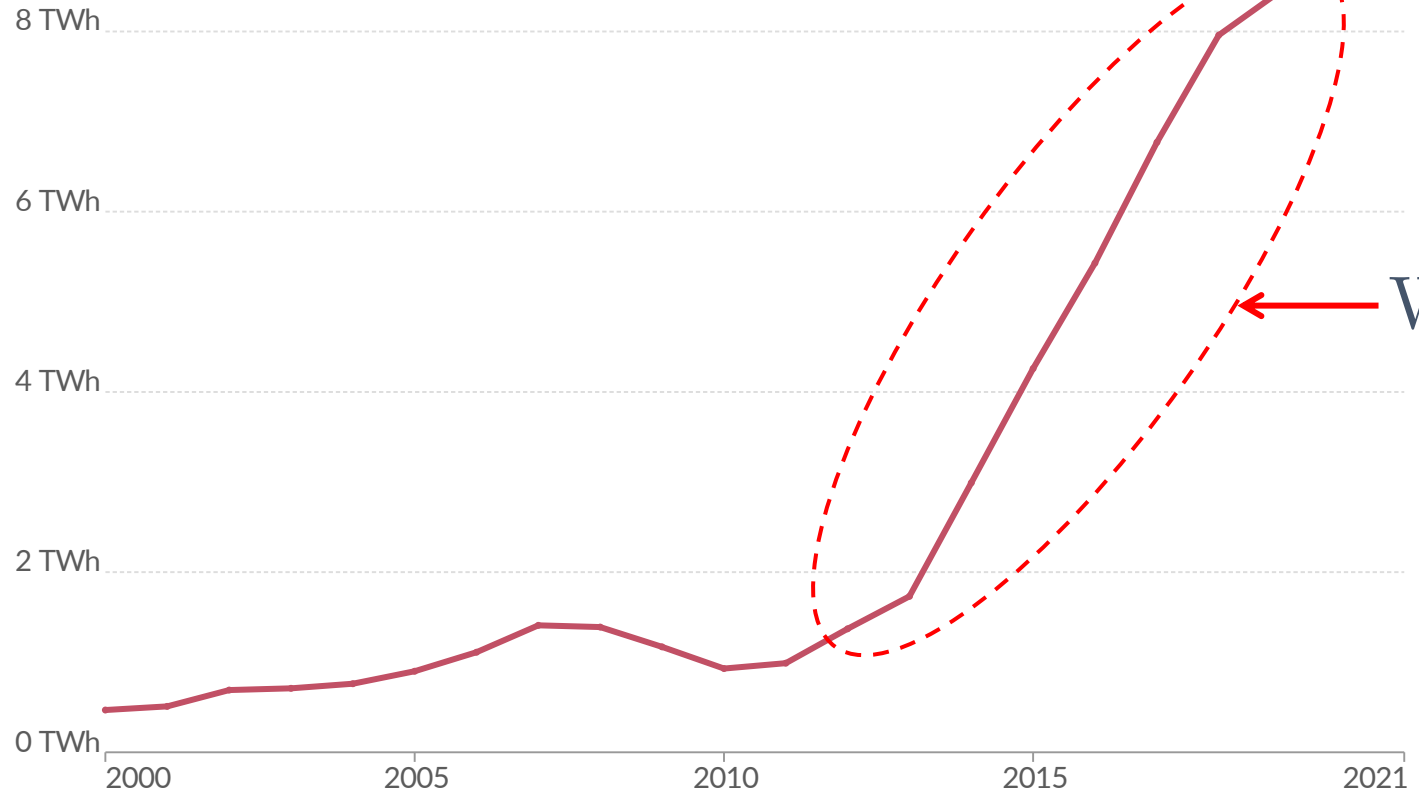
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1117	Cambodia	KHM	2002	0.69
1118	Cambodia	KHM	2003	0.71
1119	Cambodia	KHM	2004	0.76
1120	Cambodia	KHM	2005	0.9
1121	Cambodia	KHM	2006	1.11
1122	Cambodia	KHM	2007	1.41
1123	Cambodia	KHM	2008	1.39
1124	Cambodia	KHM	2009	1.17
1125	Cambodia	KHM	2010	0.93
1126	Cambodia	KHM	2011	0.99
1127	Cambodia	KHM	2012	1.37
1128	Cambodia	KHM	2013	1.73
1129	Cambodia	KHM	2014	2.99
1130	Cambodia	KHM	2015	4.26
1131	Cambodia	KHM	2016	5.43
1132	Cambodia	KHM	2017	6.77
1133	Cambodia	KHM	2018	7.96
1134	Cambodia	KHM	2019	8.45
1135	Cambodia	KHM	2020	8.45
1136	Cambodia	KHM	2021	8.80

