

**RECOVERY FROM ALCOHOL  
AND DRUG PROBLEMS IN A  
NATIONALLY-REPRESENTATIVE  
SAMPLE OF U.S. ADULTS:  
PREVALENCE, PATHWAYS,  
AND PREDICTORS**

**SSA, Newcastle, UK 2018**

**John F. Kelly, PhD, ABPP**





## John F. Kelly, PhD ABPP

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# Outline

Why long-term remission/recovery important?

National Recovery Study

What is the prevalence of alcohol or other drug problem resolution?

What proportion self-identify as being “in recovery”?

What are the pathways followed?

How many serious attempts does it take to resolve AOD problems?

What is quality of life and functioning like in recovery?

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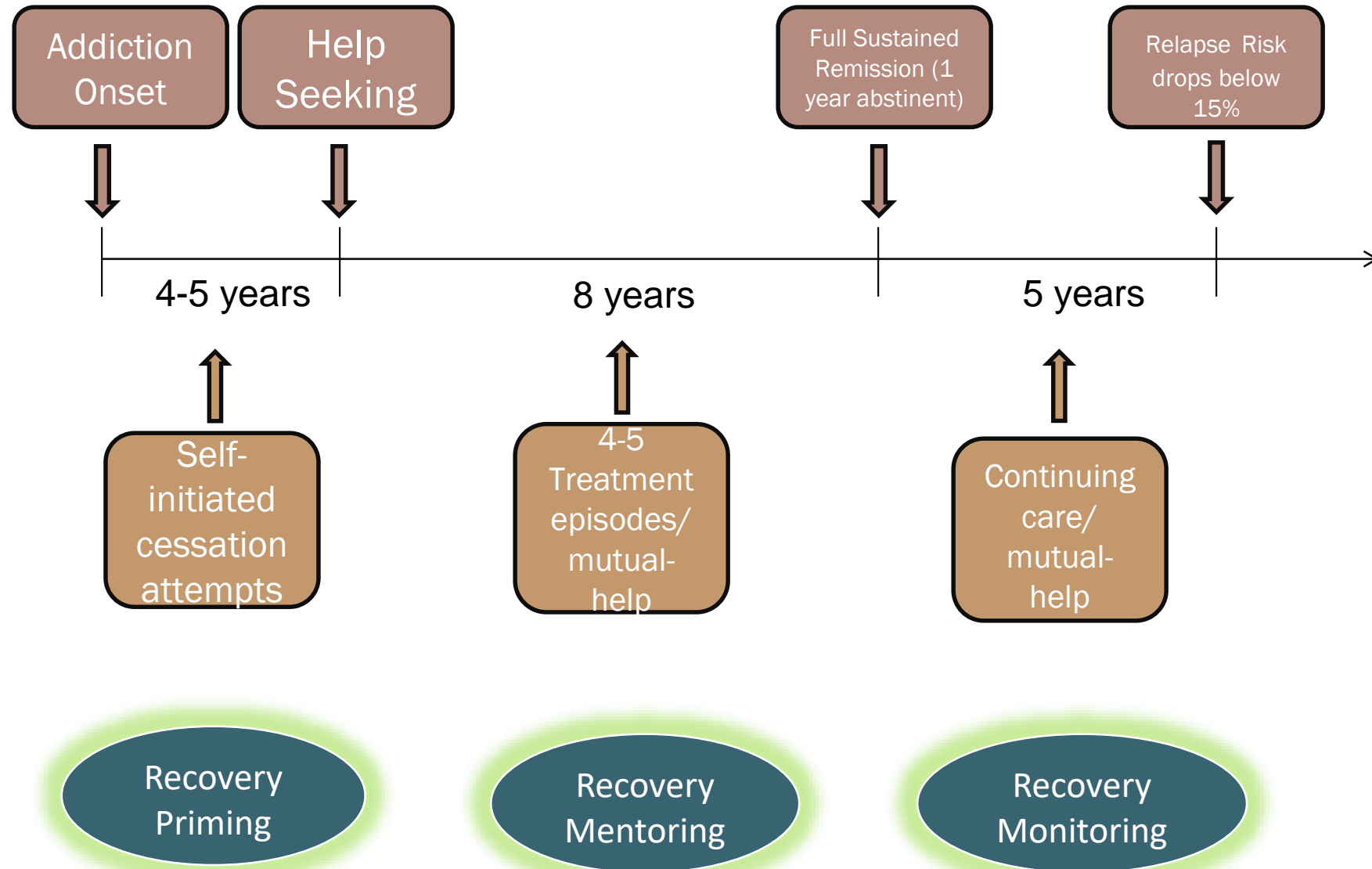
What is quality of life and functioning like in recovery?

# Focus on Recovery

- Bill White for decades has talked about understanding more about recovery from the tens of millions already in recovery-untapped resource.
- Whole libraries/volumes written about etiology, epidemiology, and treatment, but little about recovery...
- A lot might be learned from the millions of people already successfully in long-term recovery; how they did it; what helped, made the difference.



# The clinical course of addiction and achievement of stable recovery can take a long time ...



# MULTIPLE PATHWAYS TO RECOVERY

Acknowledges myriad ways in which individuals can recover:

- Clinical pathways (provided by a clinician or other medical professional – both medication and psychosocial interventions)
- Non-clinical pathways (services not involving clinicians like AA)
- Self-management pathways (recovery change processes that involve no formal services, sometimes referred to as “natural recovery”).



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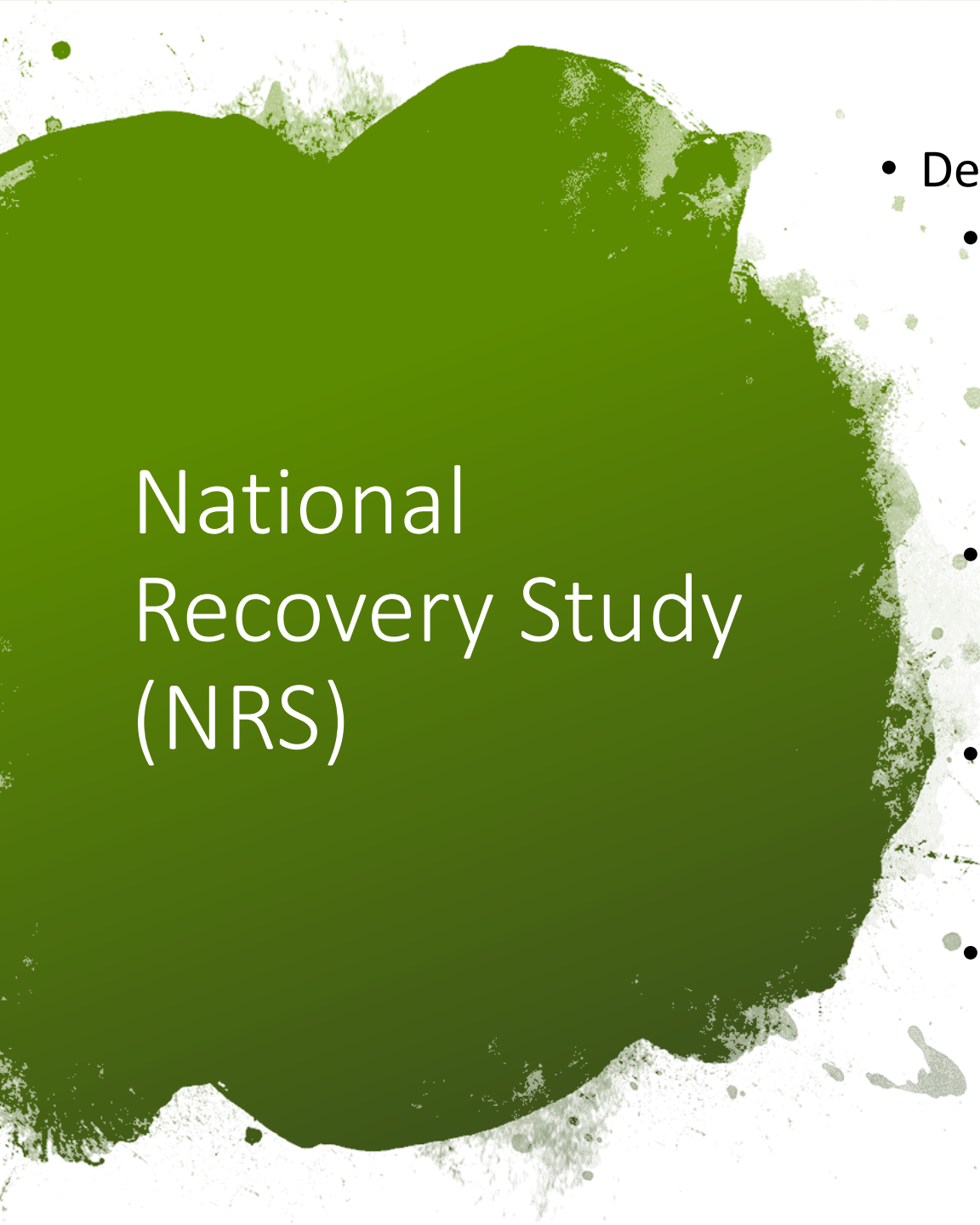
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# National Recovery Study (NRS)

