Utilizing an Implementation Science Lens to Optimize HIV Responses

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Acknowledgements

Yale University

- Lynn Madden
- Samy Galvez
- Roman Ivasiy
- Dan Bromberg
- Ben Nikitin
- Eteri Machavariani
- Maxim Polonsky

Kyrgyzstan

- Natalya Shumskaya
- Ainura Kurmanalieva
- Damira Bibosunova
- Patrick Nadol
- Ruslan Tokubaev

Ukraine

- Sergii Dvoriak
- Konstantin Dumchev
- Iryna Pykalo
- Myroslava Filippovich
- Zahedul Islam
- Anna Meteliuk
- Tanya Fomenko

Funding Support

- National Institutes of Health
- IAPAC Fast Track Cities
 - Sindhu Ravishankar

Outline

- What is and why use implementation science to guide your work?

- Stakeholder engagement

- Target implementation gaps

- Real-world examples from Eastern Europe and Central Asia
  - Biskhek, Kyrgyzstan – Fast Track City Implementation
  - Ukraine

Word Cloud: Terminology for Dissemination & Implementation Research

Rabin B.A. et al. *Dissemination & Implementation Research in Health*, 2018.

Implementation Science

- **Definition**: The scientific study of *methods* to promote the systematic uptake of research findings and other evidence-based interventions into routine practice to improve the quality and effectiveness of health services and care.

- Implementation is part of a diffusion- dissemination- implementation continuum.
  - **Diffusion:** the passive, untargeted and unplanned spread of new practice
  - **Dissemination:** the active spread of new practices to a target audience using planned strategies
  - **Implementation:** the *process* of putting to use (e.g., scaling up) or integrating new practices within a setting

- A combination of several theories, models & frameworks.
  - Now >100 theoretical frameworks to guide the science of implementation

Research Gap from Evidence to Practice
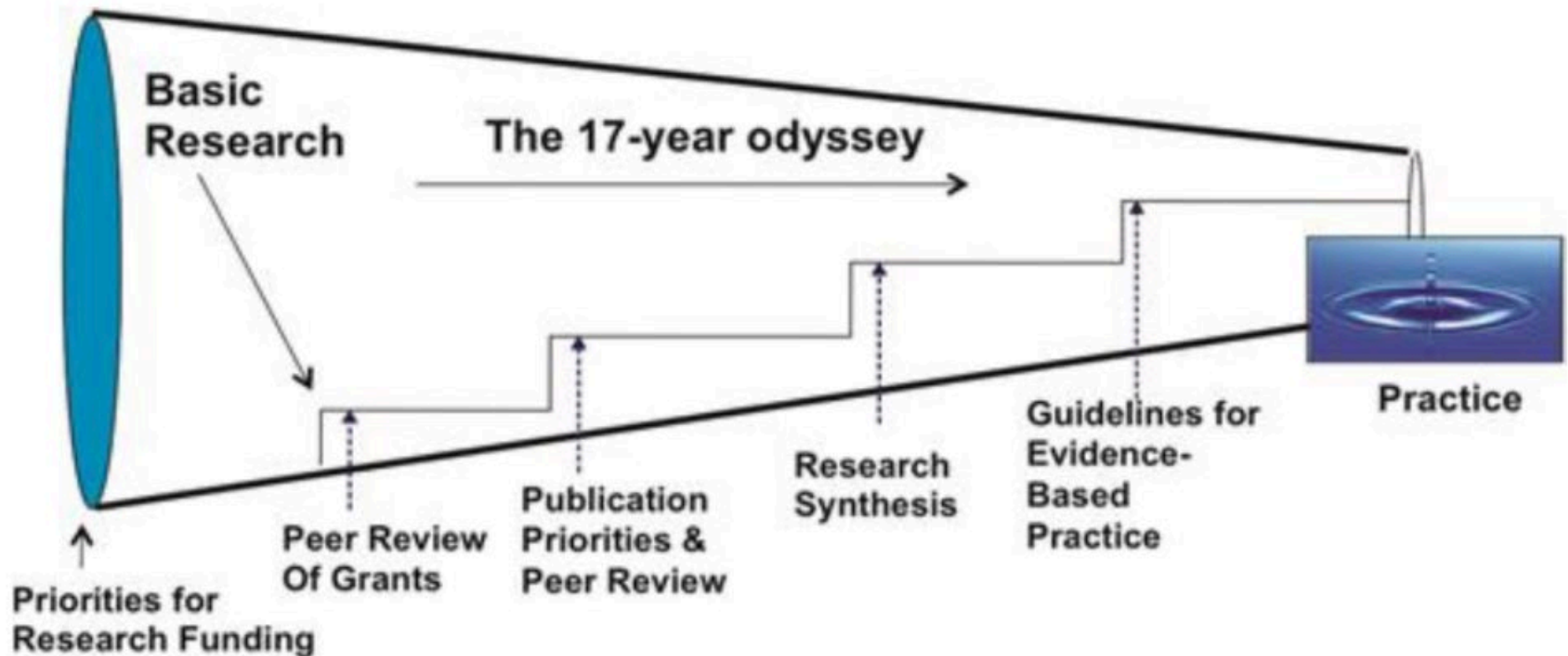
.... and this is for the 14% of evidence-based practices that actually make it!

Balas EA, Boren SA. Managing clinical knowledge for health care improvement. In: Bemmel J, McCray AT, eds. *Yearbook of medical informatics*. Stuttgart: Schattauer; 2000: 65– 70.

Implementation Science

IMPLEMENTATION TEAM

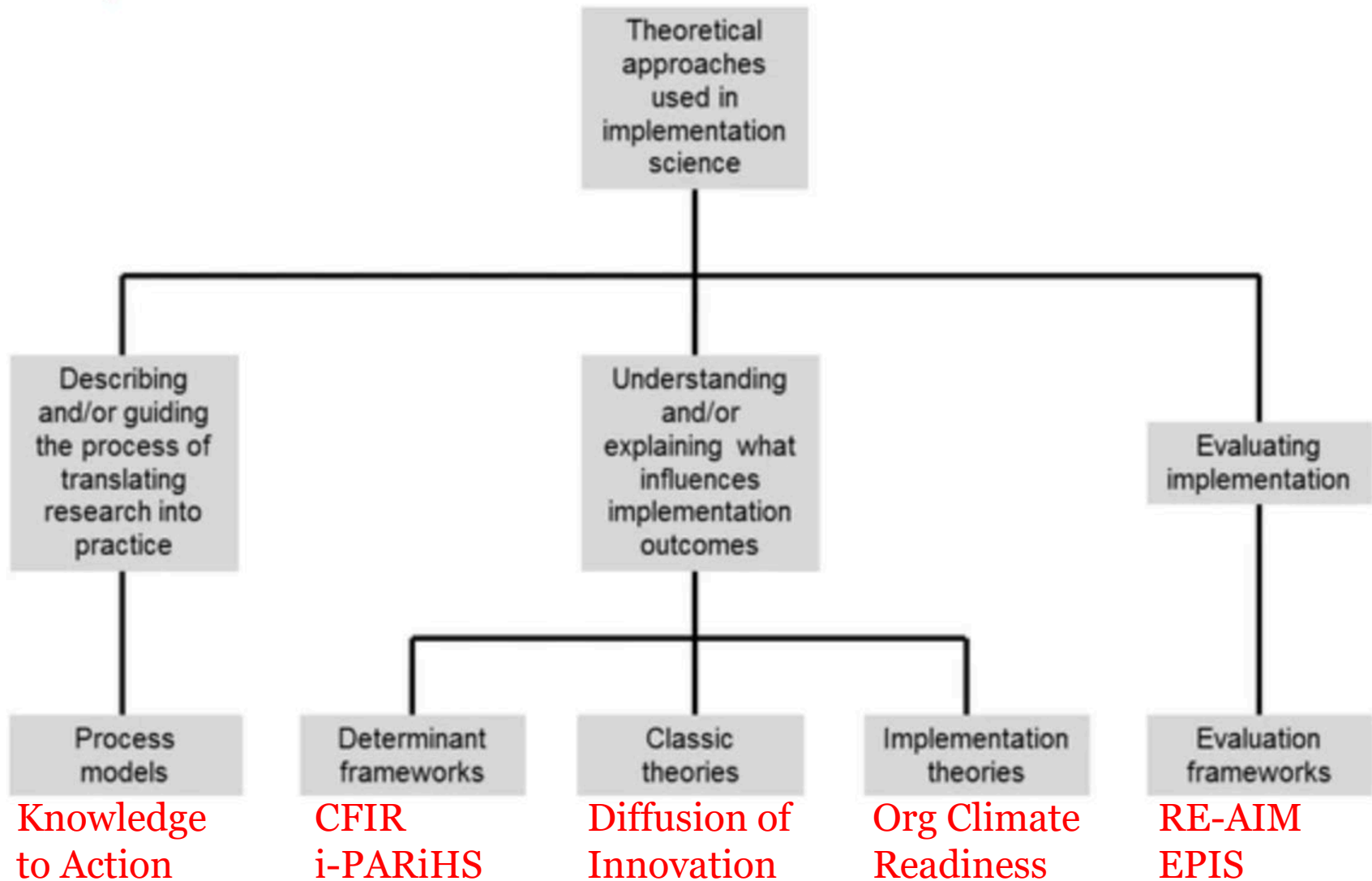| INTERVENTION		No
	Effective	**14%, 17 Yrs**
	Facilitation	Letting it Happen Helping it Happen

Balas & Boren, 2000

Interventions vs. Implementation Strategies

- The evidence-based intervention / practice / innovation is **THE THING** (e.g., ART, PrEP)

- Implementation strategies are the stuff we do to try to help people/places **DO THE THING** (e.g., facilitate, mHealth, same-day ART)

- Main implementation outcomes are **HOW WELL** they **DO THE THING** (e.g., close the implementation gap or scale up)

- Courtesy Geoff Curran

# Making Sense of Implementation Theories, Models and Frameworks

Theoretical approaches used in implementation science

Describing and/or guiding the process of translating research into practice

Understanding and/or explaining what influences implementation outcomes

Evaluating implementation

Process models	Determinant frameworks	Classic theories	Implementation theories	Evaluation frameworks
Knowledge to Action	CFIR i-PARiHS	Diffusion of Innovation	Org Climate Readiness	RE-AIM EPIS

Exploring Dissemination and Implementation Models

Helping Navigate Dissemination and Implementation Models

The D&I Models Webtool is an interactive, online resource designed to help researchers and practitioners navigate D&I Models through planning, selecting, combining, adapting, using, and linking to measures.

Access The D&I Models Webtool Here!

Plan → Select → Combine → Adapt → Use → Measure

https://dissemination-implementation.org
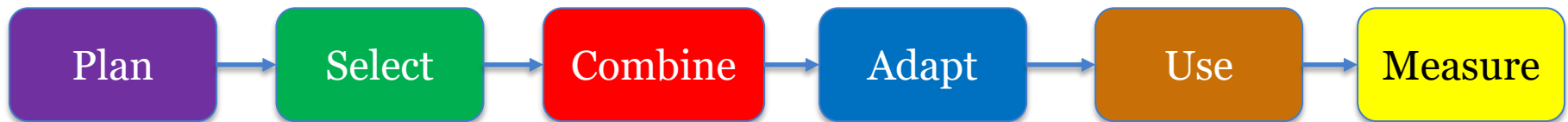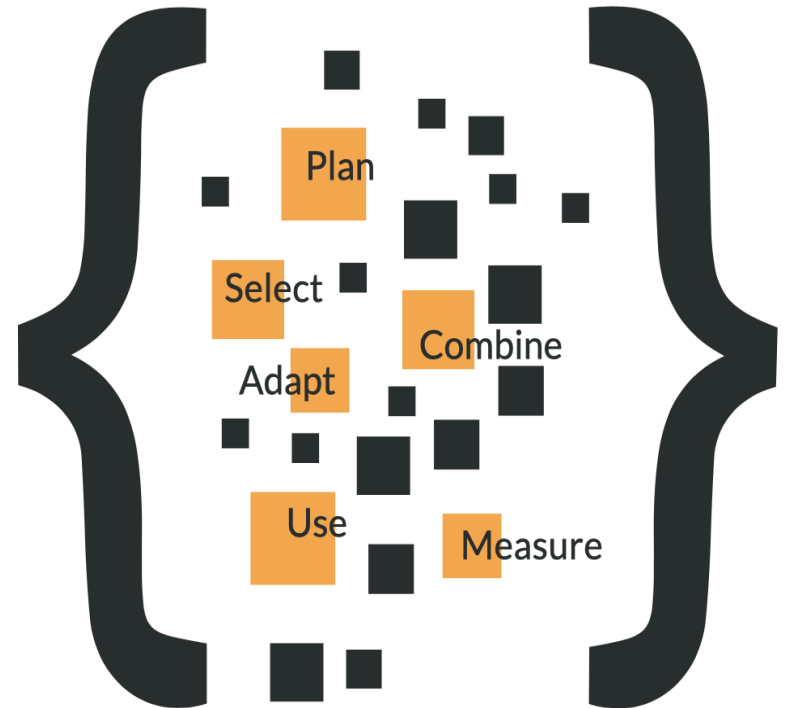
In sum ..... we become systems engineers!

Faster!

Cheaper!

Better!