Access to electricity (% population) dataset

	A	B	C	D
1	Year	Rural (% of population)	Urban (% of population)	
2	2008	11.6540451	87	
3	2009	33.63572311	81.18429565	
4	2010	15.77243519	91.30000305	
5	2011	39.03585815	93.58457947	
6	2012	43.17752838	94.2924118	
7	2013	47.41254807	94.86128998	
8	2014	44.72675323	96.90000153	
9	2015	56.12107849	95.73413086	
10	2016	61.70982742	96.40332031	
11	2017	86.08934021	99.05999756	
12	2018	75.4940567	99.35926819	
13	2019	79.96975708	96.90000153	
14	2020	82.91397858	97.30000305	
15				

	A	B	C	D
1	Entity	Code	Year	Electricity generated
1115	Cambodia	KHM	2000	0.47
1116	Cambodia	KHM	2001	0.51
1117	Cambodia	KHM	2002	0.69
1118	Cambodia	KHM	2003	0.71
1119	Cambodia	KHM	2004	0.76
1120	Cambodia	KHM	2005	0.9
1121	Cambodia	KHM	2006	1.11
1122	Cambodia	KHM	2007	1.41
1123	Cambodia	KHM	2008	1.39
1124	Cambodia	KHM	2009	1.17
1125	Cambodia	KHM	2010	0.93
1126	Cambodia	KHM	2011	0.99
1127	Cambodia	KHM	2012	1.37
1128	Cambodia	KHM	2013	1.73
1129	Cambodia	KHM	2014	2.99
1130	Cambodia	KHM	2015	4.26
1131	Cambodia	KHM	2016	5.43
1132	Cambodia	KHM	2017	6.77
1133	Cambodia	KHM	2018	7.96
1134	Cambodia	KHM	2019	8.45
1135	Cambodia	KHM	2020	8.45
1136	Cambodia	KHM	2021	8.69