- Designed to:
  - Estimate national “recovery” prevalence using nationally-representative, probability-based, sample of individuals who self-report once having a problem with AODs but no longer do...
  - Uncover and discover more about chosen recovery pathways and their correlates
  - Estimate number of serious quit attempts prior to problem resolution
  - Investigate relationships between duration of recovery and changes in other health behaviors (e.g. smoking cessation) indices of functioning and quality of life

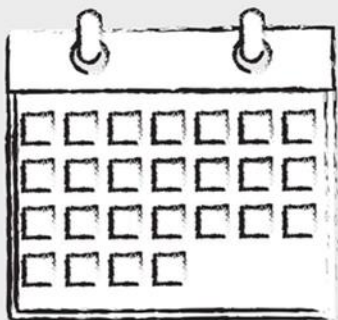
# METHODS

NRS

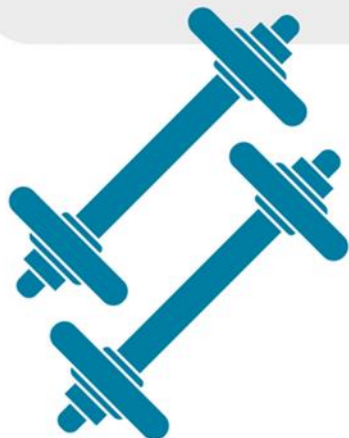


Using the National Recovery Survey (NRS), a cross sectional, random, nationally representative sampling frame of 39,809 was identified. Out of the 25,229 that then responded, 2,002 individuals self-identified as resolving a significant alcohol or other drug problem.

63% survey response rate, similar to other national epidemiological surveys



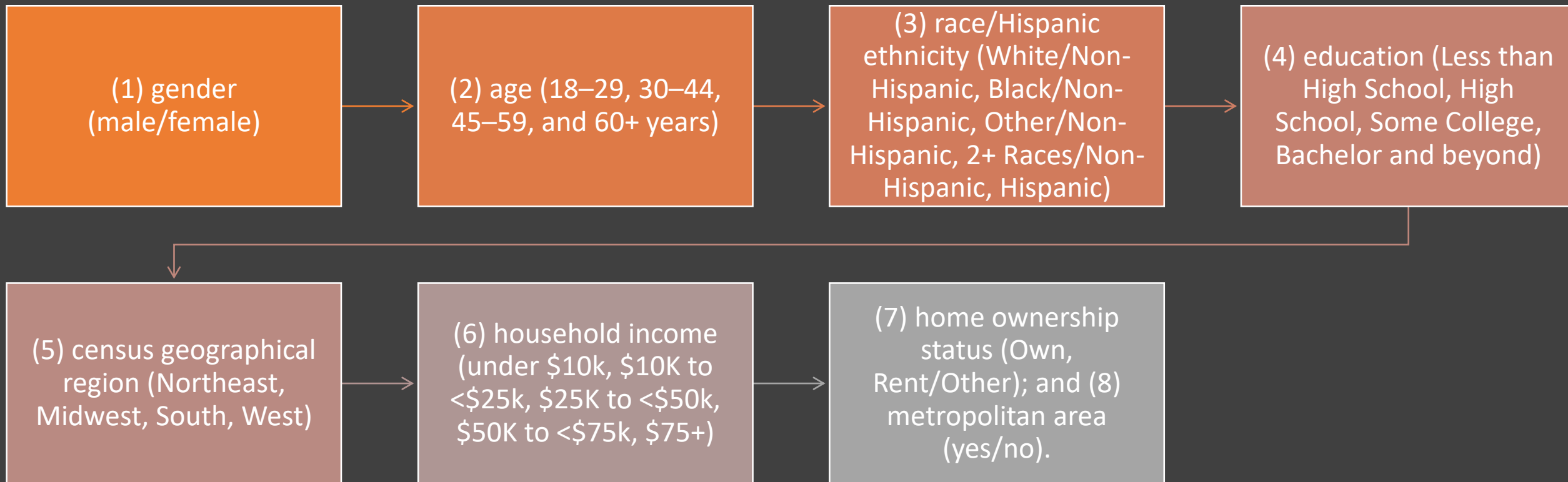
Data was collected in July & August of 2016



The data was weighted to accurately reflect the US population using iterative proportional fitting (raking), which produced weights based on eight geo-demographic benchmarks identified by the U.S. Census Bureau (CPS) in the 2015 Current Population Survey.

## Sample Weighting

Weights were computed via comparisons to benchmarks from the March 2015 Current Population Survey (CPS; United States Census Bureau, 2015) along eight dimensions..



# Response rate similar to other national epidemiological surveys

- This response rate is comparable to most other current nationally representative surveys
- NESARC-III; 60.1% (Grant et al., 2015)
- 2015 National Survey on Drug Use and Health (NSDUH; 58.3%; Center for Behavioral Health Statistics and Quality, 2016)
- 2013-2014 National Health and Nutrition Examination Survey (NHANES; 68.5%; Centers for Disease Control and Prevention [CDC], 2013)
- Data were weighted to accurately represent the civilian population using the method of iterative proportional fitting, which is commonly referred to as “raking” (Battaglia, Hoaglin, & Frankel, 2013).

# MEASURES

- Demographic characteristics
- Substance Use History
- Medical History
- Criminal Justice History
- Treatment and Other Recovery Support Services
- Problem Resolution/Recovery History
- Recovery Capital
- Psychological Distress
- Quality of Life
- Happiness
- Self-Esteem

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Full length article

## Prevalence and pathways of recovery from drug and alcohol problems in the United States population: Implications for practice, research, and policy



John F. Kelly<sup>a,\*</sup>, Brandon Bergman<sup>a</sup>, Bettina B. Hoepfner<sup>a</sup>, Corrie Vilsaint<sup>a</sup>, William L. White<sup>b</sup>

<sup>a</sup> Recovery Research Institute, Massachusetts General Hospital, 151 Merrimac Street, and Harvard Medical School, Boston, MA, 02114, United States

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### ARTICLE INFO

#### Keywords:

Recovery  
Problem resolution  
Treatment  
Assisted  
Unassisted  
Mutual-help  
Prevalence  
Adults  
Population

### ABSTRACT

**Background:** Alcohol and other drug (AOD) problems confer a global, prodigious burden of disease, disability, and premature mortality. Even so, little is known regarding how, and by what means, individuals successfully resolve AOD problems. Greater knowledge would inform policy and guide service provision.

**Method:** Probability-based survey of US adult population estimating: 1) AOD problem resolution prevalence; 2) lifetime use of “assisted” (i.e., treatment/medication, recovery services/mutual help) vs. “unassisted” resolution pathways; 3) correlates of assisted pathway use. Participants (response = 63.4% of 39,809) responding “yes” to, “Did you use to have a problem with alcohol or drugs but no longer do?” assessed on substance use, clinical histories, problem resolution.