Forsberg K & Mooz H, Center for Systems Management, 1998

Practical Implementation and Implementation Science

- There can be tension between those who are doing the actual real-world implementation and those who are studying it or facilitating it

- Tensions can occur between multiple stakeholders (e.g.)
  - Funders and implementers
  - Implementers and targets (e.g., patients, clinicians)

- Outcomes are optimized when there are synergies between implementers and researchers
  - Creating synergies is key and is an active process

- Coordination between stakeholder groups (ideally community informed or led)
  - Aligning the benefits and the goals

Four Key Ingredients in Implementation Research

Implementation Questions

Implementation Research Team

Community Partners

Theories, Models, & Frameworks

Community Partners to Guide the Research Team

Increasing Level of Community Involvement, Impact, Trust, and Communication Flow
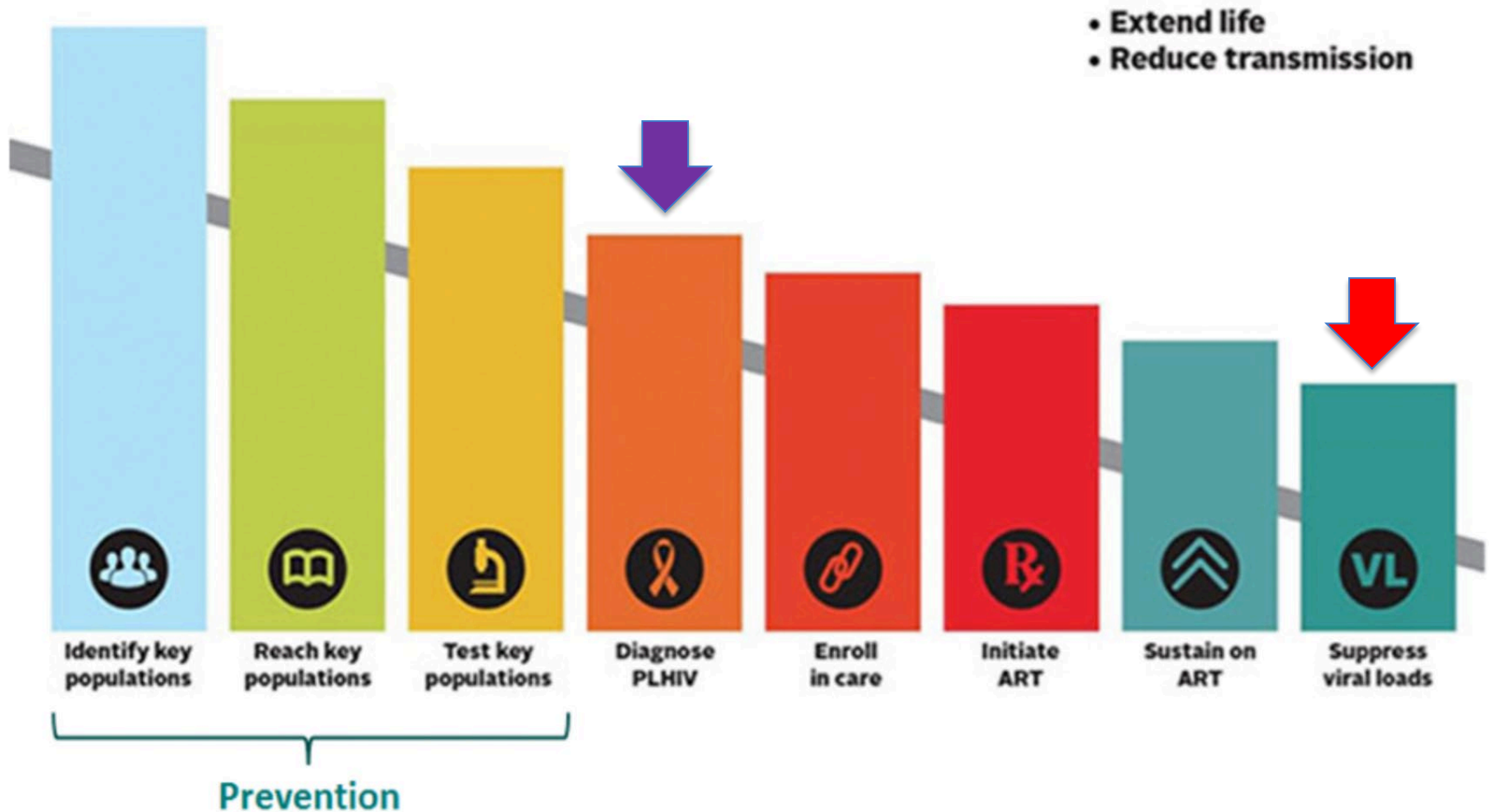
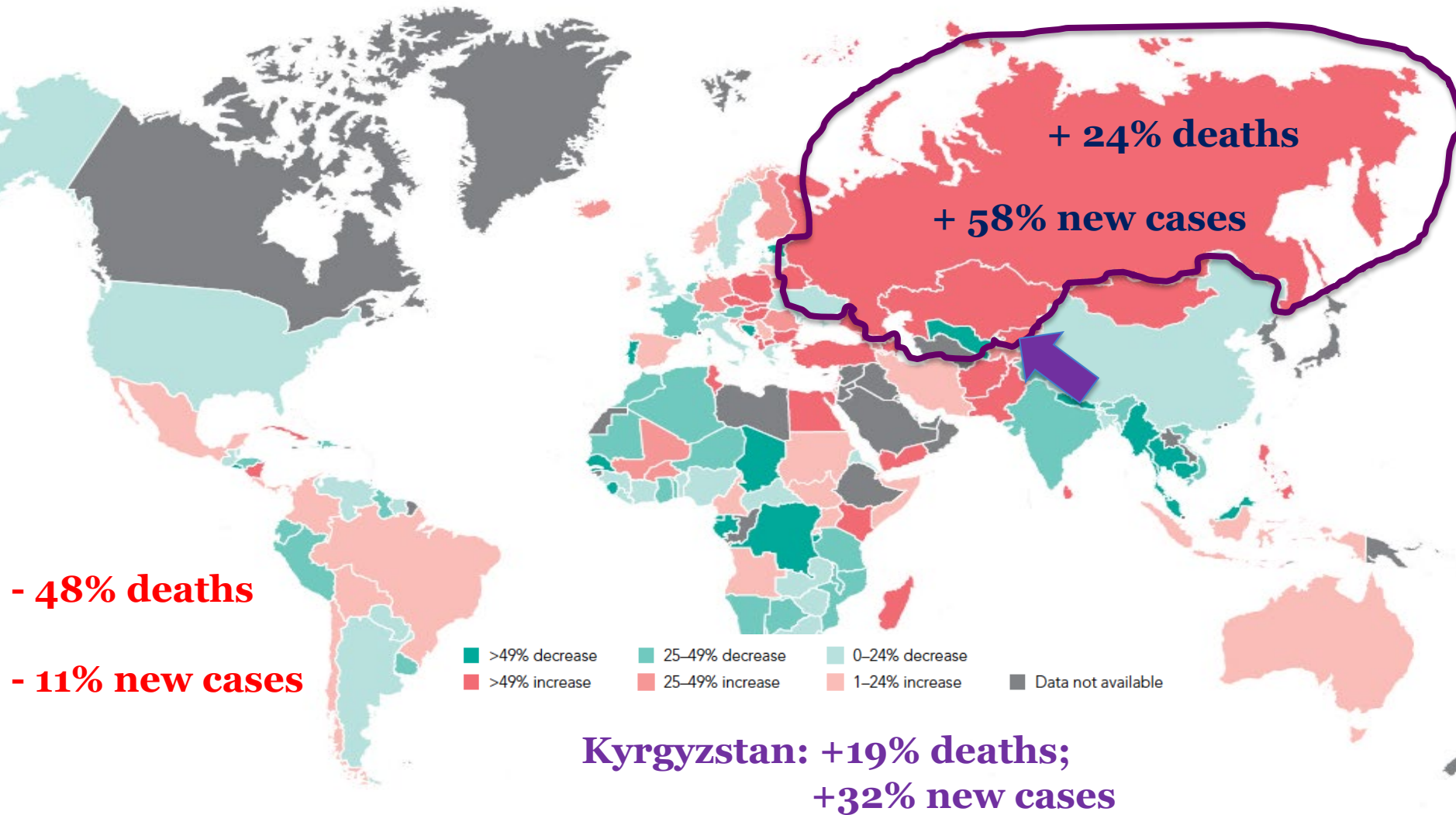| Outreach | Consult | Involve | Collaborate | Shared Leadership |

Target Implementation Gaps – Understand Context
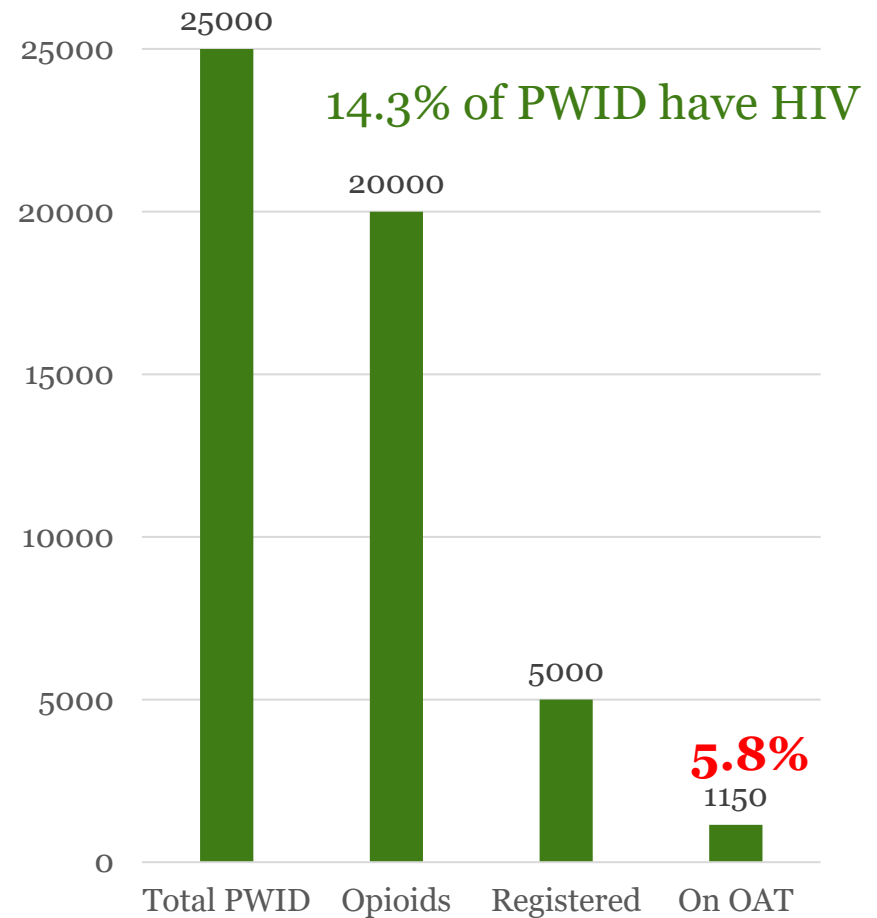
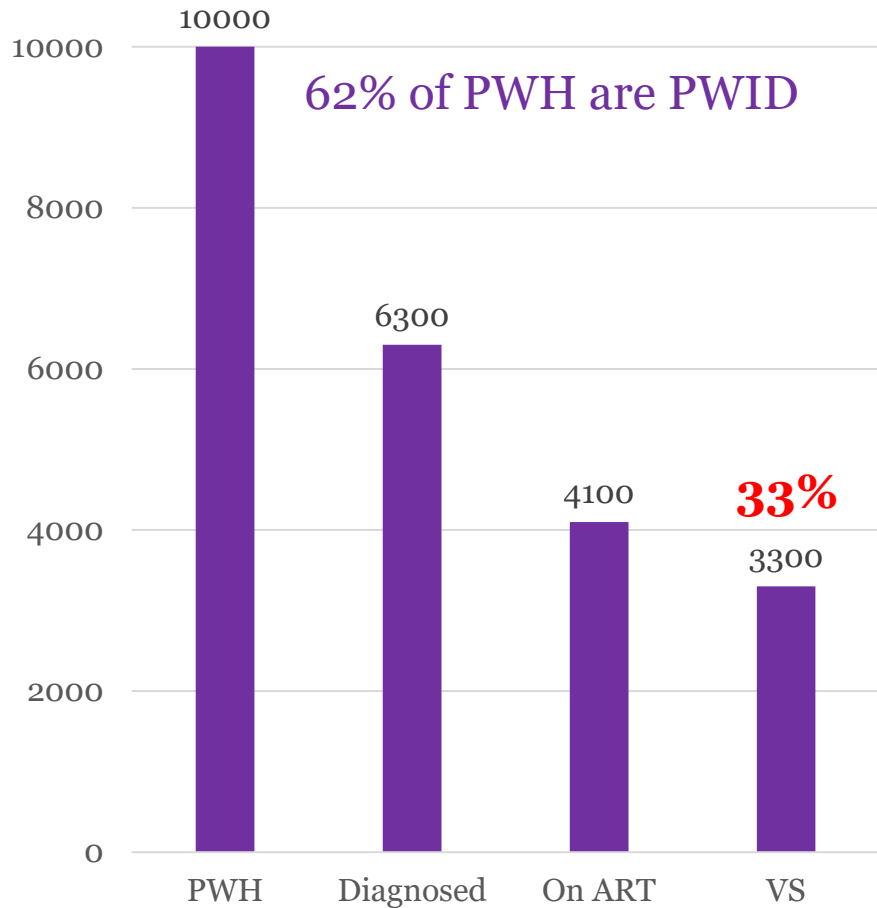# Bishkek, Kyrgyzstan

Fast Track City Project

Percent Change in New HIV cases:
2010 to 2020

+ 24% deaths

+ 58% new cases

- 48% deaths

- 11% new cases

>49% decrease	25–49% decrease	0–24% decrease
>49% increase	25–49% increase	1–24% increase	Data not available