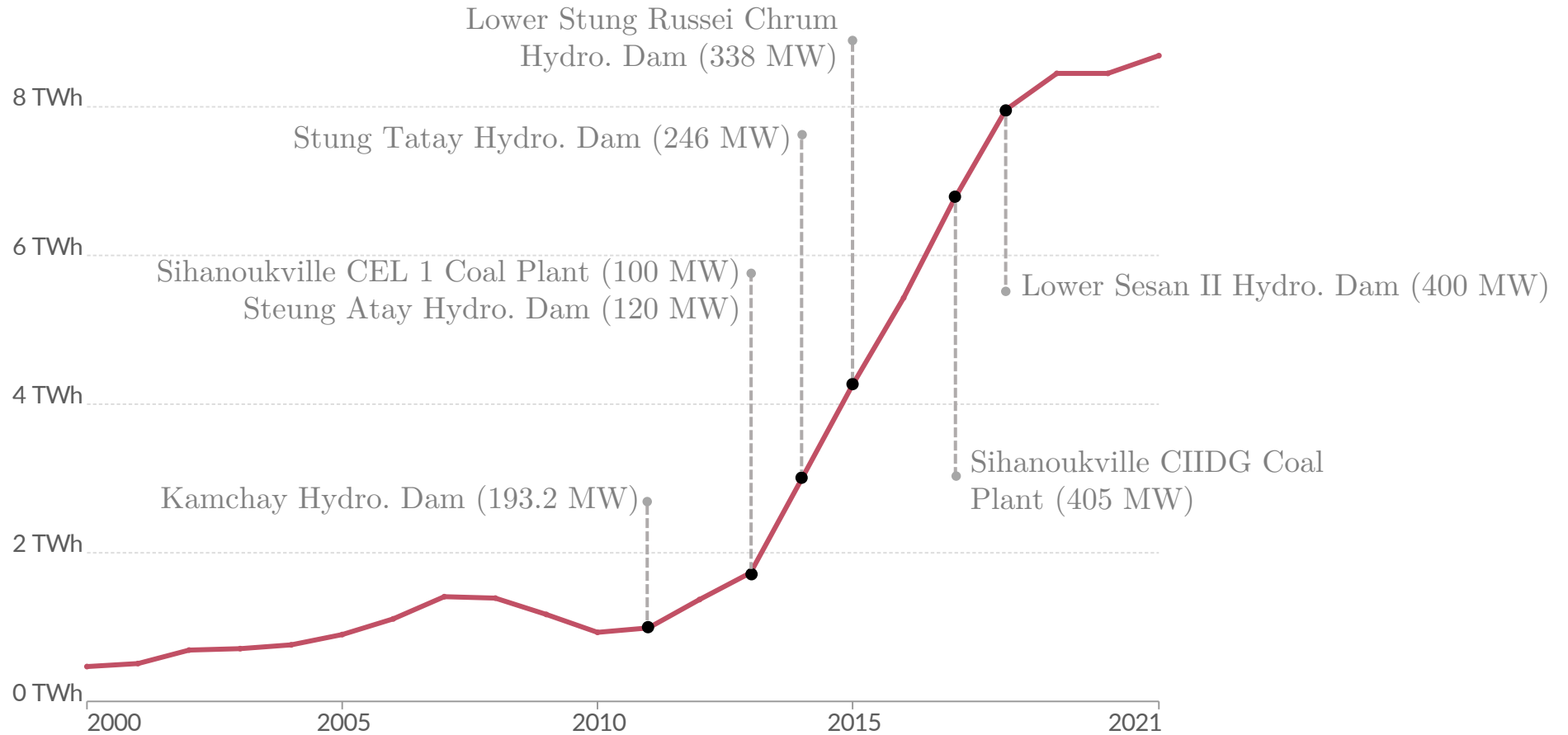




What happened?

Major operational power plant (2011-2018)