**Results:** Weighted prevalence of problem resolution was 9.1%, with 46% self-identifying as “in recovery”; 53.9% reported “assisted” pathway use. Most utilized support was mutual-help (45.1%, SE = 1.6), followed by treatment (27.6%, SE = 1.4), and emerging recovery support services (21.8%, SE = 1.4), including recovery community centers (6.2%, SE = 0.9). Strongest correlates of “assisted” pathway use were lifetime AOD diagnosis (AOR = 10.8[7.42–15.74], model R<sup>2</sup> = 0.13), drug court involvement (AOR = 8.1[5.2–12.6], model R<sup>2</sup> = 0.10), and, inversely, absence of lifetime psychiatric diagnosis (AOR = 0.3[0.2–0.3], model R<sup>2</sup> = 0.10). Compared to those with primary alcohol problems, those with primary cannabis problems were less likely (AOR = 0.7[0.5–0.9]) and those with opioid problems were more likely (AOR = 2.2[1.4–3.4]) to use assisted pathways. Indices related to severity were related to assisted pathways (R<sup>2</sup> < 0.03).

**Conclusions:** Tens of millions of Americans have successfully resolved an AOD problem using a variety of traditional and non-traditional means. Findings suggest a need for a broadening of the menu of self-change and community-based options that can facilitate and support long-term AOD problem resolution.

# RESULTS

NRS



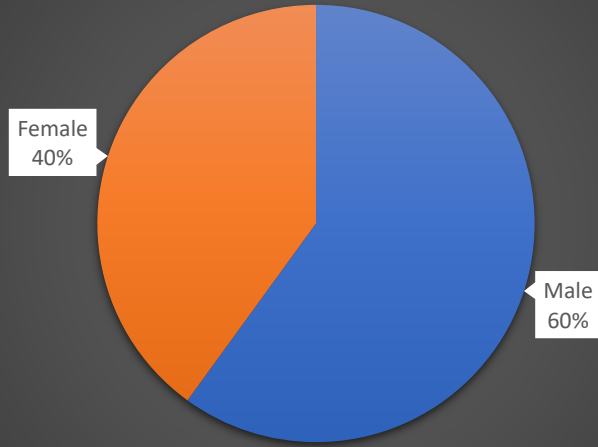
9.1% or  
22.35 million

**Americans** have  
resolved an alcohol or  
other drug problem



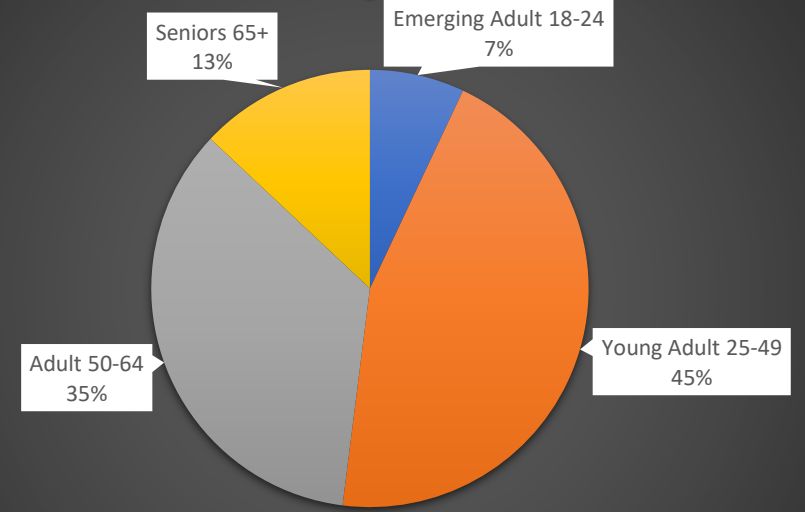


## Gender



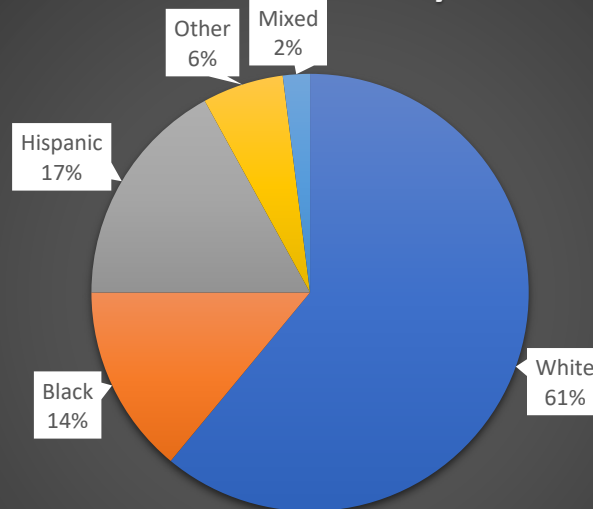
Male Female

## Age



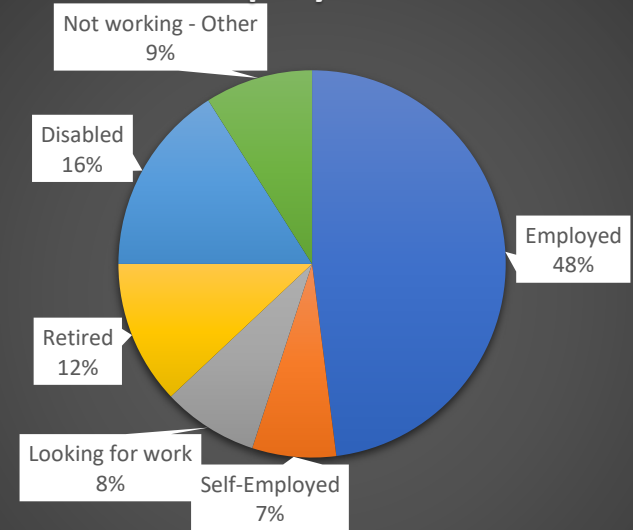
Emerging Adult 18-24 Young Adult 25-49 Adult 50-64 Seniors 65+