Kyrgyzstan: +19% deaths;
+32% new cases

Kyrgyzstan Treatment Cascades
HIV and Opioid Use Disorder

62% of PWH are PWID

14.3% of PWID have HIV
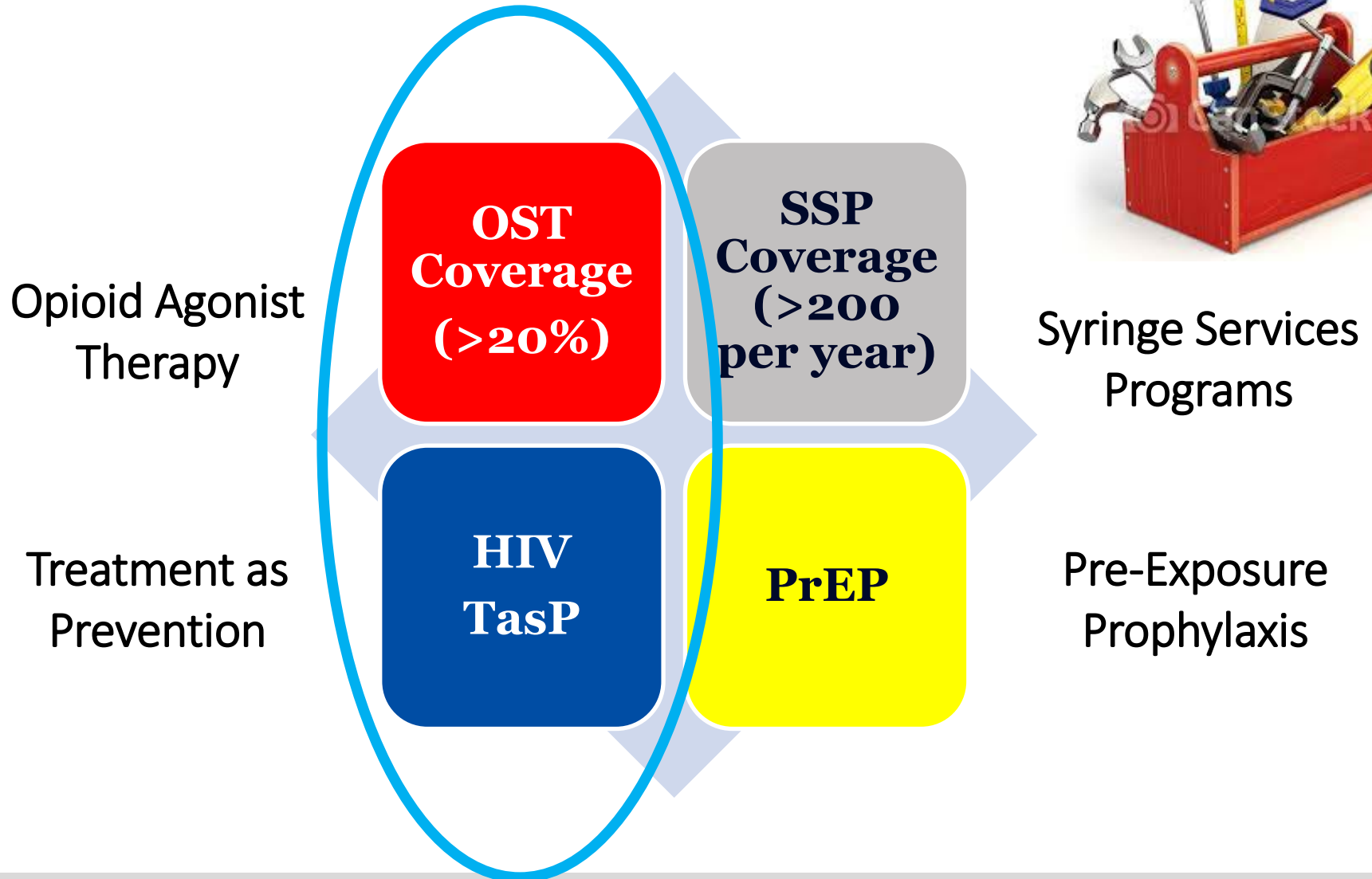
Patients on Methadone (2016-2021)
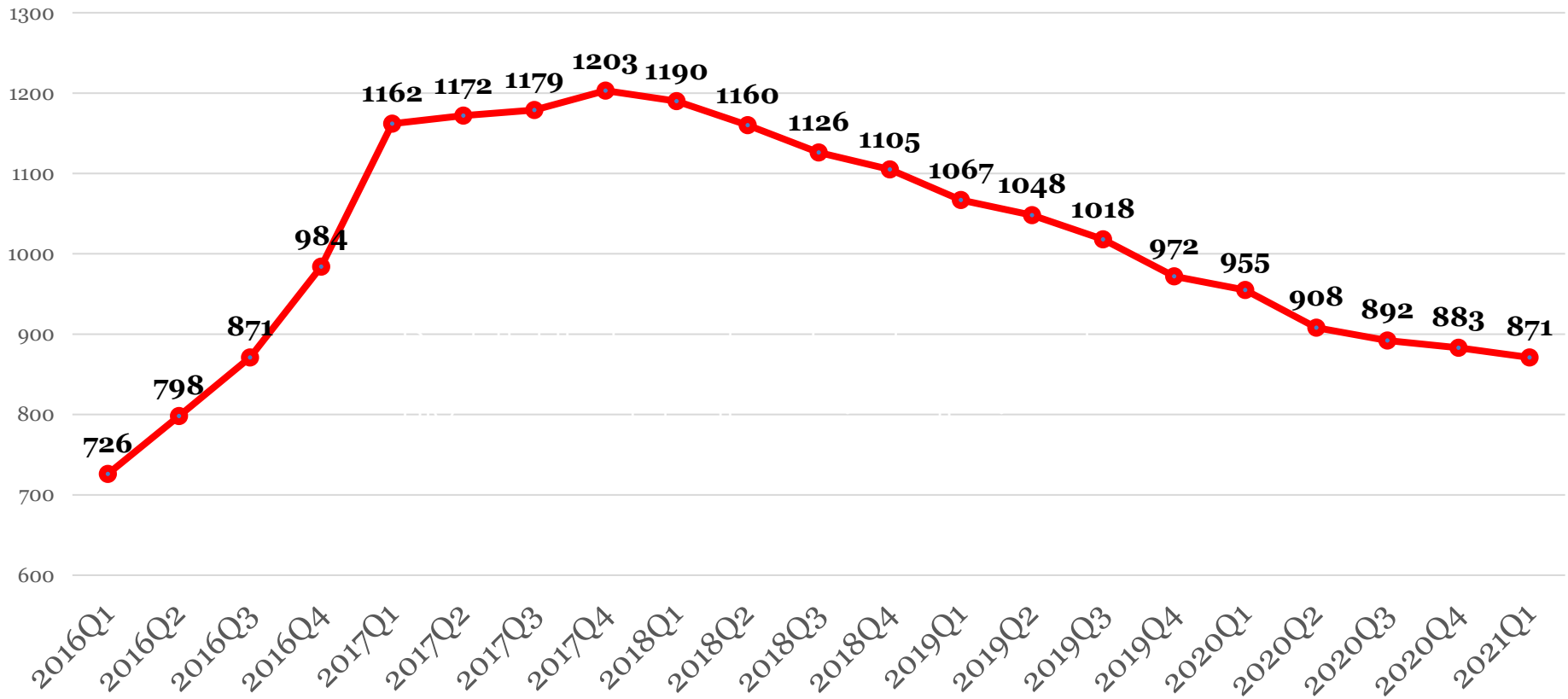
Evidence-Based Strategies (Toolbox) to Prevent HIV Transmission in PWID

Opioid Agonist Therapy

OST Coverage (>20%)

SSP Coverage (>200 per year)

Syringe Services Programs

Treatment as Prevention

HIV TasP

PrEP

Pre-Exposure Prophylaxis
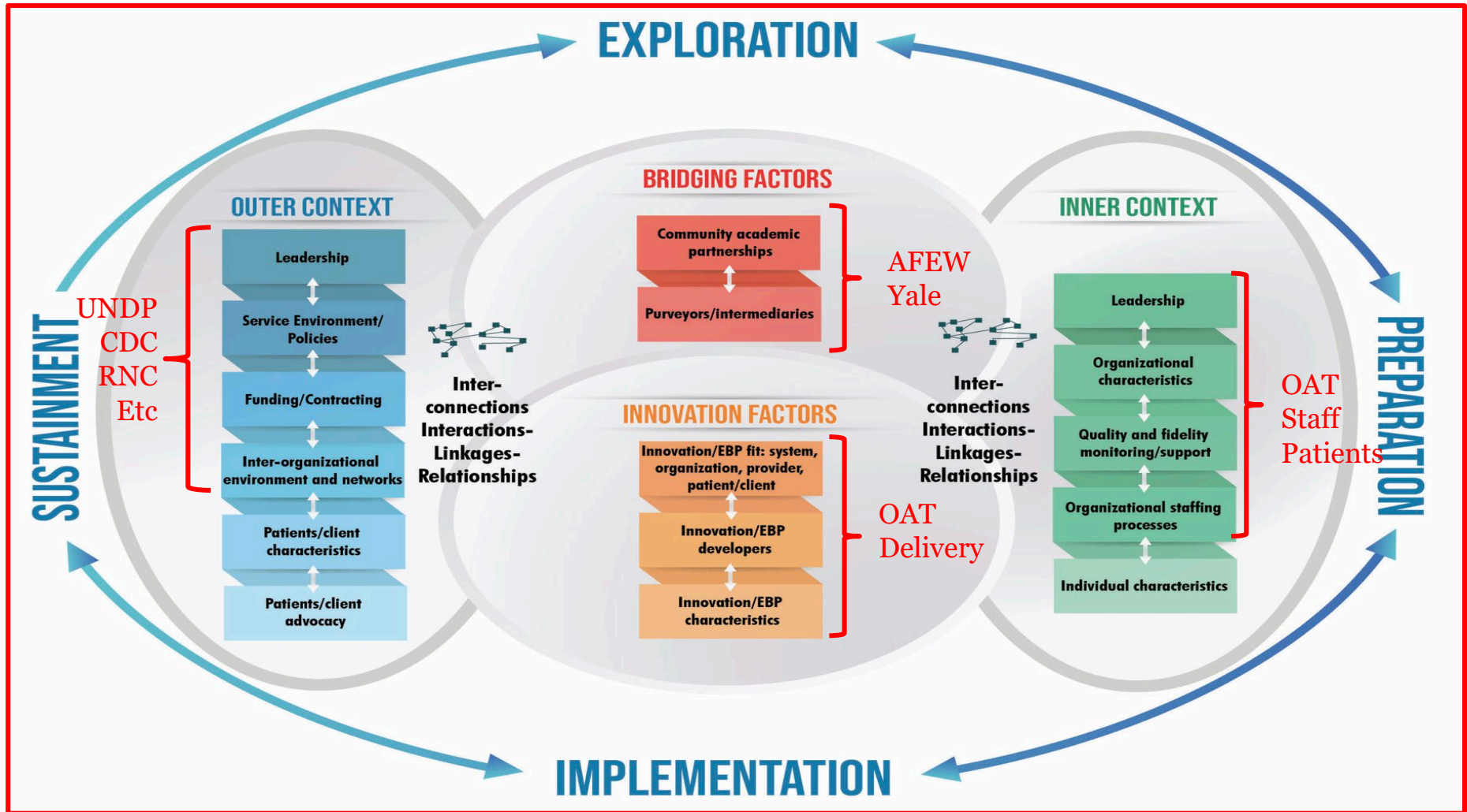
Moullin JC, Implement Sci 2019

NIATx Treatment Improvement Model

- A bundle of implementation tools that include expert facilitation (coaching) and quality *process* improvement specifically for behavioral healthcare settings to improve access and retention in treatment
  - Rapid assessment of barriers (nominal group technique)
  - Flow-charting
- Five principles include:
  - 1) understand and involve the customer;
  - 2) fix key problems;
  - 3) pick a powerful change leader;
  - 4) get ideas from outside the organization or field;
  - 5) use rapid-cycle (PDSA) testing to document changes.

See www.NIATX.net

Exploring Barriers and Facilitators to Implementation
Nominal Group Technique

Barriers to Methadone Scale-up from Providers
Nominal Group Technique

Group 1

- Inaccurate information about methadone (5)
- Low motivation by patients for treatment (5)
- Myths about methadone (3)
- Registration procedures (3)
- Prison "caste" system (3)
- Stigma towards methadone clients (2)
- Medical comorbidities (2)
- Need for family support (1)
- Geographic limitations
- Healthcare system stigma

Group 2

- Stigma towards methadone (7)
  - Prison "caste" system (3)
- Myths about methadone (5)
- Registration procedures (4)
  - Documents required
- Uncertainty about future (1)
- Daily supervision
- How long to remain in treatment
- Low public awareness
- Policing near methadone program
- How methadone patients appear

Patient-Perceived Barriers to Methadone

- Bad reputation of methadone program (N=7)
- Too many logistical barriers for entry (N=5)
- Methadone is trading one addiction for another (N=4)
- Unclear expectations of program (expected cure) (N=4)
- Rigid policies for supervision/limited hours (N=4)
- Treated poorly by doctors (N=3)
- Interfered with their work (N=2)
- Not supported by families (N=1)
- A place to go to as a last resort

Implementation Tools - NIATx

Flow Charting
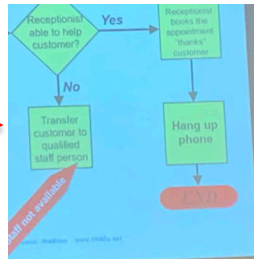
NGT

Stimulus Lectures

Understanding and Involving the Customer

Funders

Site Visit

Site Visit

Collaborative Learning and Team Building

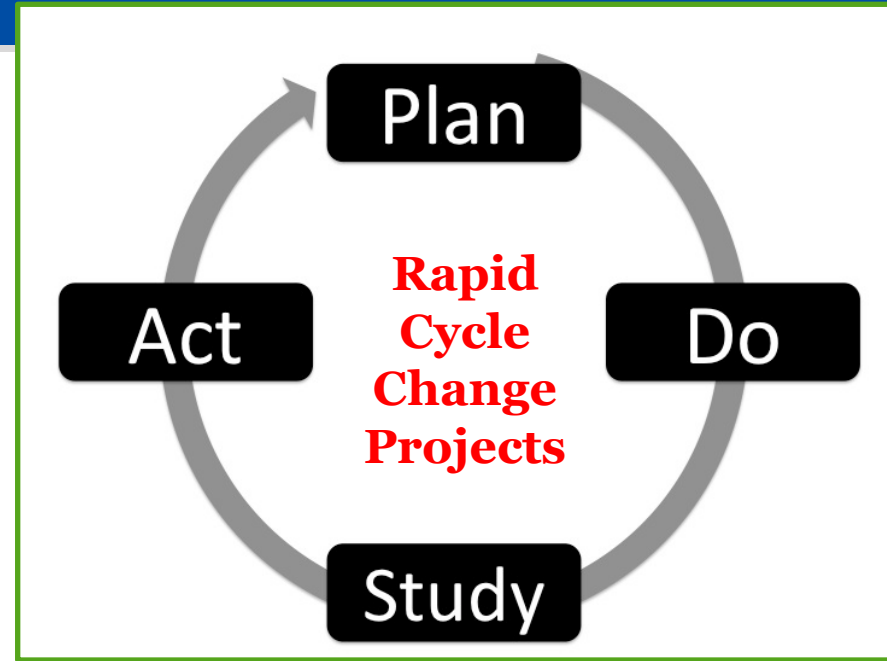# NIATx Treatment Model

Reduce Waiting Times

Reduce No Shows

Increase Entry into OAT
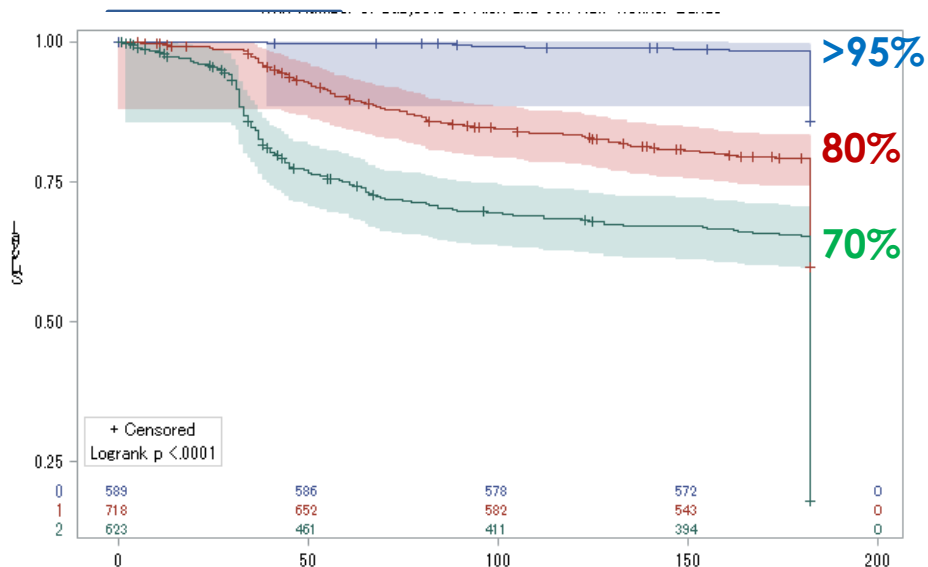
Reduce OAT Dropout