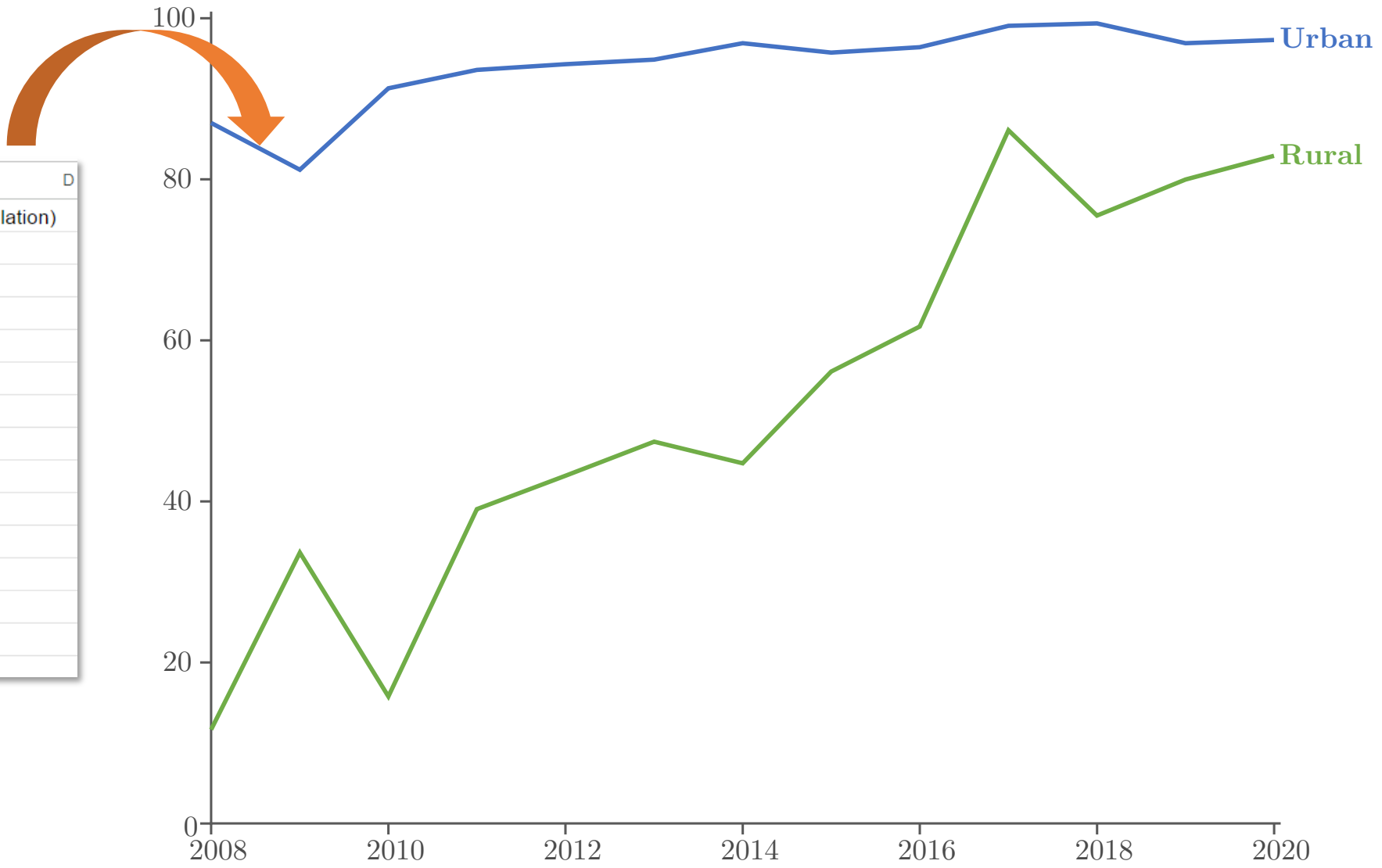
Power Plant	Type	Capacity (MW)	Location	Year of Completion
Kamchay	Hydropower	193.2	Kampot	2011
Sihanoukville CEL	Coal	100	Preah Sihanouk	2013
Stung Atay	Hydropower	120	Pursat	2013
Stung Tatay	Hydropower	246	Koh Kong	2014
Lower Stung Russei Chrum	Hydropower	338	Koh Kong	2015
Sihanoukville CIIDG	Coal	405	Preah Sihanouk	2017
Lower Sesan 2	Hydropower	400	Stung Treng	2018

