

Portfolio Analysis of Scored and Funded Behavior Change Science Applications 2021-2022

Jessica Gowda, M.S.; Sydney O'Connor, Ph.D.; Deborah Young-Hyman, Ph.D., CDCES
Office of Behavioral and Social Sciences Research
National Institutes of Health



obssr.od.nih.gov



@NIHOBSSR



@OBSSR.NIH



National Institutes of Health
Office of Behavioral and Social Sciences Research

Purpose of Portfolio Analysis

- To better understand the behavior change science of applications submitted to two behavior change-focused Notices of Special Interest (NOSIs)
- To examine to what extent these behavior change science applications addressed **behavioral maintenance** and **sustainment**
- To identify project characteristics across applications addressing behavior change (ex: representation across Institutes, disease entities, behaviors, study designs, etc.)
- To better understand behavior change terminology and definitions used in research



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Working Definitions* of Phases of Behavior Change

Initiation:

Starting a new behavior

Adoption:

Engaging in the behavior to achieve levels specified in the active protocol

Maintenance:

Continuing to engage in behavior with supports still in place during active intervention (e.g., boosters)

Sustainment:

Engaging in behavior independently, without supports post-intervention



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

**As of Spring 2023*

Structure of Portfolio Analysis

- Applications to NOT-OD-21-100 (Adherence NOSI)
 - Included applications that were scored as of July 30,2022
- Applications to NOT-OD-22-140 (Admin Supplement NOSI)
 - Included all funded applications (no cut-off date)
 - Consulted parent grant as needed for additional info

Title	Announcement Number	Issuing Organization	Opening Date	Closing Date
<u>Notice of Special Interest (NOSI): Improving Patient Adherence to Treatment and Prevention Regimens to Promote Health</u>	NOT-OD-21-100	OBSSR	4/8/2021	6/8/2024
<u>Notice of Special Interest (NOSI): Administrative Supplement for Research Efforts that Illuminate Fundamental Processes Underlying Behavior Change, Maintenance, and Adherence (Admin Supp Clinical Trial Optional)</u>	NOT-OD-22-140	OBSSR	5/27/2022	7/16/2022