Improved OAT Outcomes

⇑ 1° & 2° HIV Prevention & QoL; ⇓ addiction severity & drug use

Plan

Do

Study
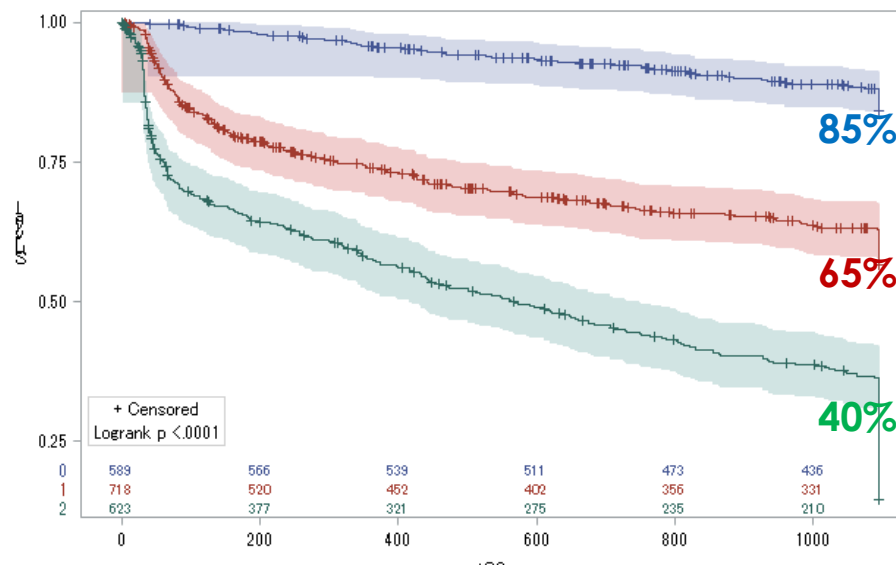
Act

Rapid Cycle Change Projects

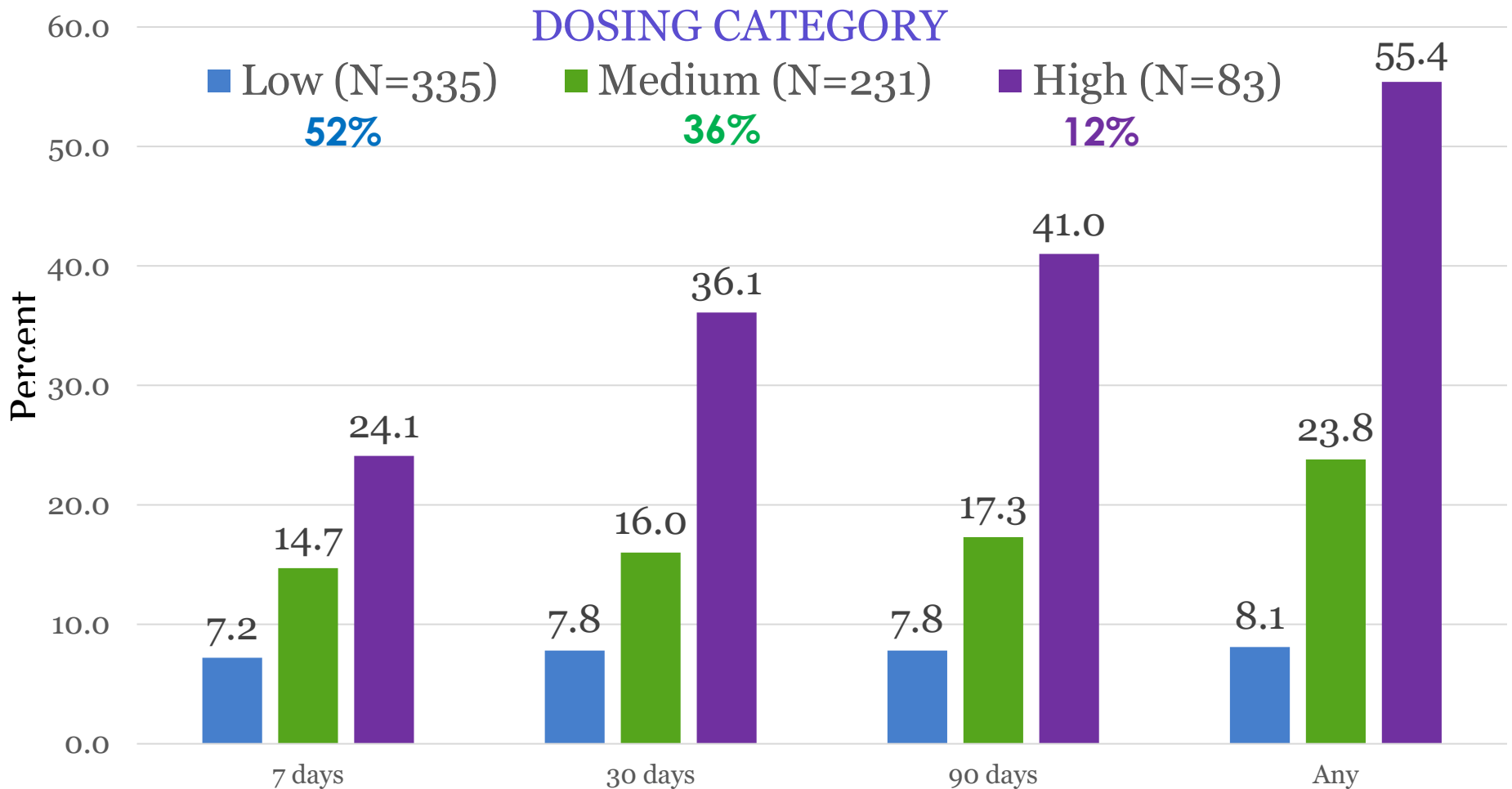# OAT Retention and Dosing: Kaplan Meier SCs

6 months

3 years

Stimulus Lectures → Change Projects

# Linkage to Methadone After Release From Prison (N=649)

Bachireddy C, IJDP, 2022

Opportunities for Change Projects

- **Planned change projects**
  - Increase the proportion of patients on 90mg or more per day
    - Community and prison settings
  - Focus on patients who are on the "standby" list
  - Supplemental counseling for positive drug tests
  - Work to support families
  - Increase proportion who are HIV tested
  - Enhance transition from prison to communities

OAT Patients: New Admissions vs Dropouts
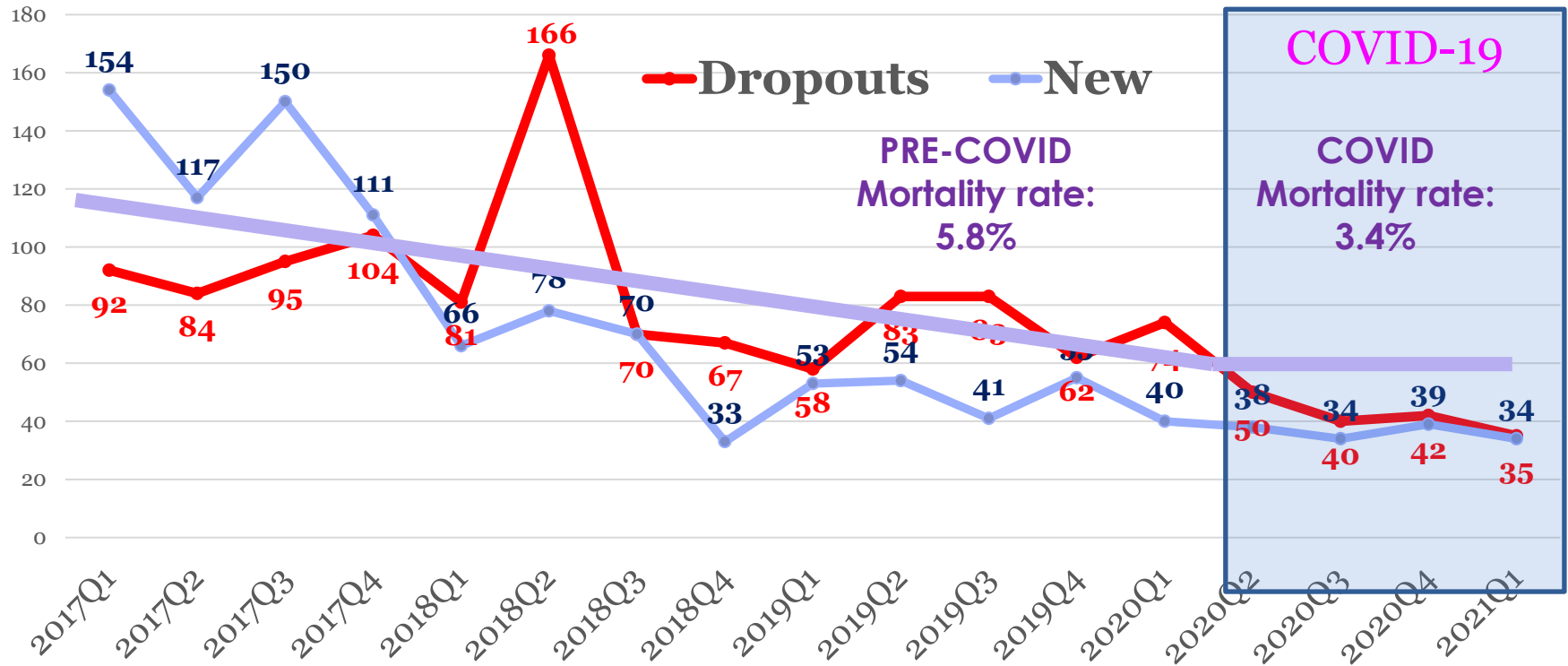
Opportunity: What Happened During COVID that resulted in fewer dropouts while new admissions stayed about the same?
Increased Take-home dosing
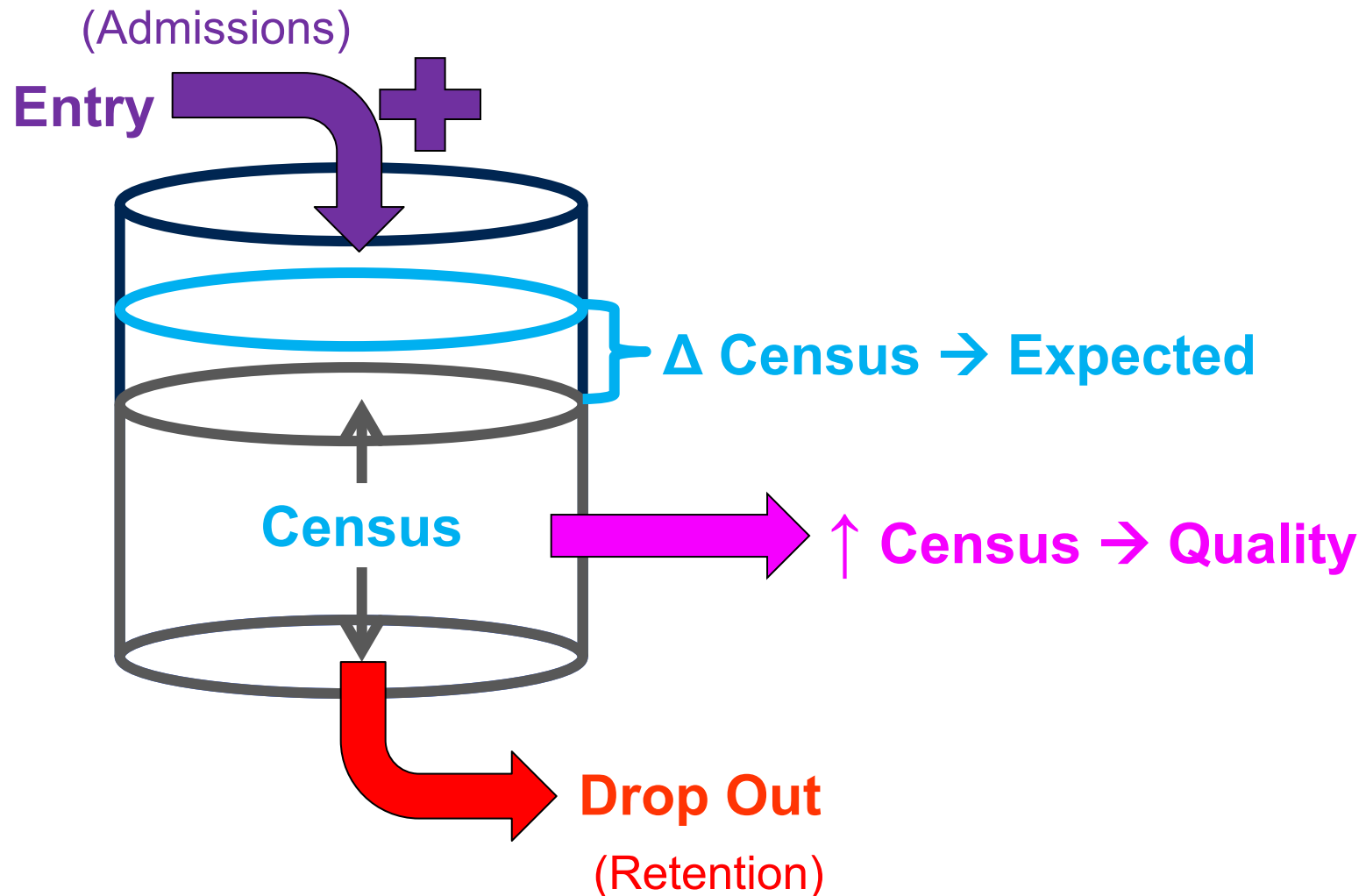
Preliminary Outcomes