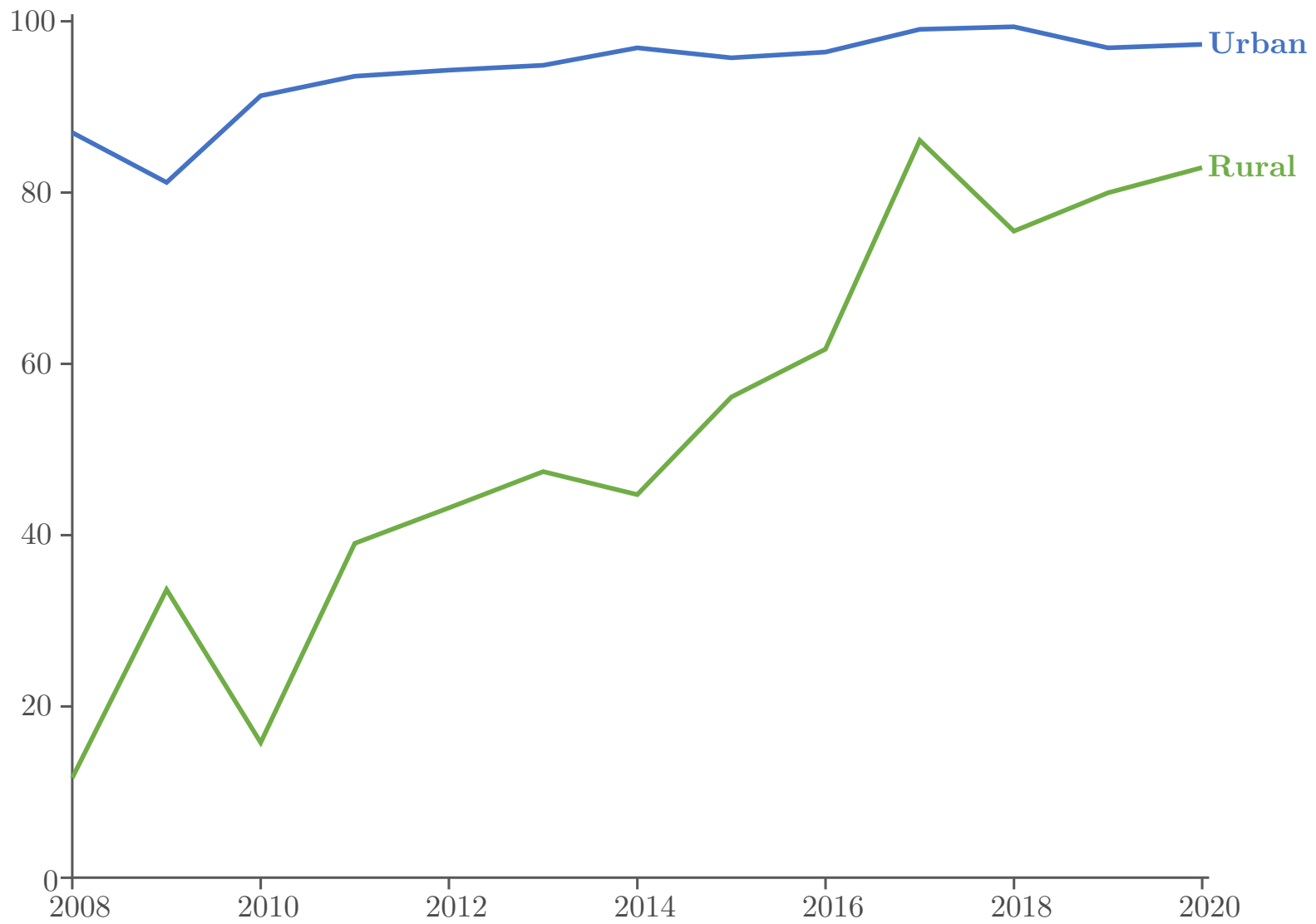


Data source: Ember - Yearly Electricity Data (2023); Ember - European Electricity Review (2022); Energy Institute - Statistical Review of World Energy (2023)
 OurWorldInData.org/energy | CC BY

	A	B	C	D
1	Year	Rural (% of popu	Urban (% of population)	
2	2008	11.6540451	87	
3	2009	33.63572311	81.18429565	
4	2010	15.77243519	91.30000305	
5	2011	39.03585815	93.58457947	
6	2012	43.17752838	94.2924118	
7	2013	47.41254807	94.86128998	
8	2014	44.72675323	96.90000153	
9	2015	56.12107849	95.73413086	
10	2016	61.70982742	96.40332031	
11	2017	86.08934021	99.05999756	
12	2018	75.4940567	99.35926819	
13	2019	79.96975708	96.90000153	
14	2020	82.91397858	97.30000305	
15				