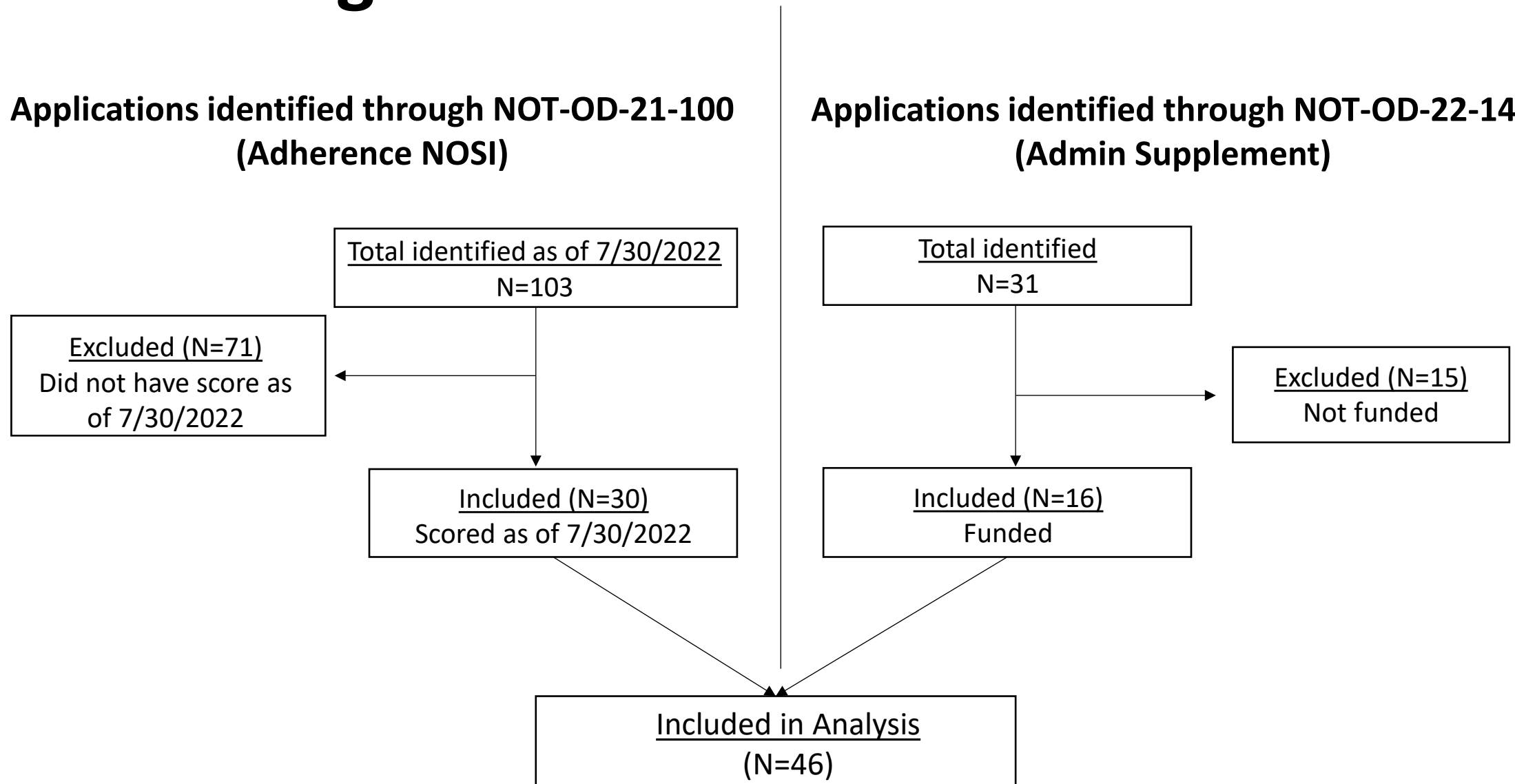
National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Flow Diagram

Applications identified through NOT-OD-21-100
(Adherence NOSI)

Applications identified through NOT-OD-22-140
(Admin Supplement)



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Key Data Extracted

- Activity code
- Primary Institute assignment
- Study design
- Multilevel target(s) of intervention/influence
- Hypothesized mechanisms of action (MoA)
- Length of active and non-active intervention
- Disease entity and target outcomes
- Phases of behavior change: Initiation, adoption, maintenance, sustainment



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Activity Code

Activity Code	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
R01	38 (82%)	24 (80%)	14 (88%)
R21	3 (7%)	3 (10%)	0 (0%)
R34	3 (7%)	2 (7%)	1 (6%)
R03	1 (2%)	1 (3%)	0 (0%)
R33	1 (2%)	0 (0%)	1 (6%)



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Primary Institute Assignment

Institute Assignment	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
NHLBI	22 (48%)	17 (57%)	5 (31%)
NIDDK	5 (11%)	0 (0%)	5 (31%)
NINR	5 (11%)	4 (13%)	1 (6%)
NCI	4 (9%)	2 (7%)	2 (13%)
NIMH	2 (4%)	2 (7%)	0 (0%)
NIA	2 (4%)	1 (3%)	1 (6%)
NIDA	2 (4%)	1 (3%)	1 (6%)
NIDCD	2 (4%)	2 (7%)	0 (0%)
NICHD	1 (2%)	0 (0%)	1 (6%)
NIMHD	1 (2%)	1 (3%)	0 (0%)



National Institutes of Health

Office of Behavioral and Social Sciences Research

Type of Study

Type of Study	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Randomized Control Trial (RCT)	35 (76%)	21 (70%)	14 (88%)
Methods Development or Proof of Concept	5 (11%)	5 (16%)	0 (0%)
Observational Cohort	4 (9%)	2 (7%)	2 (13%)
Mechanism of Pathophysiology	2 (4%)	2 (7%)	0 (0%)



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Target(s) of Intervention/Influence Examined in Projects*