- OAT increased by 8% in Bishkek but continued to drop outside of Bishkek

- Change projects that achieved the best results:
  - Enhanced treatment in prisons and linkage to the community
  - Enhanced dosing strategies
  - Maintained patients on take-home dosing
  - Quick-start dosing → logistical work-up after stabilization

- Implementation products
  - Educational tools for patients and families

- Bridging Factors
  - Global Fund and CDC adopted performance indicators and P4P
  - New guidelines developed with fewer demands on patients and providers
  - Now planning to work throughout 3 countries in Central Asia

Ukraine

Implementation Goal: To Scale Up Medications for Opioid Use Disorder for HIV Prevention
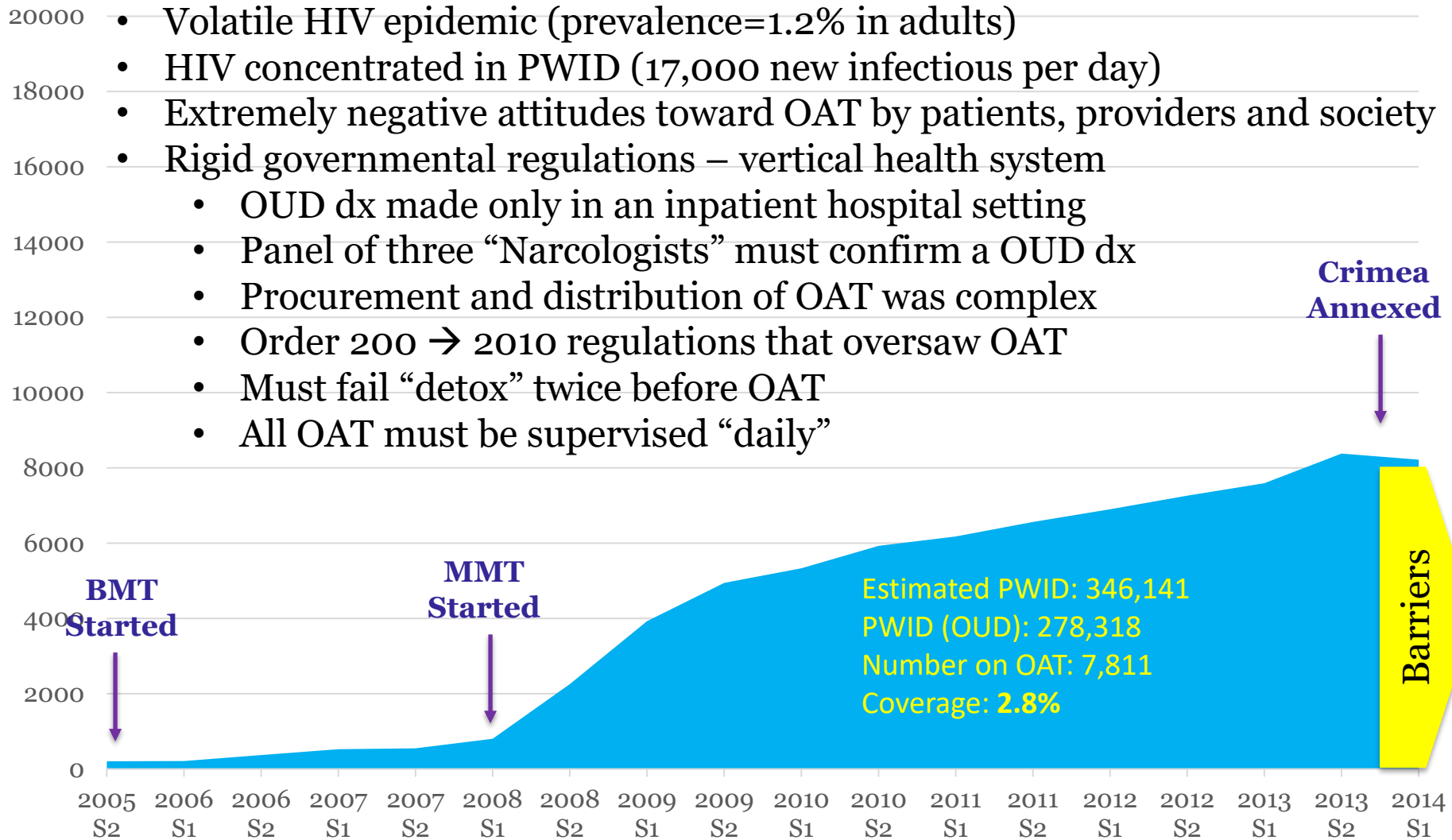
OAT Scale-Up Conceptual Model

Context: OAT Scale-up in Ukraine

- Volatile HIV epidemic (prevalence=1.2% in adults)
- HIV concentrated in PWID (17,000 new infectious per day)
- Extremely negative attitudes toward OAT by patients, providers and society
- Rigid governmental regulations – vertical health system
  - OUD dx made only in an inpatient hospital setting
  - Panel of three "Narcologists" must confirm a OUD dx
  - Procurement and distribution of OAT was complex
  - Order 200 → 2010 regulations that oversaw OAT
  - Must fail "detox" twice before OAT
  - All OAT must be supervised "daily"

BMT Started

MMT Started

Crimea Annexed

Barriers

Estimated PWID: 346,141
PWID (OUD): 278,318
Number on OAT: 7,811
Coverage: **2.8%**

Chart y-axis: 0, 2000, 4000, 6000, 8000, 10000, 12000, 14000, 16000, 18000, 20000

Chart x-axis: 2005 S2, 2006 S1, 2006 S2, 2007 S1, 2007 S2, 2008 S1, 2008 S2, 2009 S1, 2009 S2, 2010 S1, 2010 S2, 2011 S1, 2011 S2, 2012 S1, 2012 S2, 2013 S1, 2013 S2, 2014 S1

NIATx Treatment Improvement Model

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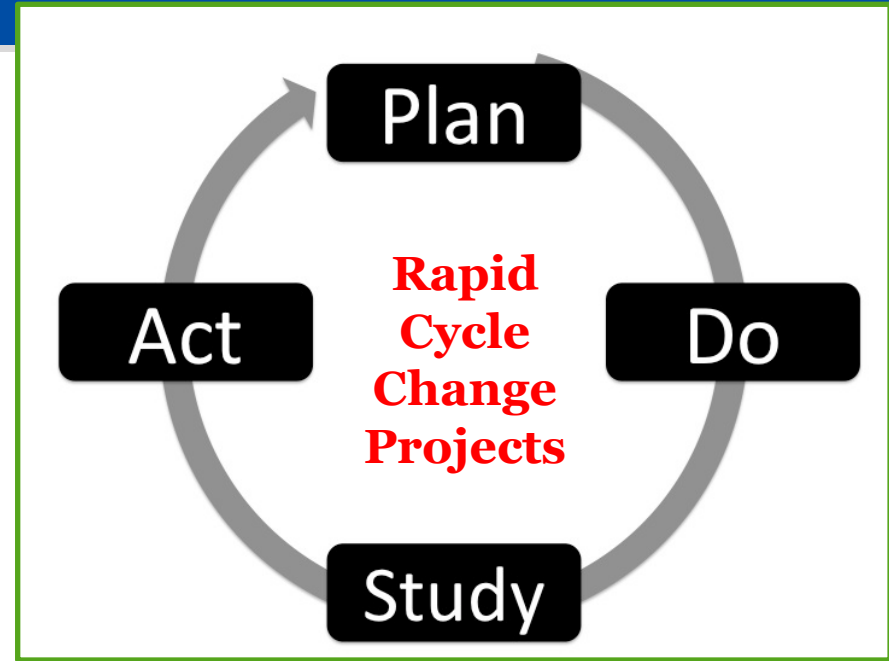
See www.NIATX.net

NIATx Treatment Model

OAT Scale-up in Ukraine – Guided by NIATx and Collaborative Learning

Challenge 1: Scale-Up Results

Map of Ukraine showing scale-up results by region:

- Volyn 10%
- Rivne 3%
- Zhytomyr -4%
- Kyiv City 10%
- Kyiv oblast 5%
- Chernihiv 22%
- Sumy 20%
- Lviv 15%
- Ternopil 2%
- Khmelnytskyi 4%
- Ivano-Frankivsk 16%
- Zakarpattiia 0%
- Chernivtsi 1%
- Vinnytsia 7%
- Cherkasy 71%
- Poltava 6%
- Kharkiv 5%
- Luhansk 8%
- Kropyvnytskyi 17%
- Dnipro 20%
- Donetsk 27%
- Mykolaiv 10%
- Zaporizhia 40%
- Kherson 24%
- Odesa 15%
- Crimea 0.0%
- Sevastopol

Legend:
- >50% (N=1)
- 20-50% (N=7)
- 10-20% (N=6)
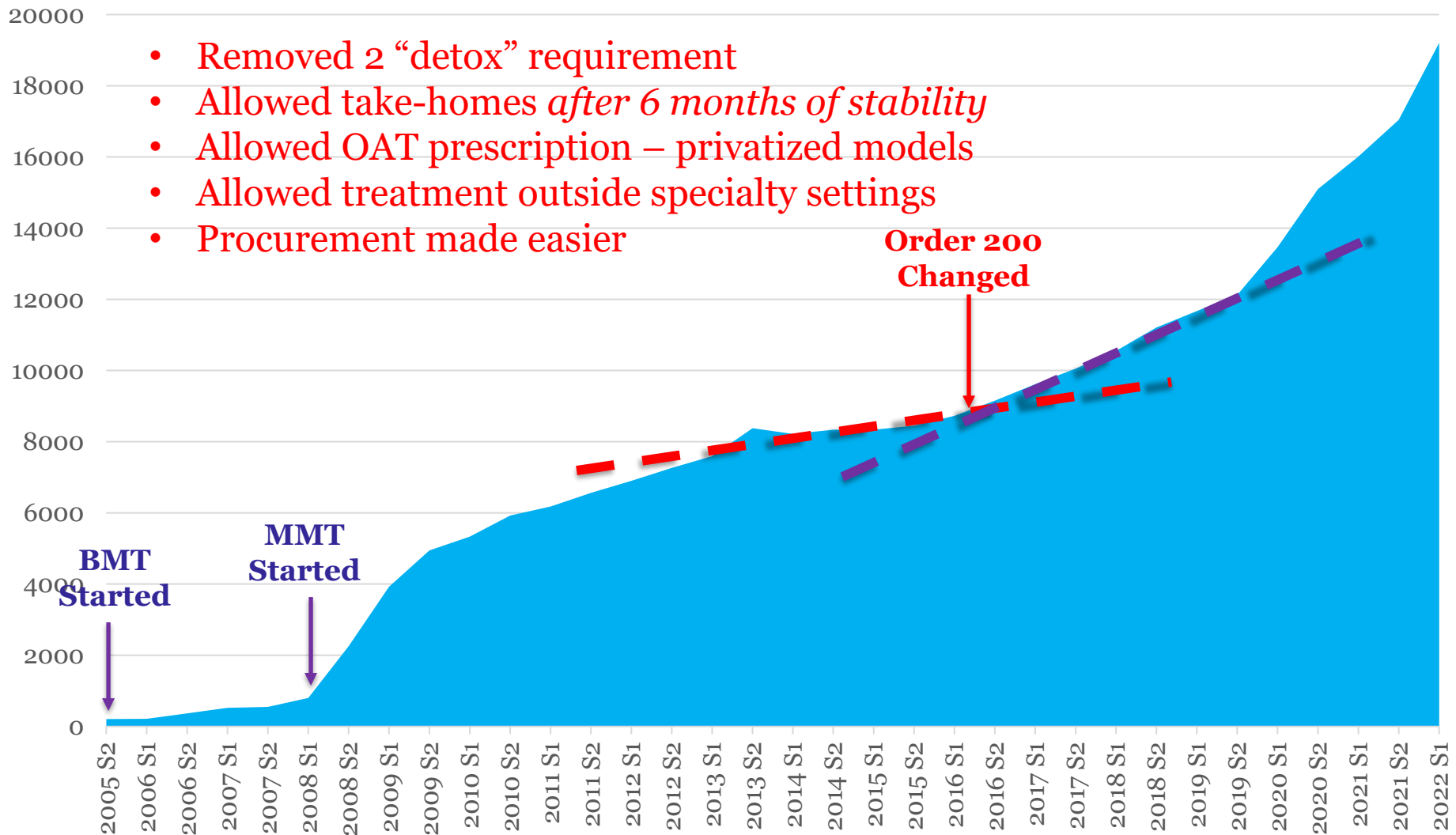- 5-10% (N=5)
- <5% (N=6)