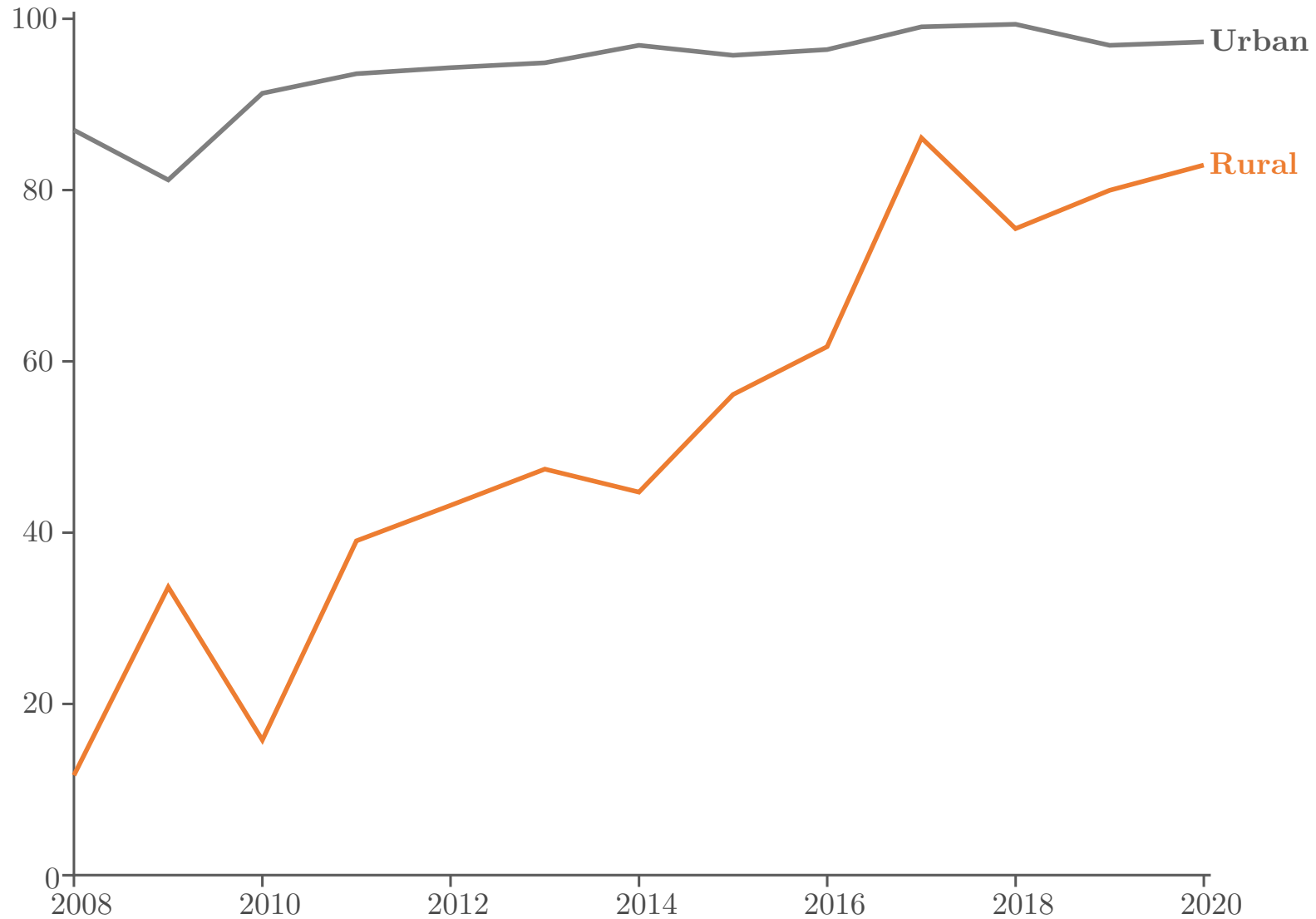
	A	B	C	D
1	Year	Rural (% of popu	Urban (% of population)	
2	2008	11.6540451	87	
3	2009	33.63572311	81.18429565	
4	2010	15.77243519	91.30000305	
5	2011	39.03585815	93.58457947	
6	2012	43.17752838	94.2924118	
7	2013	47.41254807	94.86128998	
8	2014	44.72675323	96.90000153	
9	2015	56.12107849	95.73413086	
10	2016	61.70982742	96.40332031	
11	2017	86.08934021	99.05999756	
12	2018	75.4940567	99.35926819	
13	2019	79.96975708	96.90000153	
14	2020	82.91397858	97.30000305	
15				



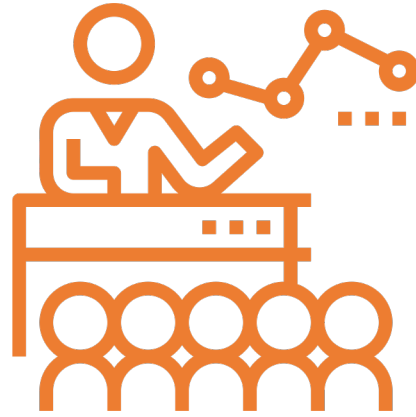


Closing the gap of Rural-Urban electricity access inequality

% Population having access to electricity



Recap



Data storytelling : telling a **thorough** and **factual** story.

Most often, the story can't be told
thoroughly **without data**.

By telling a complete factual story, high
chance of having **impact**.

Explore



Explain



Context



Purpose



Explore data



Synthesize data

findings



Who, What, How



Choosing the right approach



Remove clutters



Organize your story

Thank You!