Level of Intervention/Influence	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Individual	45 (98%)	29 (97%)	16 (100%)
Provider	12 (26%)	10 (33%)	2 (13%)
Community	10 (22%)	6 (20%)	4 (25%)
Healthcare System	6 (13%)	6 (20%)	0 (0%)

* Column frequencies may add up to more than 100%, as each application may have focused on multiple levels of intervention/influence



National Institutes of Health

Office of Behavioral and Social Sciences Research

Total Number of Intervention/Influence Targets Examined in Each Project

Number of Levels	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
1	24 (52%)	14 (47%)	10 (63%)
2	17 (37%)	11 (37%)	6 (38%)
3	5 (11%)	5 (17%)	0 (0%)



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Disease Entity Category*

Disease Entity Category	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Cardiovascular Disease	16 (35%)	14 (47%)	2 (13%)
Other	13 (28%)	9 (30%)	4 (25%)
Obesity	9 (20%)	3 (10%)	6 (38%)
Diabetes	5 (11%)	1 (3%)	4 (25%)
Cancer	4 (9%)	2 (7%)	2 (13%)
HIV/AIDS	4 (9%)	4 (13%)	0 (0%)

* Column frequencies may add up to more than 100%, as each application may have focused on multiple disease entity categories



National Institutes of Health

Office of Behavioral and Social Sciences Research

Target Outcome Category*

Target Outcome Category	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Clinical	39 (85%)	26 (87%)	13 (81%)
Behavioral	22 (48%)	13 (43%)	9 (56%)
Psychosocial	12 (26%)	7 (23%)	5 (31%)

* Column frequencies may add up to more than 100%, as each application may have focused on multiple target outcome categories



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Hypothesized Mechanisms of Action (MoA)*

Hypothesized MoA(s)	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Psychological	31 (67%)	18 (60%)	13 (81%)
Social/Environmental	25 (54%)	19 (63%)	6 (38%)
Behavioral	20 (43%)	9 (30%)	11 (69%)
Physiological	14 (30%)	7 (23%)	7 (44%)

* Column frequencies may add up to more than 100%, as each application may have hypothesized/tested multiple MoAs



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Phase of Change*

Phase of Change	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Initiation	36 (78%)	23 (77%)	13 (81%)
Adoption	38 (83%)	24 (80%)	14 (88%)
Maintenance	30 (65%)	20 (67%)	10 (63%)
Sustainment	19 (41%)	13 (43%)	6 (38%)

* Column frequencies may add up to more than 100%, as each application may have focused on multiple phases of change



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Phase of Change – Number of Phases*

Number of Phases	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
N=0	7 (14%)	5 (17%)	2 (13%)
N=1	0 (0%)	0 (0%)	0 (0%)
N=2	9 (20%)	5 (17%)	4 (25%)
N=3	15 (33%)	10 (33%)	5 (31%)
N=4	15 (33%)	10 (33%)	5 (31%)