Time Series Based on Three Disruptors

- **Change in Order 200 (November 2016)**
  - Based on landscape analysis and early promising practices
  - Removed 2 failed "detox" attempt
  - Allowed take-home dosing if stable for 6 months
  - Allowed prescriptions → private clinics emerged
  - Allowed treatment outside specialty care settings
    - Primary care clinics
- **COVID-19 (March 2020)**
  - Accelerated transfer to take-home dosing (up to 10 days)
- **Russia's Second Invasion of Ukraine (February 2022)**
  - Further acceleration of take-home dosing (up to 30 days)
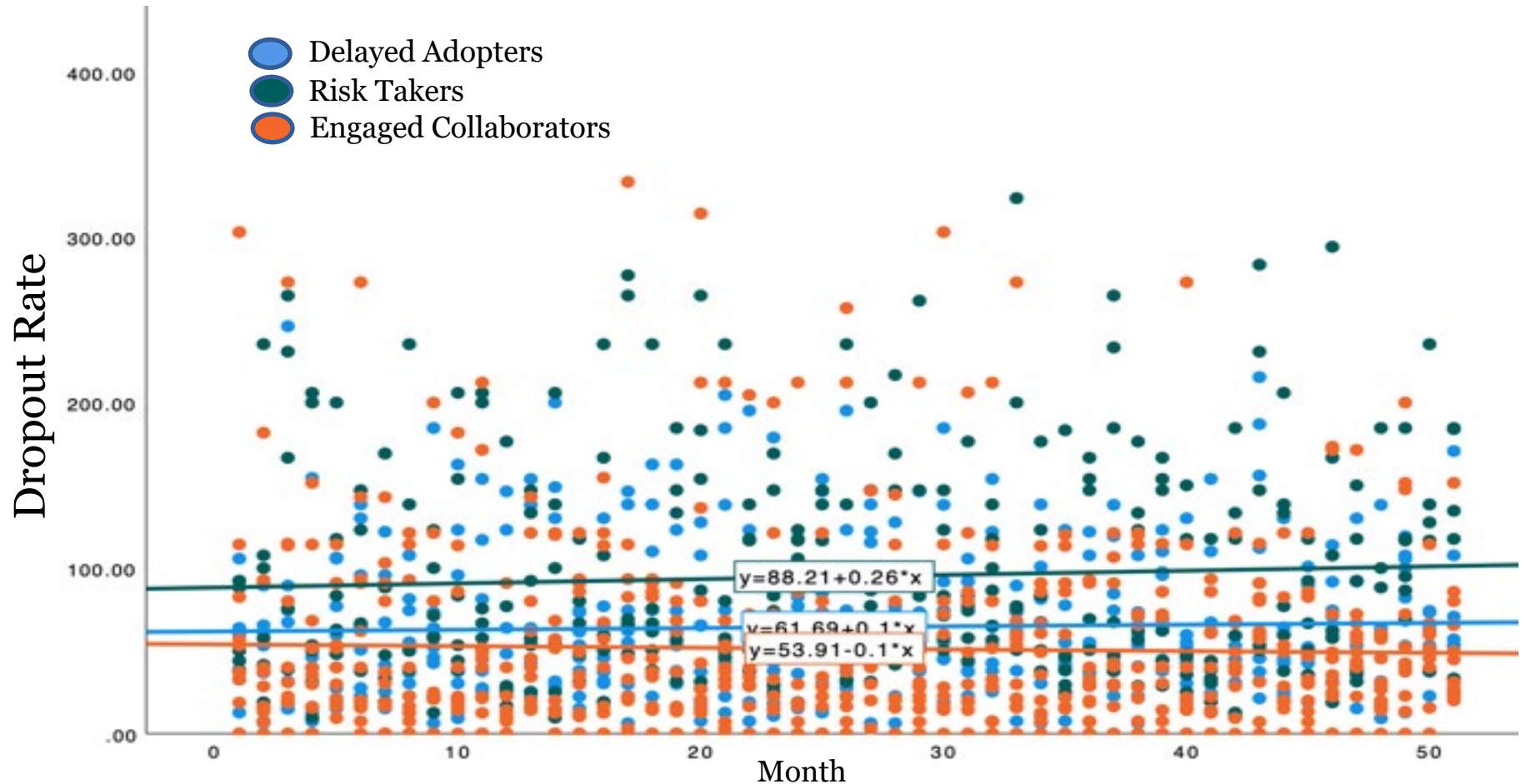 - Rapid shifts in drug use, OAT and internal displacements

Development of Latent Classes by Regions

| NIATx Inputs	Engaged Collaborators N=8	Independent Operators N=9	Delayed Adopters N=8
Leadership (Chief Narcol participation)	High (100%)	High (56%)	Low (100%)
Collaboration Climate Scale	High (75%)	Low (67%)	High (50%)
Independent risk-taking scale	Low (63%)	High (89%)	Low (100%)
Trip 1 (identified as a leader)	Yes (40%)	Yes (80%)	Yes (0%)
Trip 2 (succeeded with Challenge 1)	Yes (50%)	Yes (67%)	No (100%)

Engaged Collaborators
Risk Takers
Delayed Adopters

Not all sites implement equally

$$y = 61.93 + 1.86 \cdot x$$
$$y = 62.01 + 1.05 \cdot x$$
$$y = 42.14 + 0.72 \cdot x$$

Scale-Up Rate

Month

Dropout Rate by Month by Clusters After Order 200 Changed

OAT Scale-up in Ukraine – COVID-19 as a Disruptor
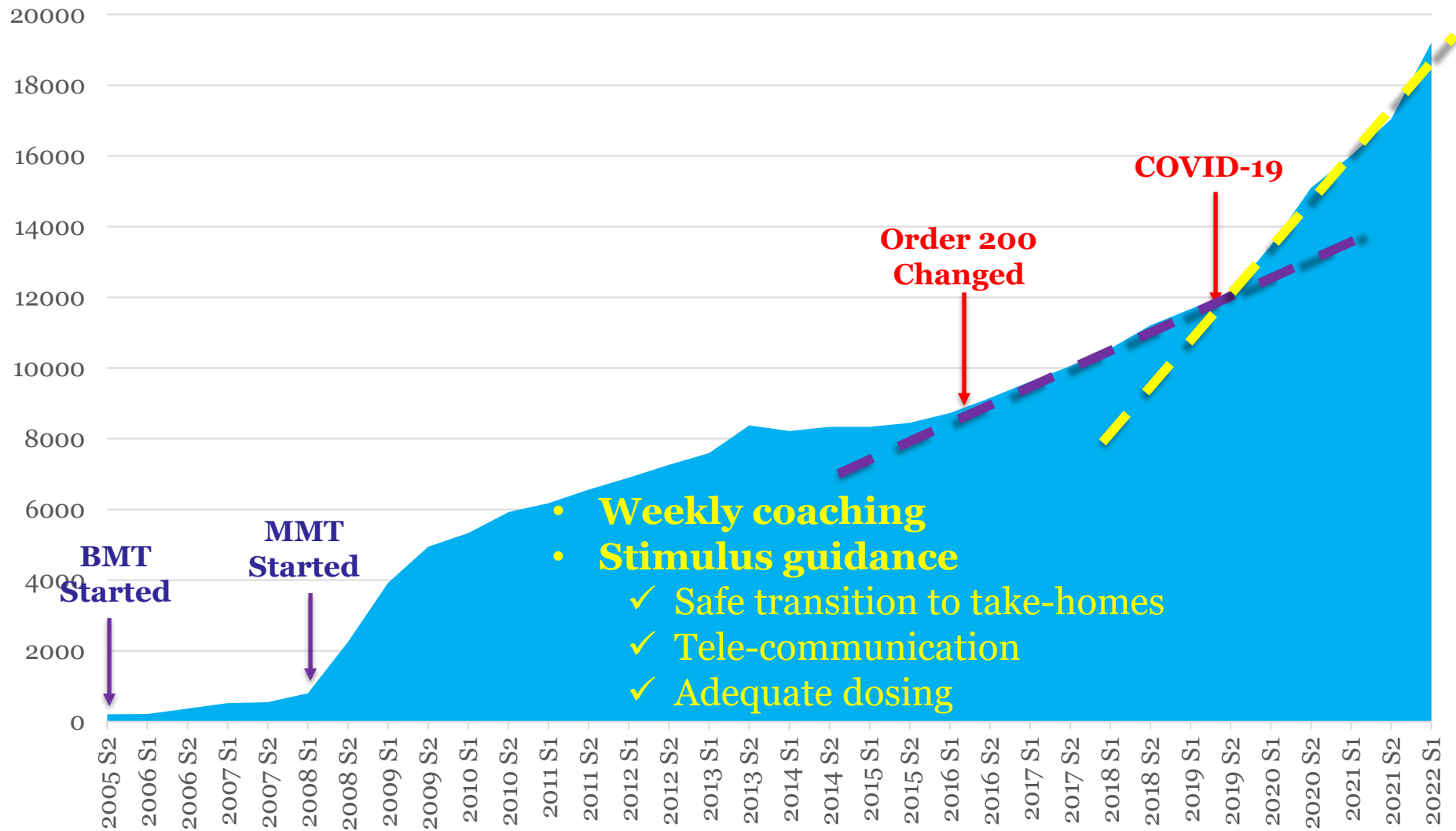
Service Delivery Disruptions – COVID
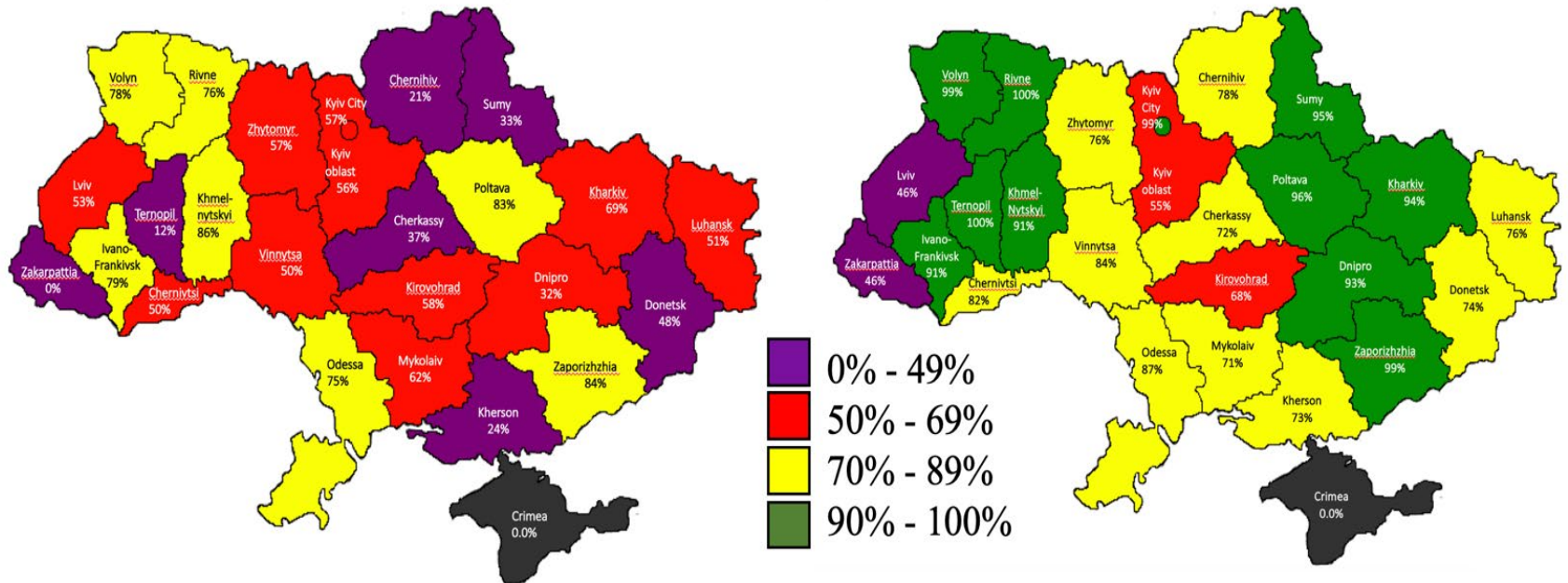

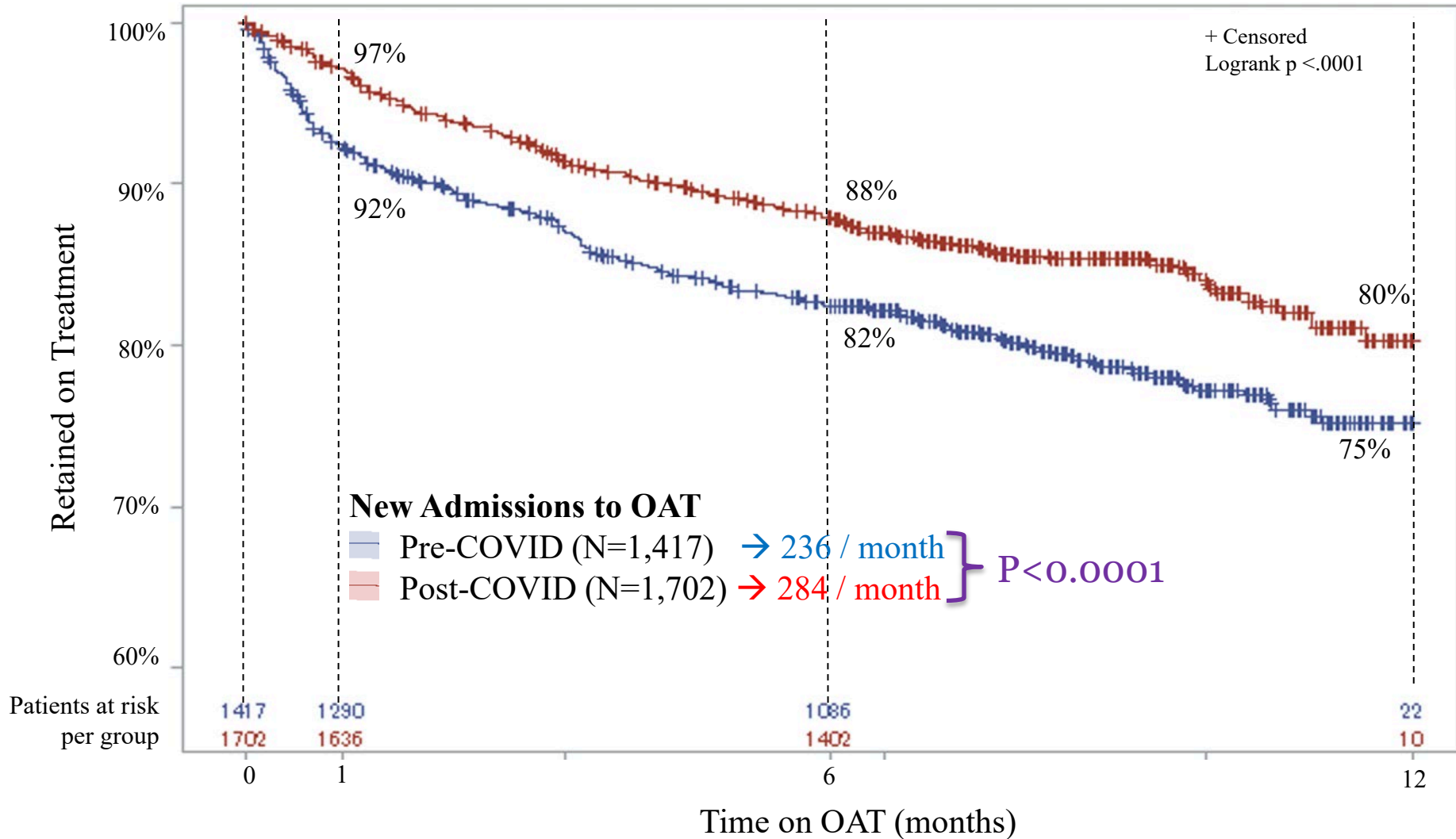A. March 1st, 2020 (mean = 53.4%)