## Race-Ethnicity



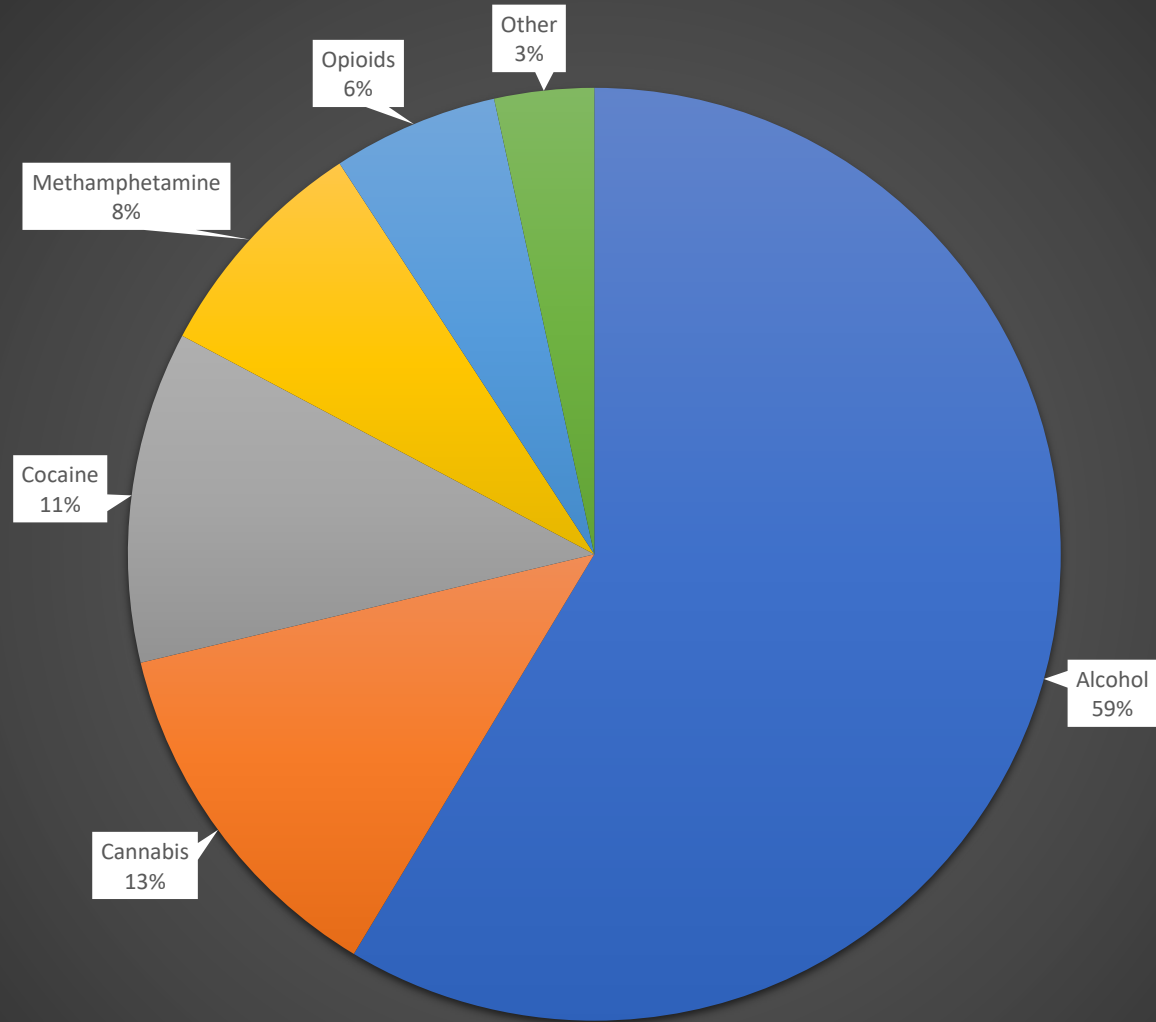
White Black Hispanic Other Mixed

## Employment



Employed Self-Employed Looking for work Retired Disabled Not working - Other

# Primary Substance



■ Alcohol ■ Cannabis ■ Cocaine ■ Methamphetamine ■ Opioids ■ Other

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What is quality of life and functioning like in recovery?



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## On Being “In Recovery”: A National Study of Prevalence and Correlates of Adopting or Not Adopting a Recovery Identity Among Individuals Resolving Drug and Alcohol Problems

John F. Kelly, Alexandra W. Abry, Connor M. Milligan, Brandon G. Bergman, and Bettina B. Hoepfner  
Massachusetts General Hospital, Boston, Massachusetts

The concept of recovery has become an organizing paradigm in the addiction field globally. Although a convenient label to describe the broad phenomena of change when individuals resolve significant alcohol or other drug (AOD) problems, little is known regarding the prevalence and correlates of adopting such an identity. Greater knowledge would inform clinical, public health, and policy communication efforts. We conducted a cross-sectional nationally representative survey ( $N = 39,809$ ) of individuals resolving a significant AOD problem ( $n = 1,995$ ). Weighted analyses estimated prevalence and tested correlates of label adoption. Qualitative analyses summarized reasons for prior recovery identity adoption/nonadoption. The proportion of individuals currently identifying as being in recovery was 45.1%, never in recovery 39.5%, and no longer in recovery 15.4%. Predictors of identifying as being in recovery included formal treatment and mutual-help participation, and history of being diagnosed with AOD or other psychiatric disorders. Qualitative analyses regarding reasons for no/prior recovery identity found themes related to low AOD problem severity, viewing the problem as resolved, or having little difficulty of stopping. Despite increasing use of the recovery label and concept, many resolving AOD problems do not identify in this manner. These appear to be individuals who have not engaged with the formal or informal treatment systems. To attract, engage, and accommodate this large number of individuals who add considerably to the AOD-related global burden of disease, AOD public health communication efforts may need to consider additional concepts and terminology beyond recovery (e.g., “problem resolution”) to meet a broader range of preferences, perspectives and experiences.

**Keywords:** recovery, addiction, identity, social, remission



Proportion self-identify  
as being “in recovery”

46%

- Odds of self-identifying in this manner associated with greater indices of greater severity (earlier age of onset, psychiatric comorbidities, greater treatment and recovery support services use)

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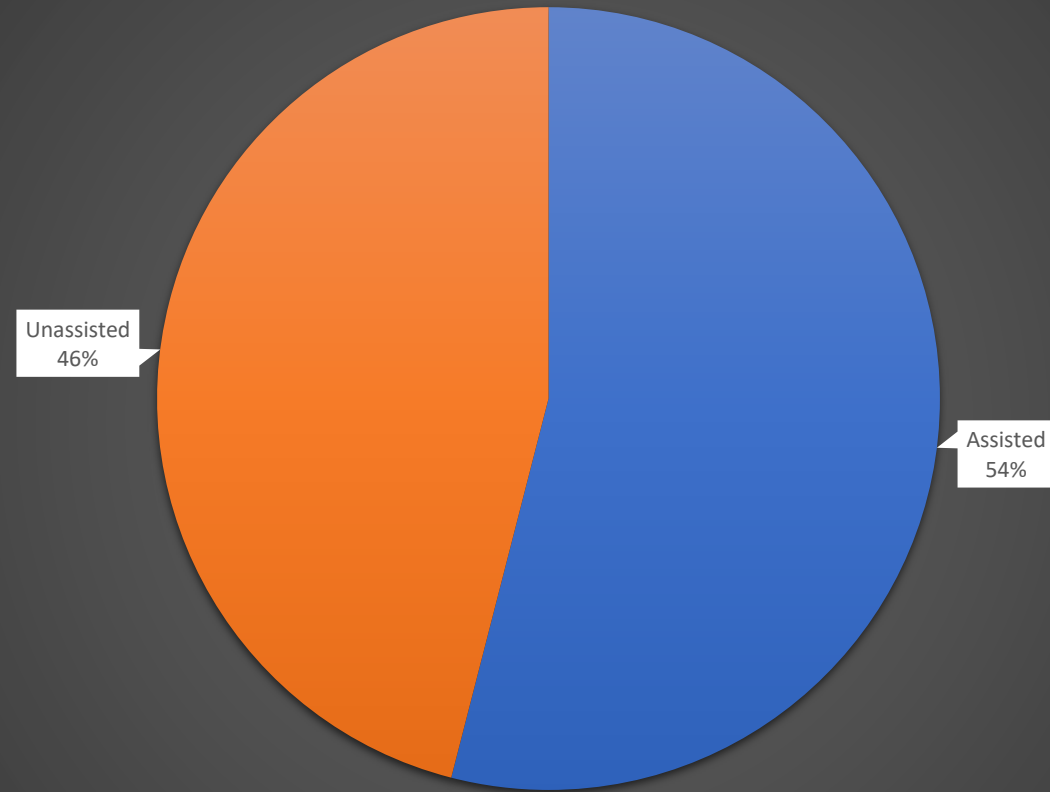
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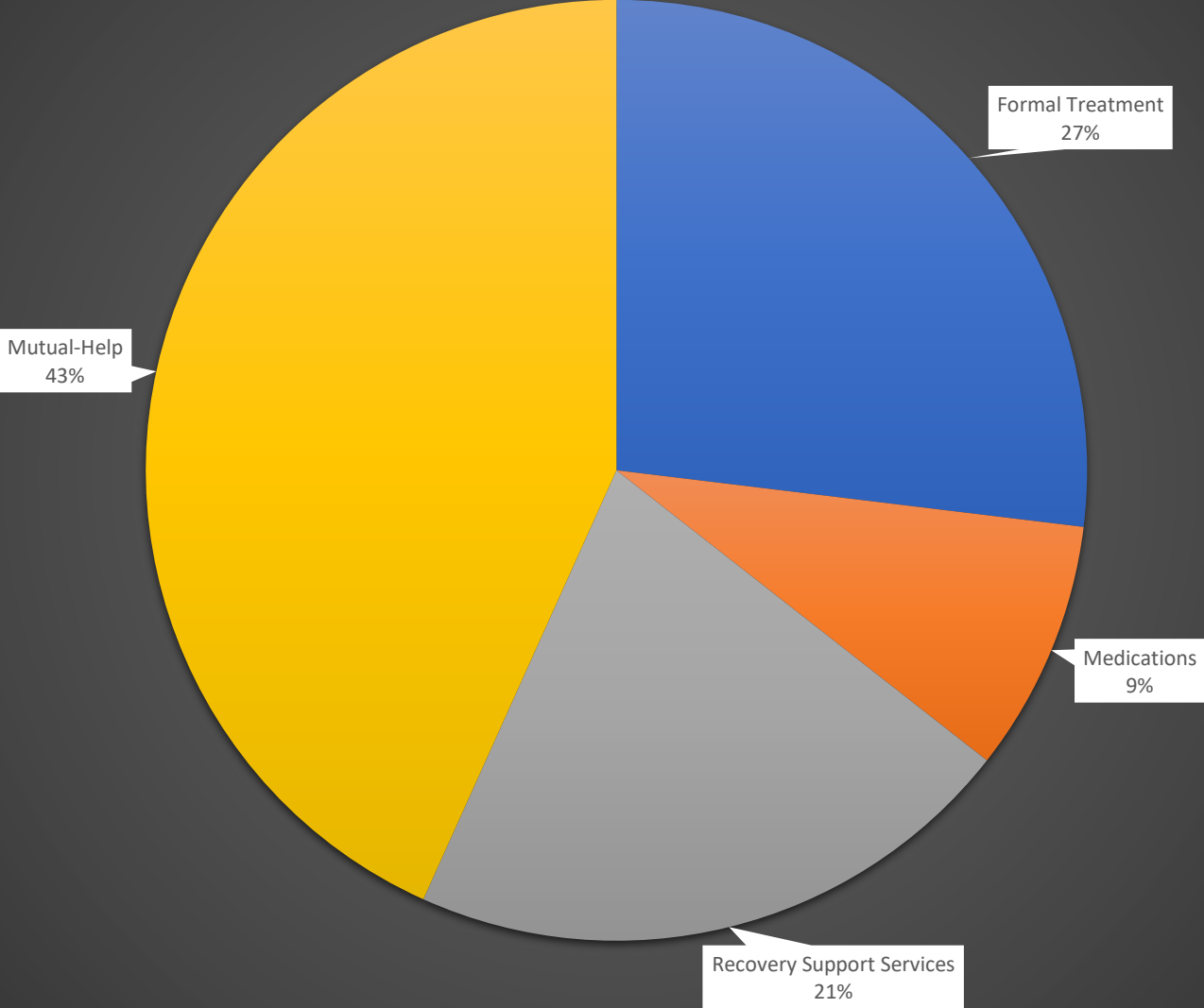
What is quality of life and functioning like in recovery?