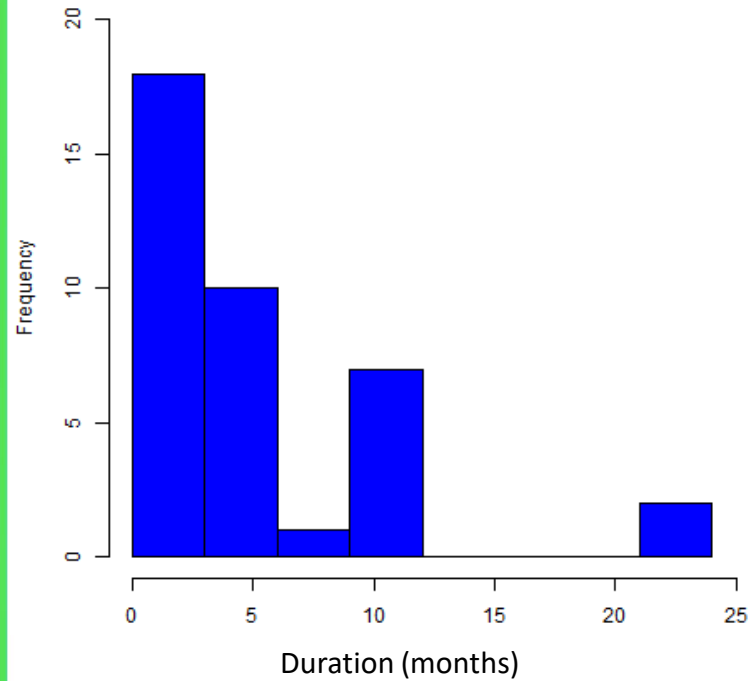


National Institutes
of Health

Office of Behavioral and
Social Sciences Research

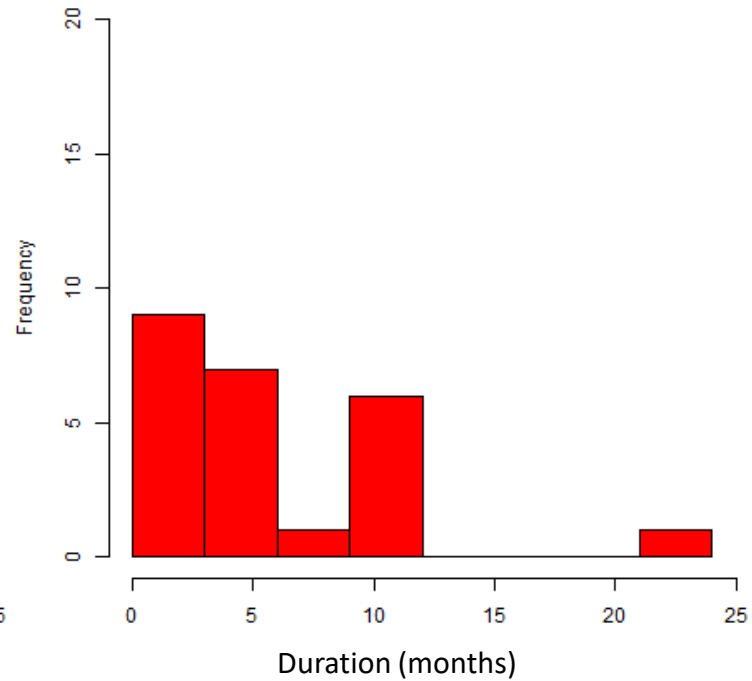
Duration of Active Intervention

Overall Sample



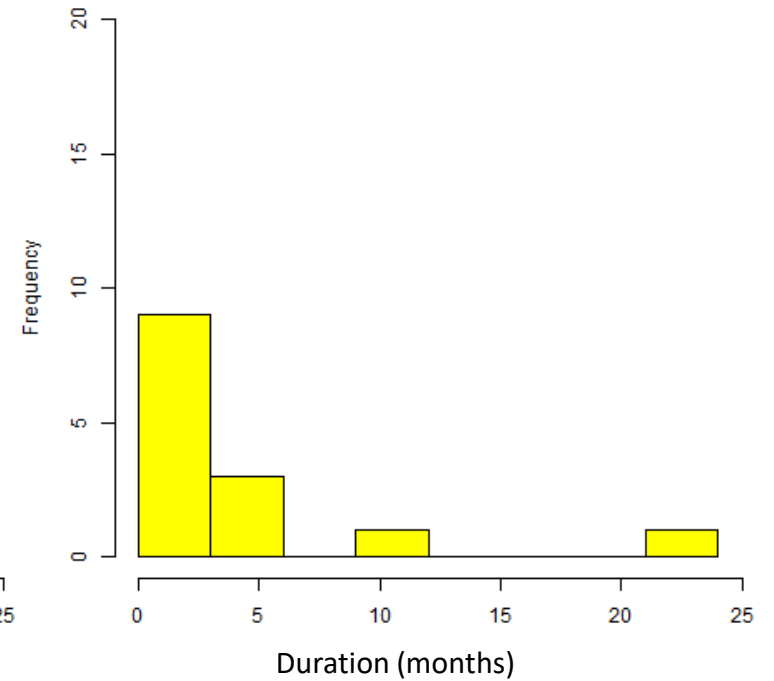
N=7 (15%) no intervention

Adherence NOSI



N=5 (17%) no intervention

Admin Supplement



N=2 (13%) no intervention



National Institutes of Health

Office of Behavioral and Social Sciences Research

Duration of Active Intervention