B. June 1st, 2020 (mean = 84.4%)

Legend:
- 0% - 49%
- 50% - 69%
- 70% - 89%
- 90% - 100%

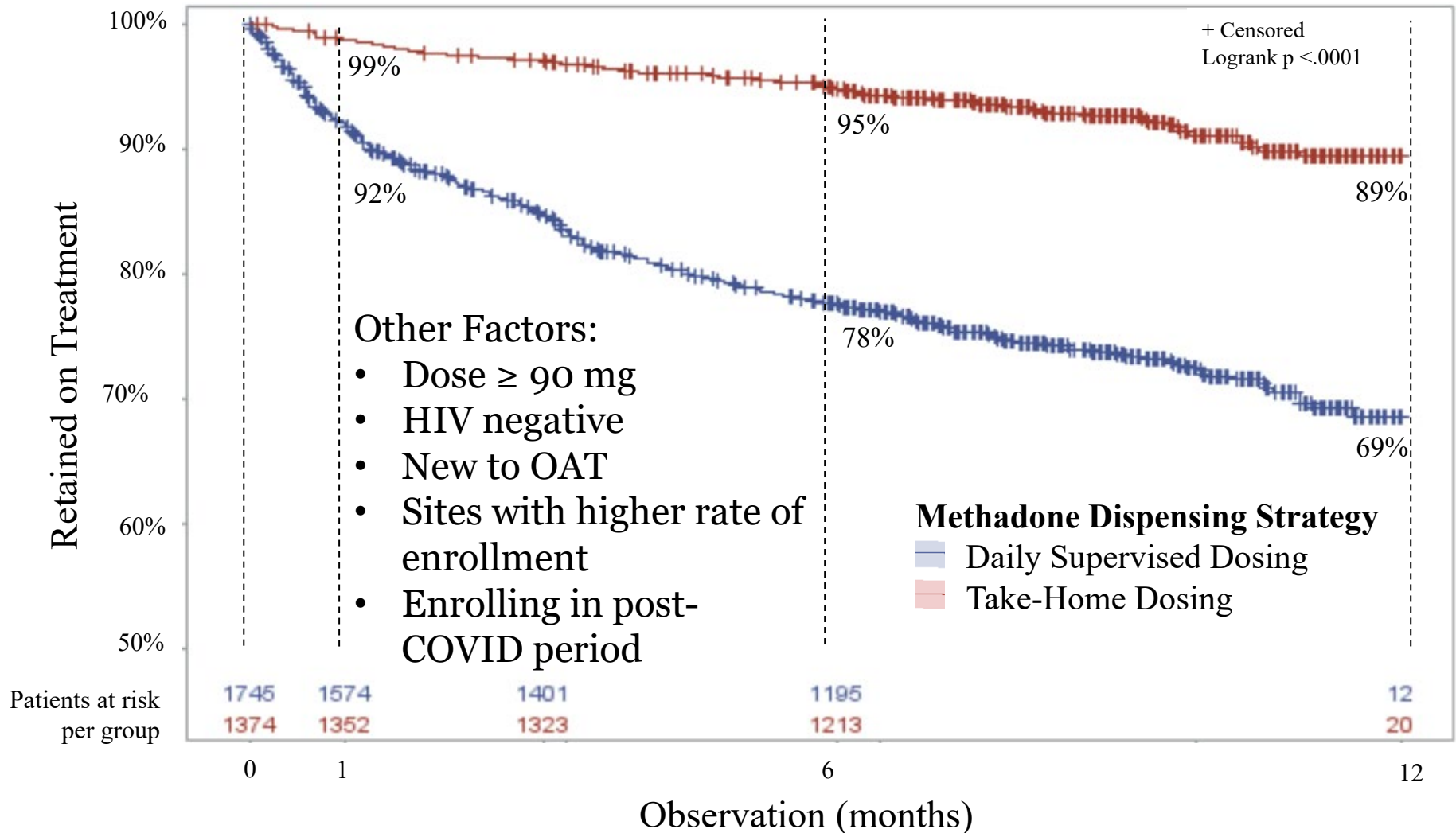|	Pre COVID-19 (Annualized)		COVID-19 (Annualized)		Difference (Annualized)	
Dose	Contacts	Hours	Contacts	Hours	**Contacts**	**Hours**
3 Days	2,889,395	240,783	2,160,743	180,062	728,652	60,721
7 Days	2,376,220	198,018	1,412,268	117,689	963,952	80,329
10 Days	2,260,756	188,396	1,243,861	103,655	**1,016,895**	**84,741**

Mortality: 2019 (4.3%) --- Pre-COVID (5.0%) --- COVID (4.2%)
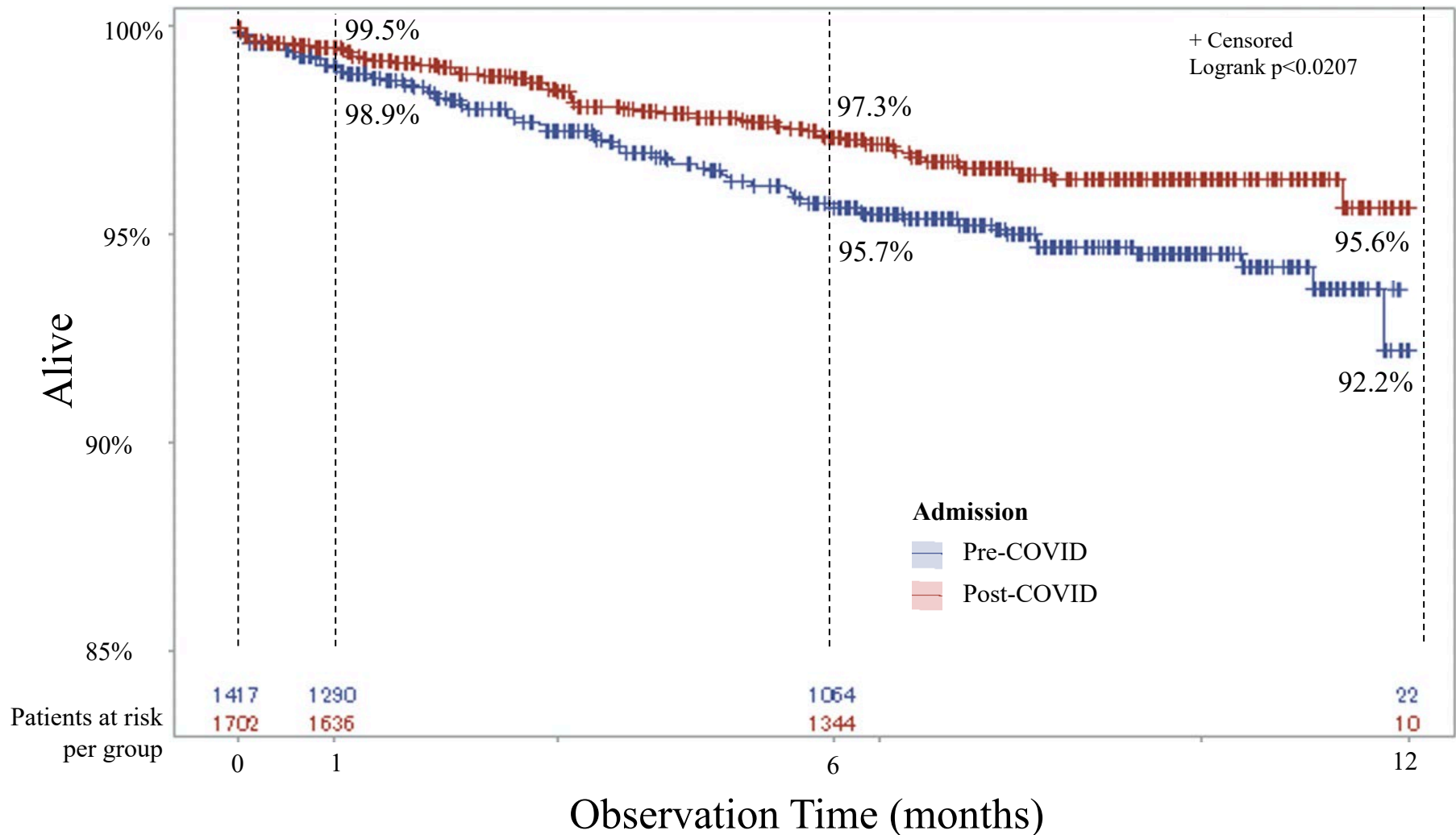
Meteliuk A et al, JSAT, 2021

Retention on OAT over 12 months for newly admitted patients, PRE- vs POST-COVID periods (N=3,119)

Ivasiy R et al, under review

Transition to Take-Home Dosing Contributed most to Treatment Retention (N=3,119)

Retained on Treatment

100%
90%
80%
70%
60%
50%

+ Censored
Logrank p <.0001

99%
95%
89%
92%
78%
69%

Other Factors:
- Dose ≥ 90 mg
- HIV negative
- New to OAT
- Sites with higher rate of enrollment
- Enrolling in post-COVID period

Methadone Dispensing Strategy
Daily Supervised Dosing
Take-Home Dosing

Patients at risk per group

1745	1574	1401	1195	12
1374	1352	1323	1213	20

Observation (months)

0   1   6   12

Survival is Higher After COVID-19 Guidelines Introduced (N=3,119)

Ivasiy R et al, under review

Transition to Take-Home Dosing is Associated with Higher Survival (N=3,119)
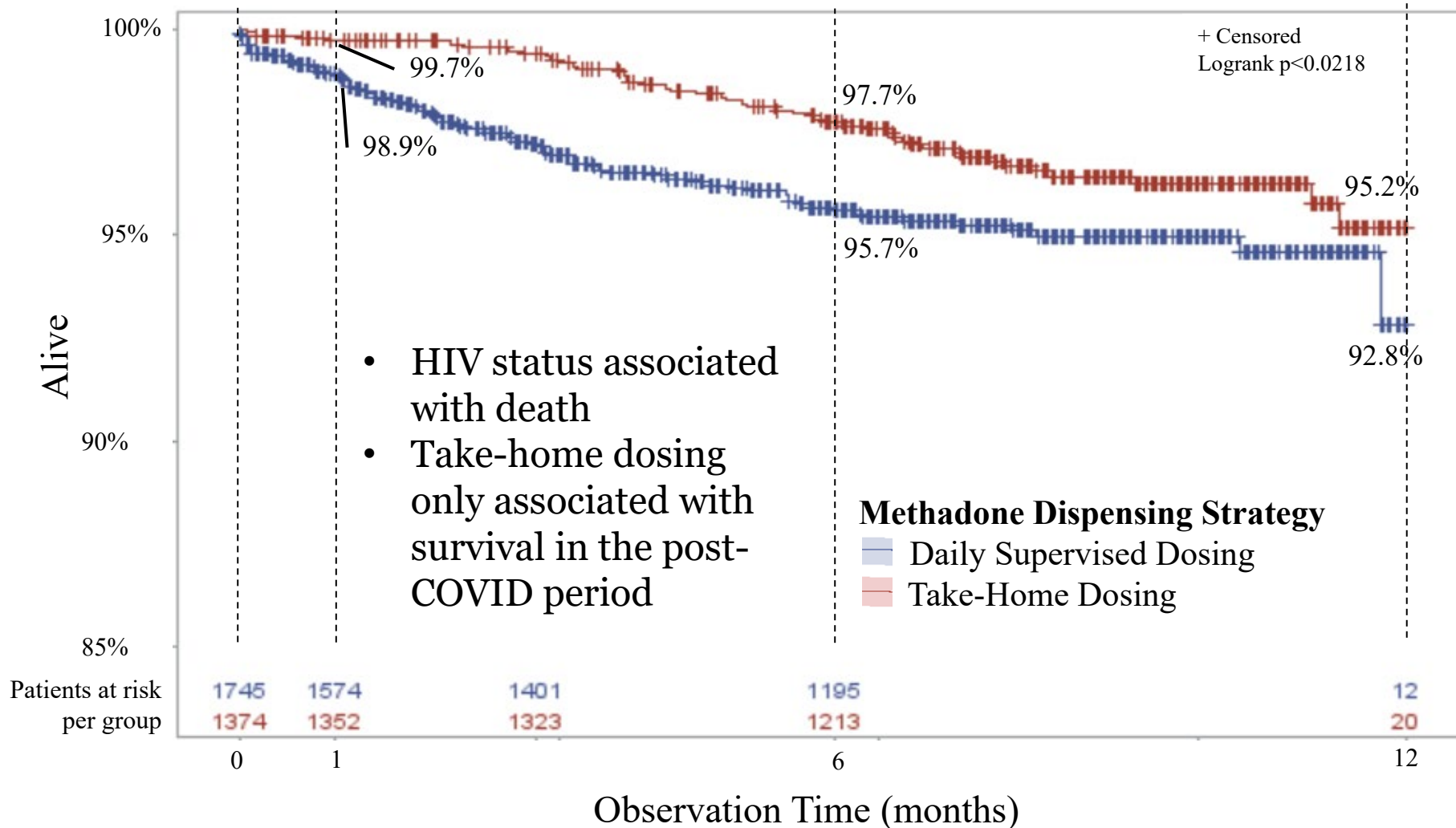
Ivasiy R et al, under review
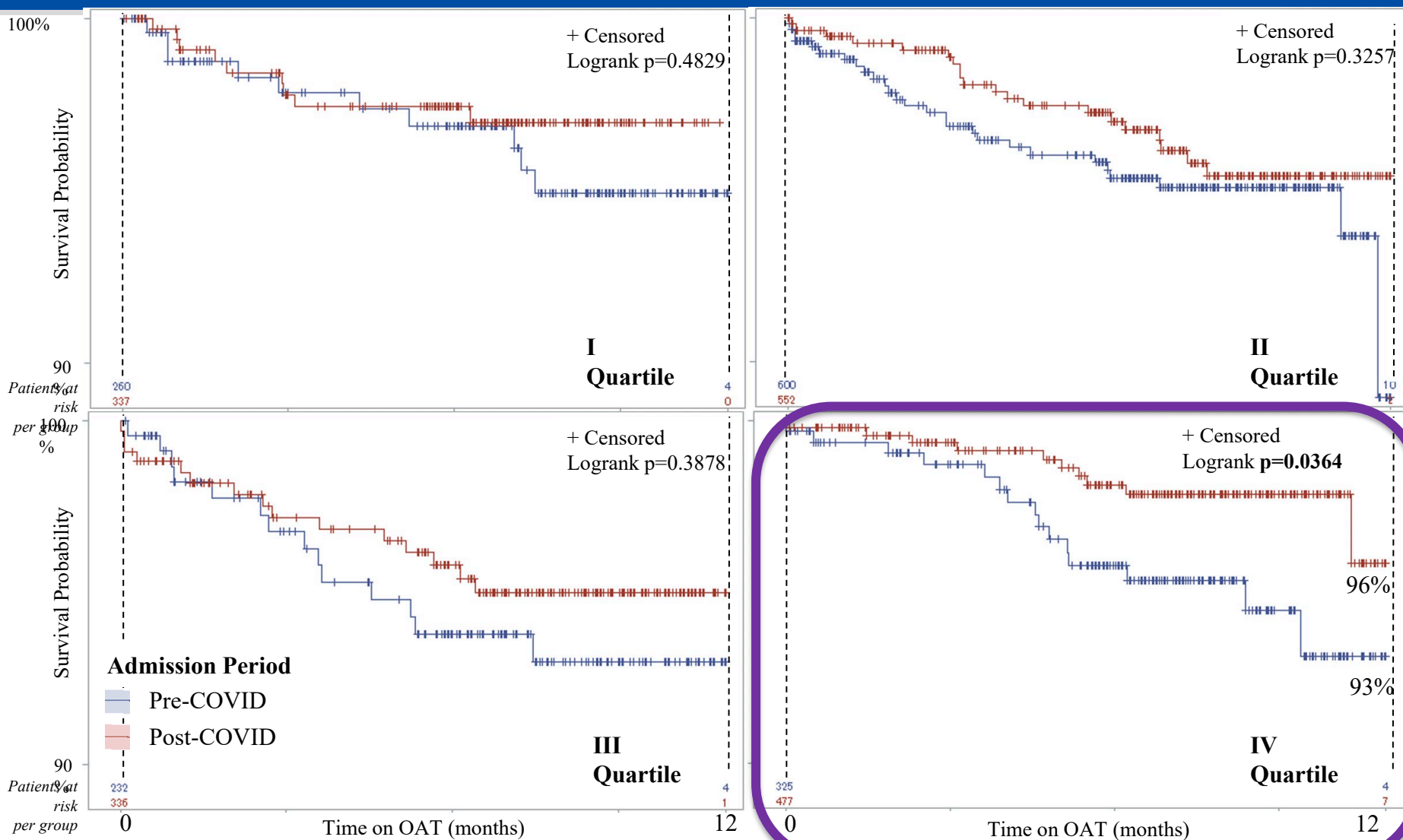
Ukraine's Response to COVID-19: Summary