## Recovery Pathways: Assisted vs Unassisted



■ Assisted    ■ Unassisted

# Assisted Pathway: Services Used



■ Formal Treatment   ■ Medications   ■ Recovery Support Services   ■ Mutual-Help



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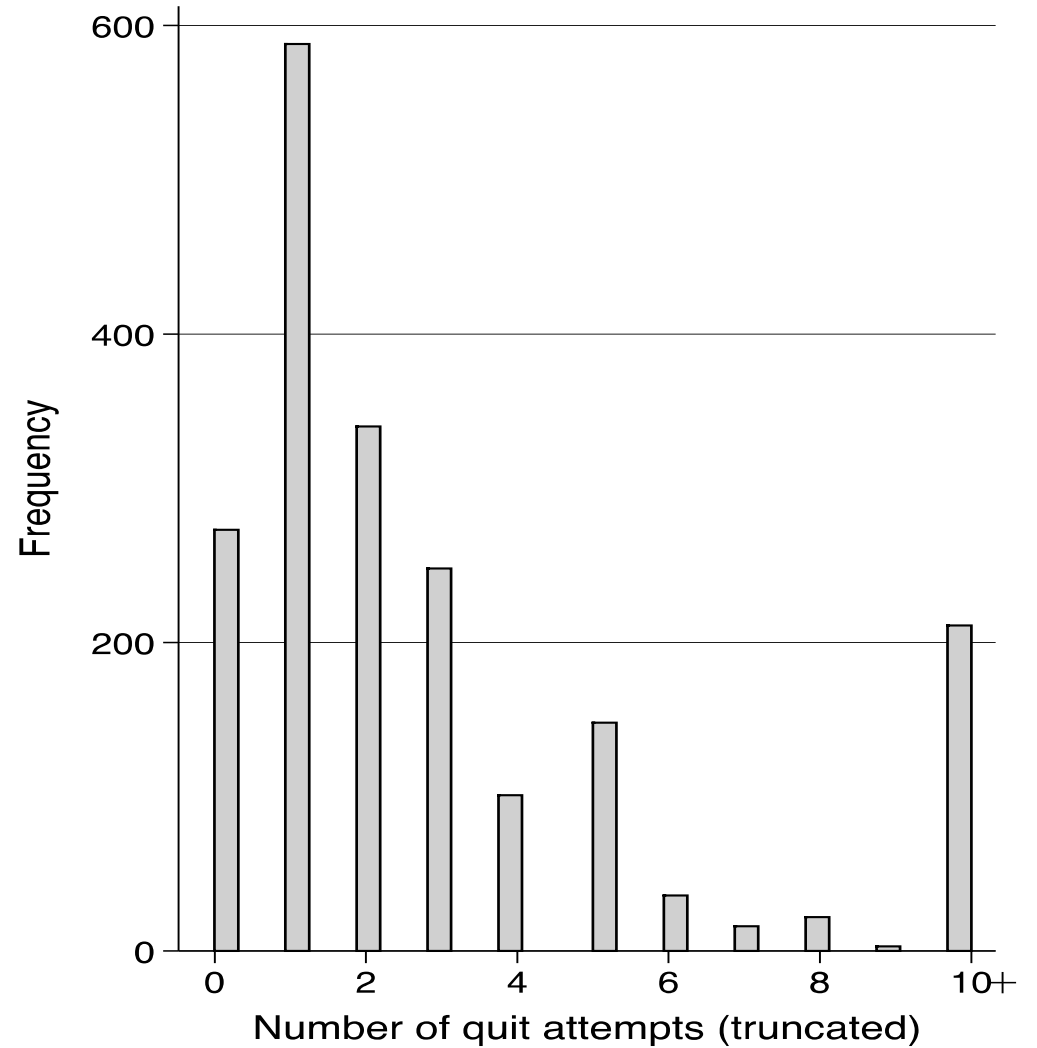