Duration of Intervention	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
Single exposure	3 (7%)	3 (10%)	0 (0%)
<1 month	2 (4%)	0 (0%)	2 (13%)
1-2 months	7 (16%)	3 (10%)	4 (25%)
3-5 months	9 (20%)	5 (17%)	4 (25%)
6 months	8 (17%)	6 (20%)	2 (13%)
7-12 months	8 (17%)	7 (23%)	1 (6%)
24 months	2 (4%)	1 (3%)	1 (6%)
NA	7 (15%)	5 (17%)	2 (13%)

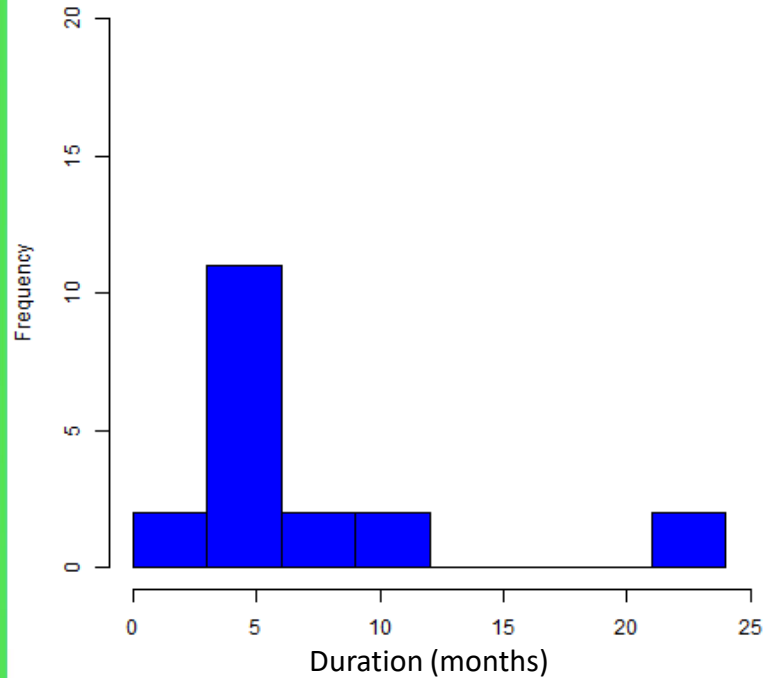


National Institutes
of Health

Office of Behavioral and
Social Sciences Research

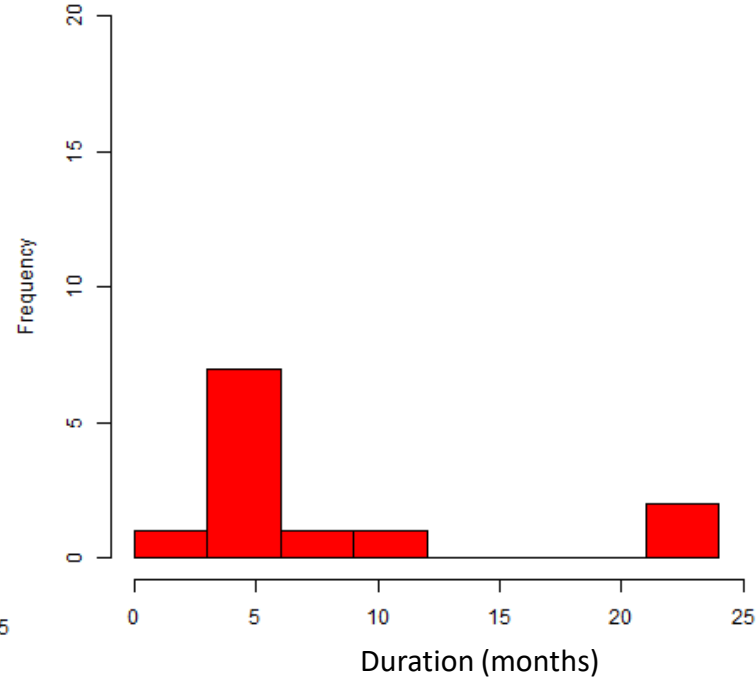
Duration of Follow-Up (Sustainment)