- Reducing clinical demands on patient and clinicians through rapid transition to take-home dosing resulted in:
  - More new patients recruited as clinicians had more time to focus on recruitment efforts
  - Reductions in drop-out from treatment through increasing take-home dosing, attaining adequate dosing and enrolling naïve patients
  - Reductions in death with take-home dosing, especially in the highest performing regions

- These findings challenge the paradigm of higher control on patients on full opioid agonists
  - Dosing is still a major contributor to retention in treatment
  - These findings contributed to policy changes to allow patients to transfer to take-home dosing as early as 3 months after initiating therapy

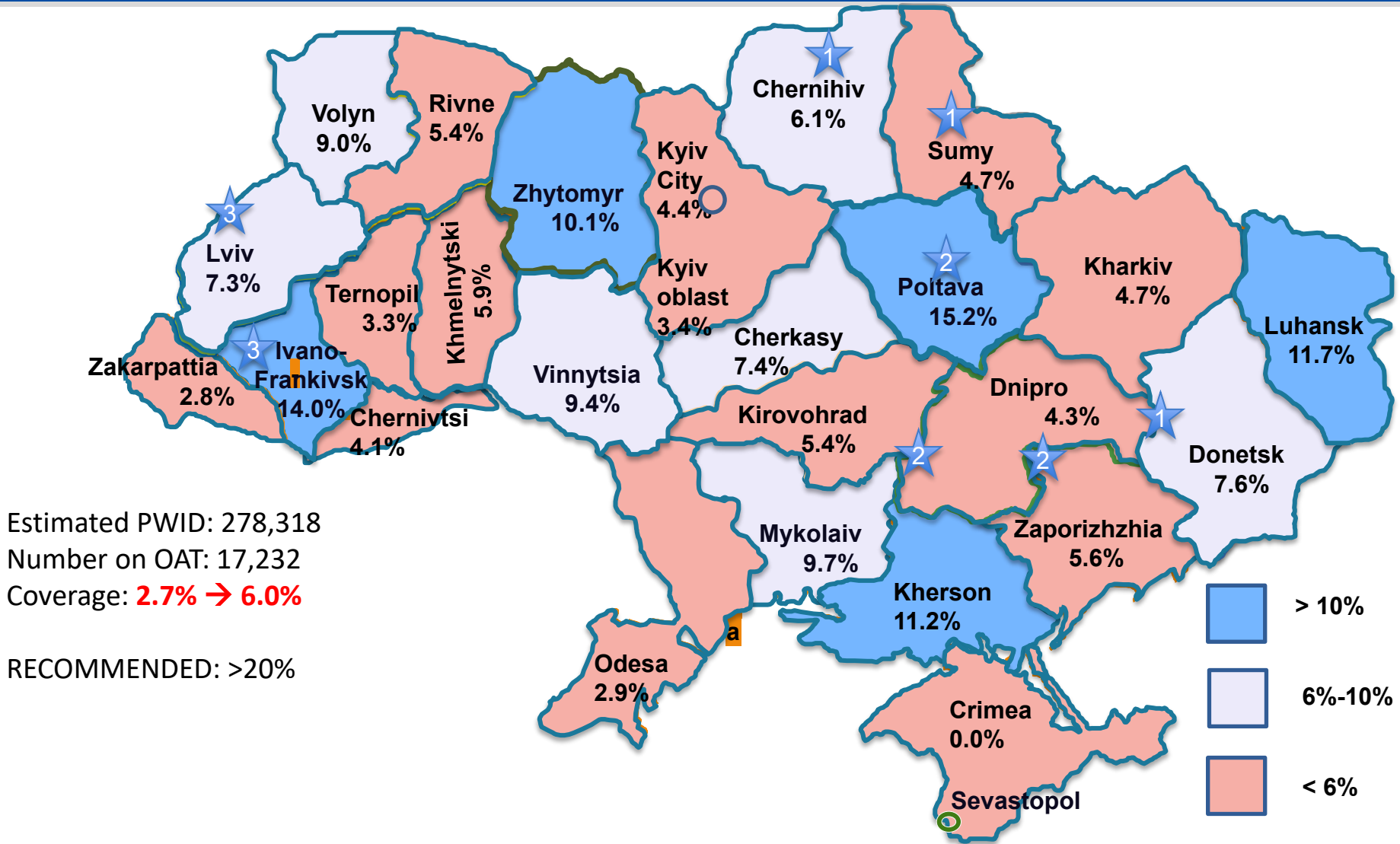# Extending a lifeline to people with HIV and opioid use disorder during the war in Ukraine

Prof Frederick L Altice, MD · Daniel J Bromberg, MSc · Sergii Dvoriak, MD · Anna Meteliuk, MPH · Iryna Pykalo, MPH · Zahedul Islam, MBA · Lyu Azbel, PhD · Lynn M Madden, PhD · Show less

February 24, 2022

Lancet Public Health, 2022

Yale SCHOOL OF MEDICINE

OAT Coverage in Each Region (February 1, 2022)

Estimated PWID: 278,318
Number on OAT: 17,232
Coverage: **2.7%** → **6.0%**

RECOMMENDED: >20%

Volyn 9.0%
Rivne 5.4%
Chernihiv 6.1%
Sumy 4.7%
Lviv 7.3%
Zhytomyr 10.1%
Kyiv City 4.4%
Kharkiv 4.7%
Zakarpattia 2.8%
Ternopil 3.3%
Khmelnytski 5.9%
Ivano-Frankivsk 14.0%
Kyiv oblast 3.4%
Poltava 15.2%
Luhansk 11.7%
Chernivtsi 4.1%
Vinnytsia 9.4%
Cherkasy 7.4%
Dnipro 4.3%
Donetsk 7.6%
Kirovohrad 5.4%
Mykolaiv 9.7%
Zaporizhzhia 5.6%
Odesa 2.9%
Kherson 11.2%
Crimea 0.0%
Sevastopol

(blue)	> 10%
(light)	6%-10%
(pink)	< 6%

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SLIDE 56

Ukraine: Early Responses

- Operating collaborative learning sessions with the Chief Narcologists in each region to update on emerging strategies (NIATx)
  - 20 OAT sites shut down (all of Luhansk and much of Kherson and Donetsk)
  - Ministry of Health issued emergency guidelines allowing patients to have up to 30 days of take-home medications (supplies variable) and for a 30-day prescription (free) to pick up at pharmacies
  - Variable dispensation of larger quantities (most only 10-14 days)
  - Some starting dosing tapers
  - Collaboration between governmental and private OAT clinics
- Strategies to communicate with patients
  - Patients afraid to travel ("yoked to treatment")
  - Online message board for pharmacies with medication
  - Online message board to let clients know where OPEN OAT clinics are located
  - Closed social media chat groups (WhatsApp, Viber, Telegram)
  - Crowd sourcing to announce when supplies are available in a given location

Medications for opioid use disorder during war in Ukraine: Innovations in public and private clinic cooperation

Daniel J. Bromberg • Lynn M. Madden • Anna Meteliuk • Roman Ivasiy • Samy J. Galvez de Leon •
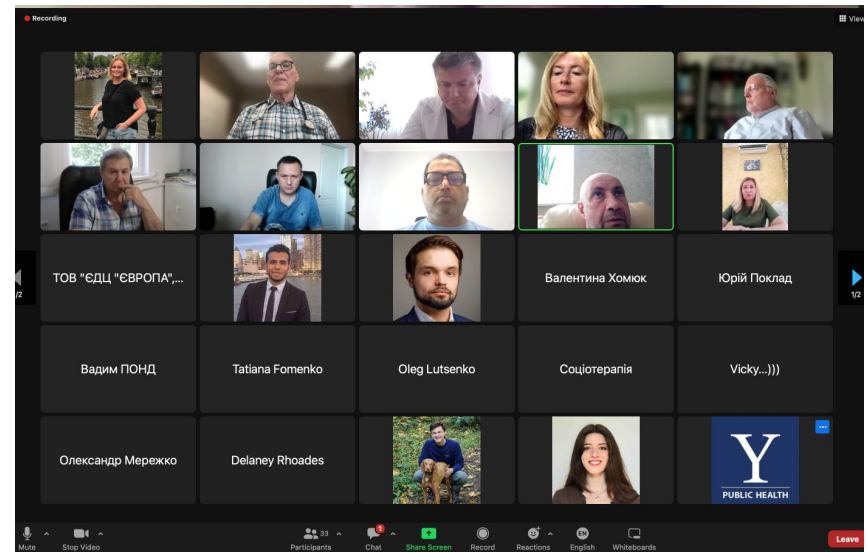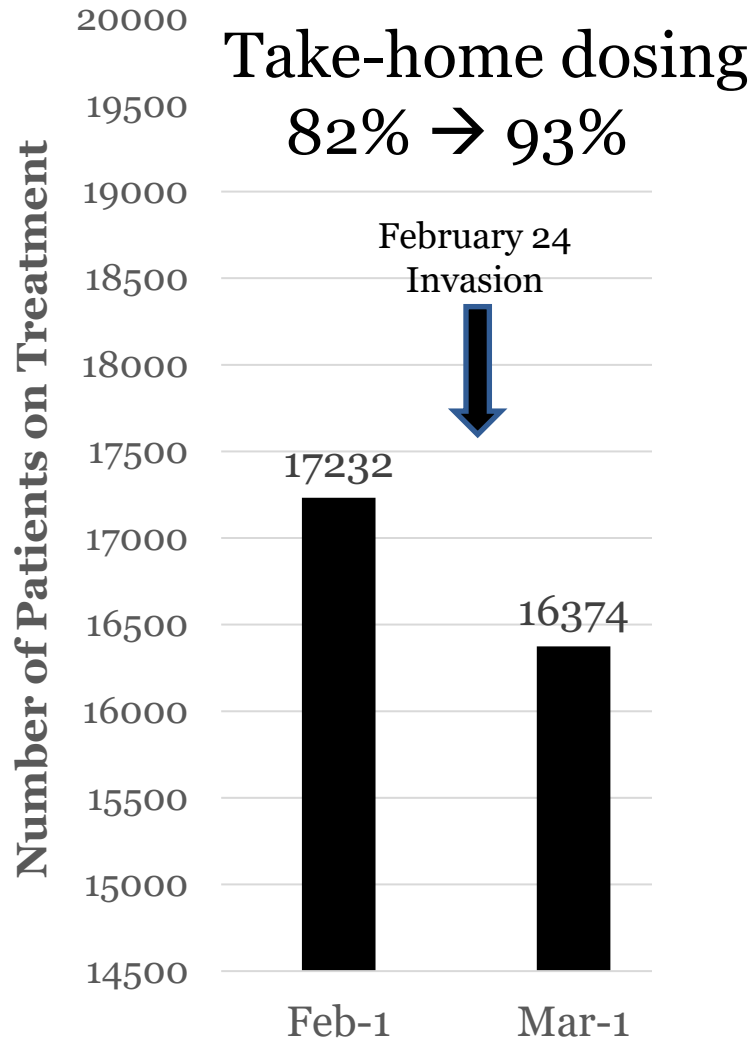Konstantin Klyucharyov • et al.   Show all authors

Collaborative learning and response to opioid misuse and HIV prevention in Ukraine during war

Frederick L Altice ✉ • Daniel J Bromberg • Adriy Klepikov • Ezra J Barzilay • Zahedul Islam • Sergii Dvoriak •
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Yale SCHOOL OF MEDICINE

OAT Scale-Up After the Invasion by Russia

Take-home dosing
82% → 93%

February 24
Invasion

Number of Patients on Treatment

20000
19500
19000
18500
18000
17500
17000
16500
16000
15500
15000
14500

17232

16374

Feb-1

Mar-1

2022

Slava Ukraini!

Questions?

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