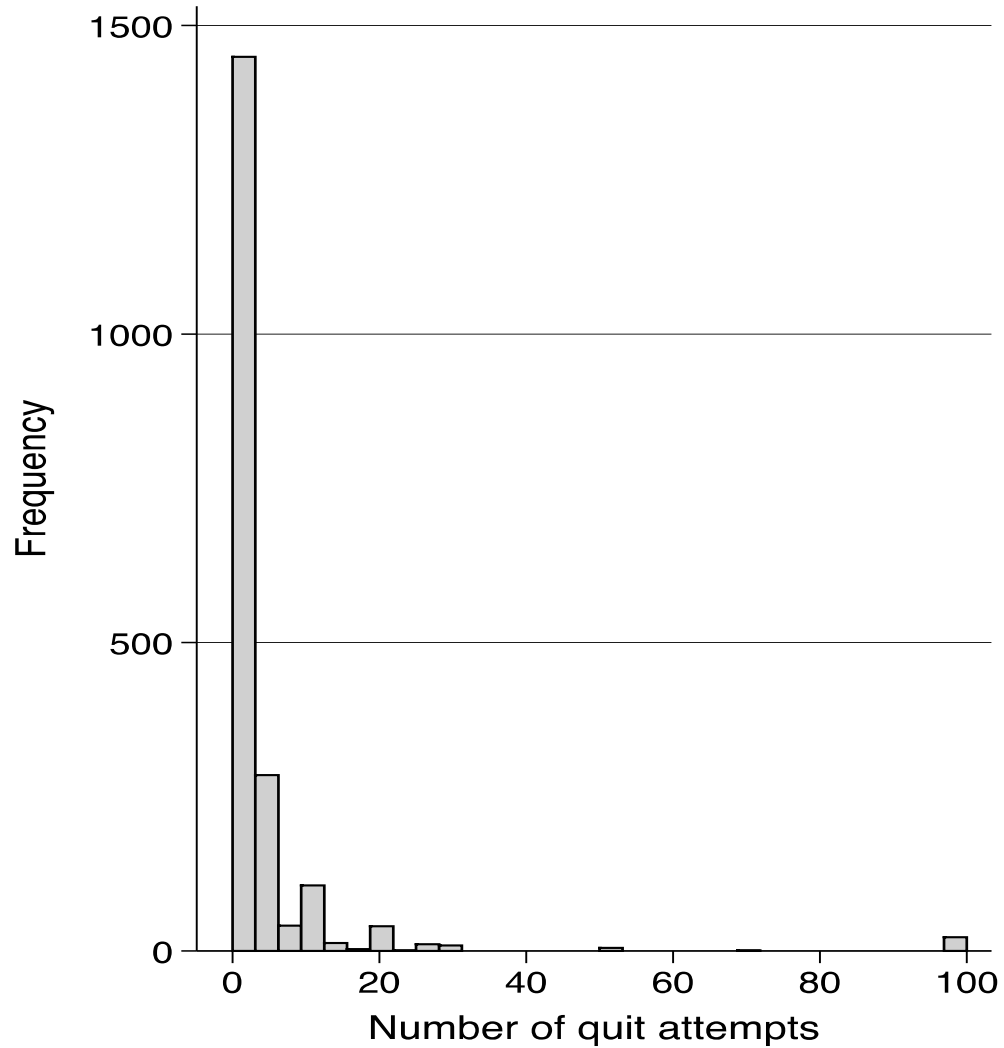
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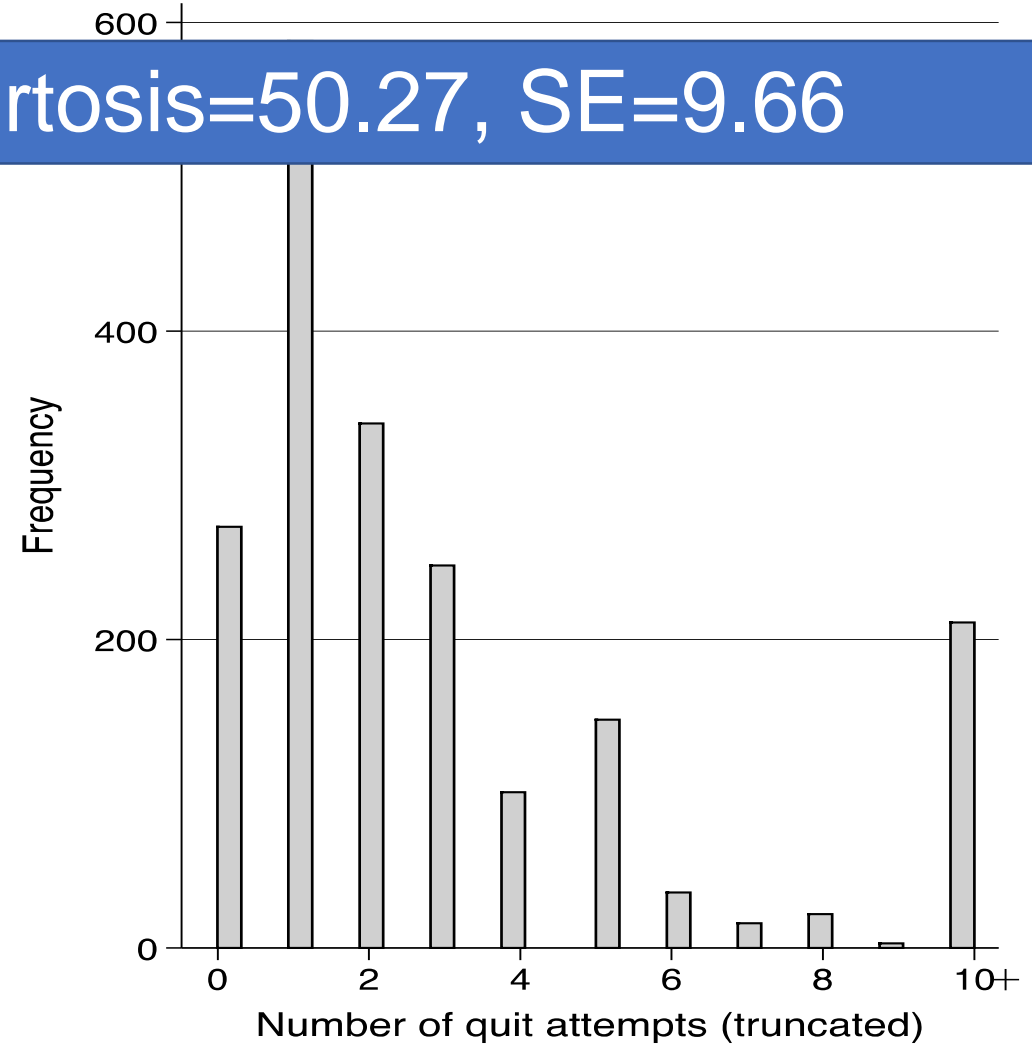
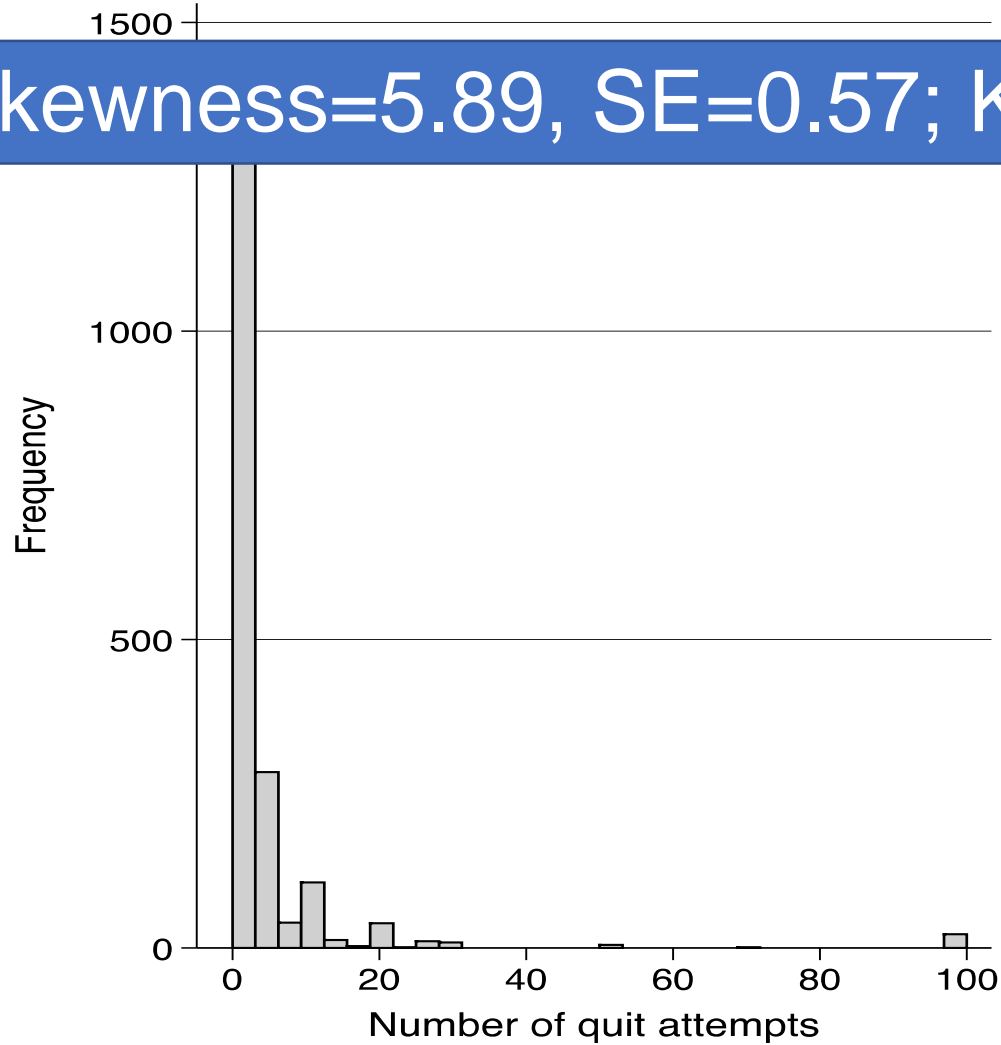
What is quality of life and functioning like in recovery?