Overall Sample



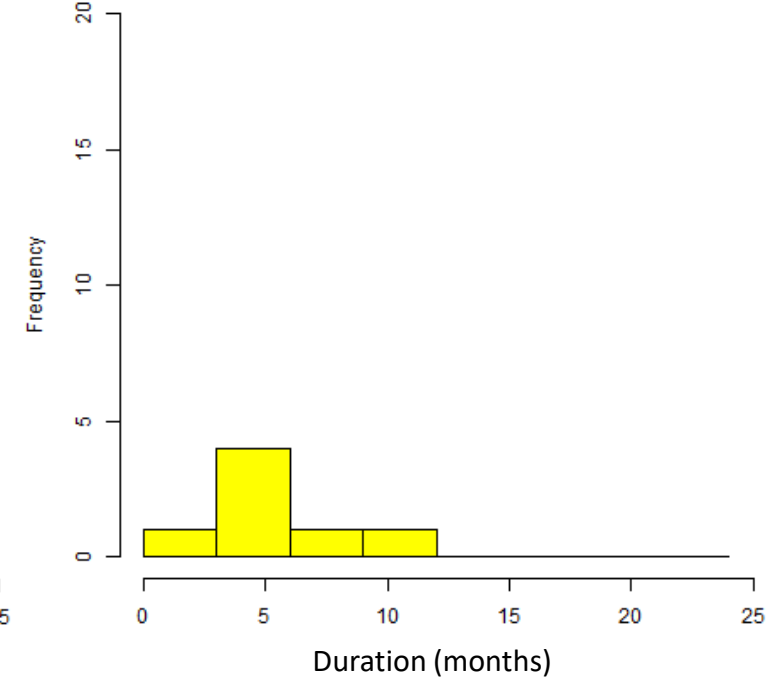
N= 20 (43%) no follow-up
N= 6 (13%) no intervention

Adherence NOSI



N= 13 (43%) no follow-up
N= 4 (13%) no intervention

Admin Supplement



N= 7 (44%) no follow-up
N= 2 (13%) no intervention



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Duration of Follow-Up (Sustainment)

Duration of Follow-Up	Overall (N=46)	Adherence NOSI (N=30)	Administrative Supplement (N=16)
0 months	20 (43%)	13 (43%)	7 (44%)
1-5 months	3 (7%)	1 (3%)	2 (13%)
6 months	11 (24%)	8 (27%)	3 (19%)
7-12 months	4 (9%)	2 (7%)	2 (13%)
24 months	2 (4%)	2 (7%)	0 (0%)
NA	6 (13%)	4 (13%)	2 (13%)



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Key Findings

- Most active interventions were ≤ 12 months in duration
- 40% of projects examined sustainment after the end of the active intervention - persistence of intervention effect on behavior
- 1 in 3 projects considered all four phases of change - initiation, adoption, maintenance, sustainment
- 2 in 3 projects examined influence of multiple categories of MoAs
- 50% of projects examined ≥ 1 target of intervention/influence
- $>80\%$ of projects examined a disease outcome
- Coding projects posed distinct challenges, due to:
 - Non-standardized terminology used to describe phases of behavior change
 - Inexact mapping of phases of behavior change in relation to outcomes



National Institutes
of Health

Office of Behavioral and
Social Sciences Research

Future Directions

- Identify ways to stimulate high-quality research in behavior maintenance/sustainment including persistence of intervention effects, and build an ontology of standardized behavior change language
 - Use Notices of Funding Opportunities (NOFOs) to call for applications regarding phases of behavior change, MoAs, and outcomes
 - Use more *precise language* in NOFOs regarding phases of behavior change, MoAs, and outcomes
- Use the Behavior Maintenance Workshop Series to address some of these broad challenges



National Institutes
of Health

Office of Behavioral and
Social Sciences Research