Frequency Distribution of Serious Recovery Attempts Prior to Successful Resolution  
(LEFT: Full sample RIGHT PANEL: Outliers removed)



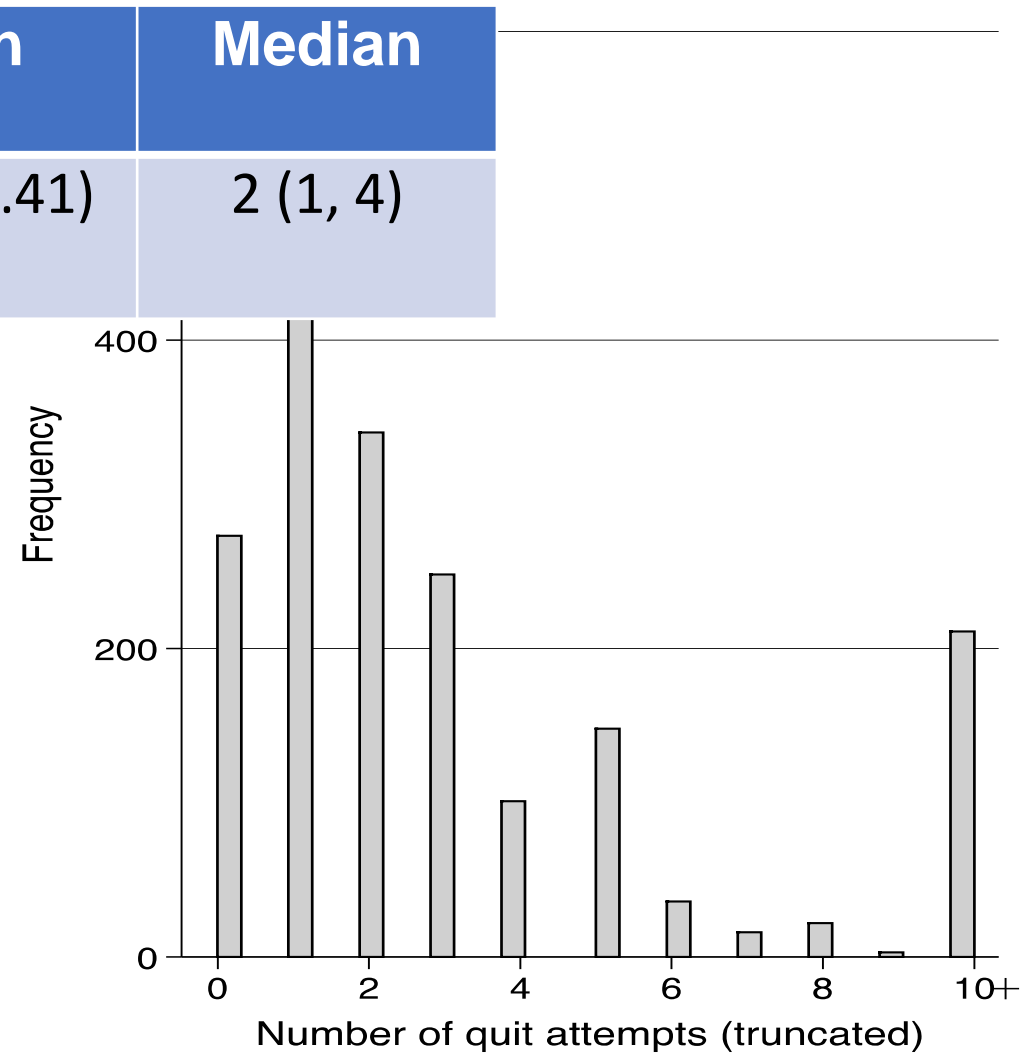
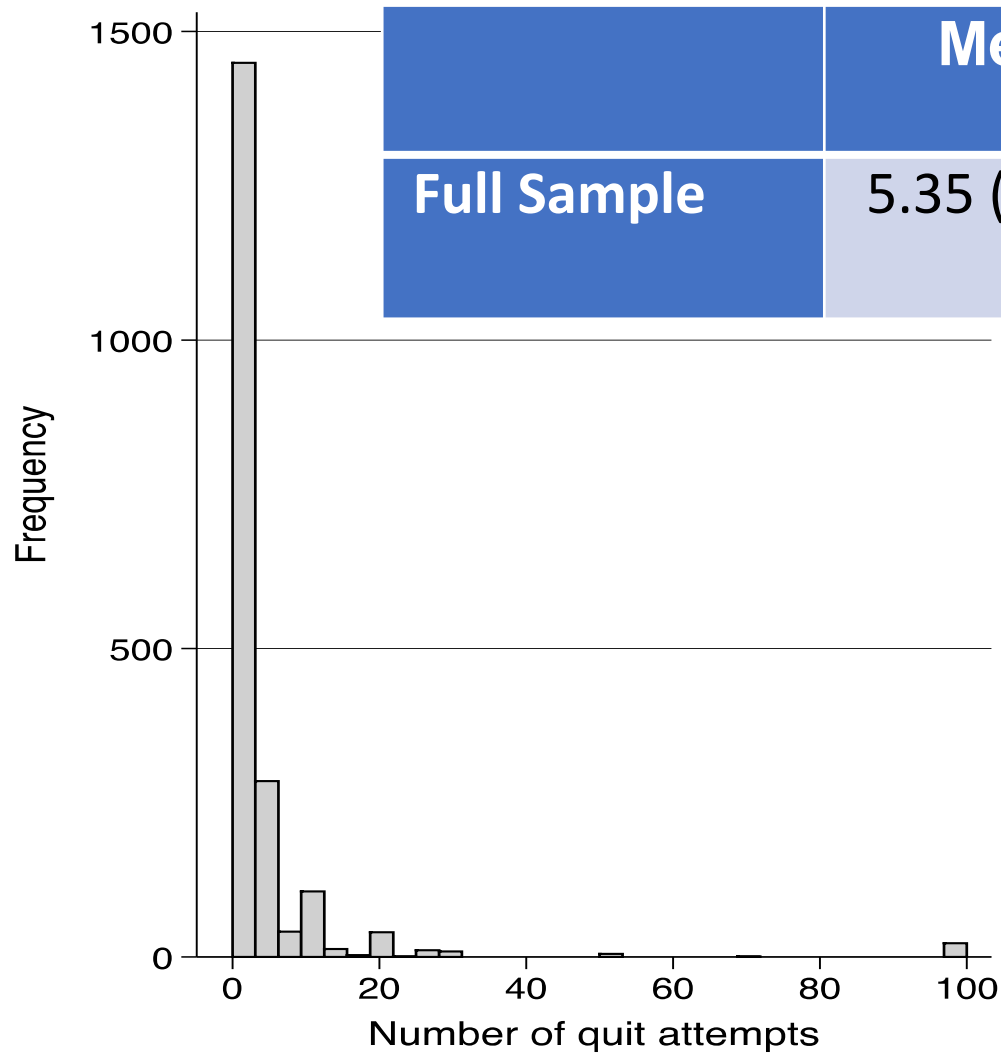
Frequency Distribution of Serious Recovery Attempts Prior to Successful Resolution  
(LEFT: Full sample RIGHT PANEL: Outliers removed)

Skewness=5.89, SE=0.57; Kurtosis=50.27, SE=9.66



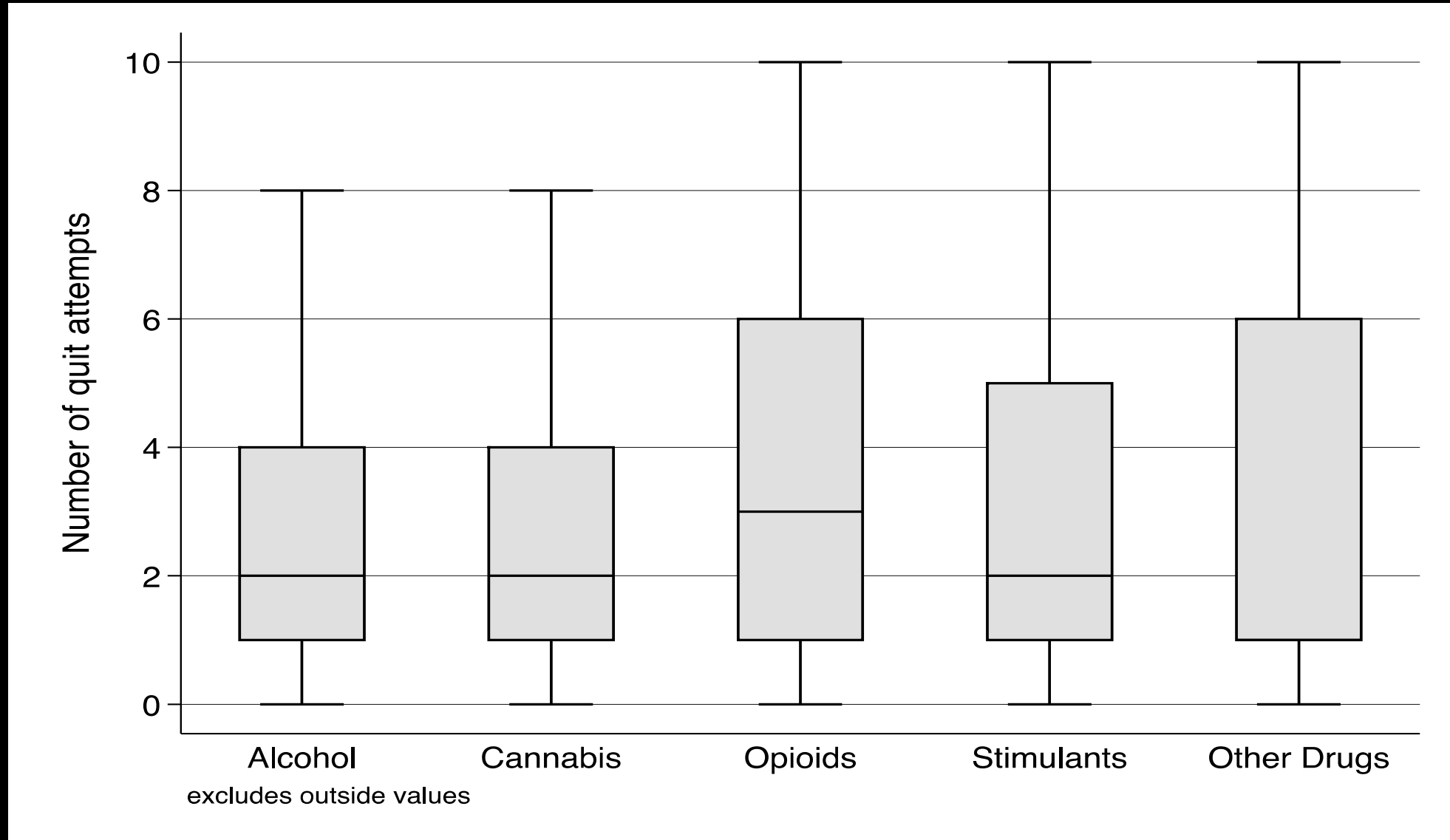
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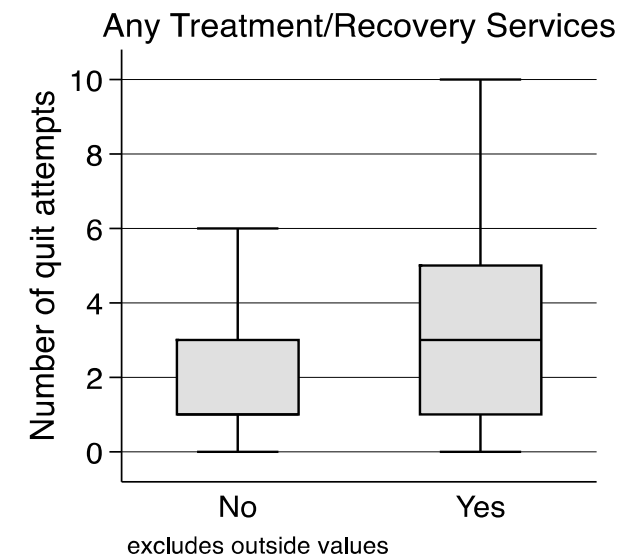
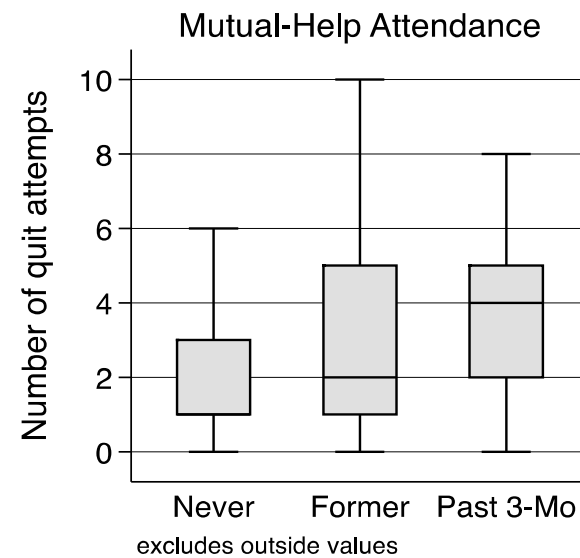
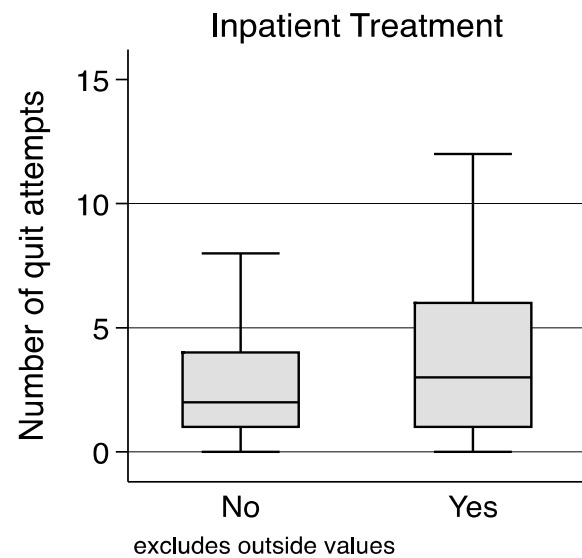
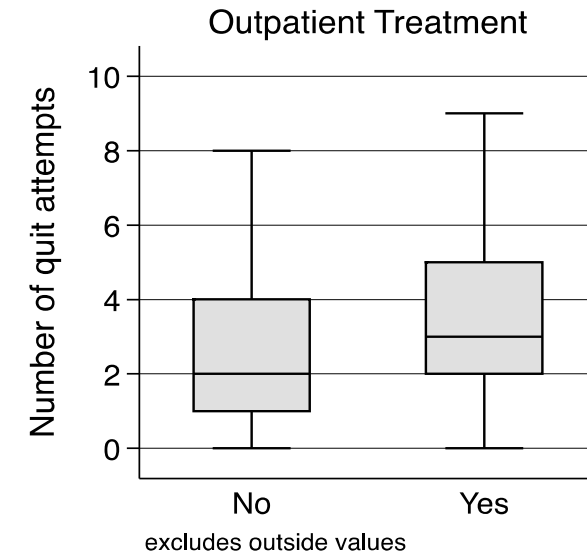
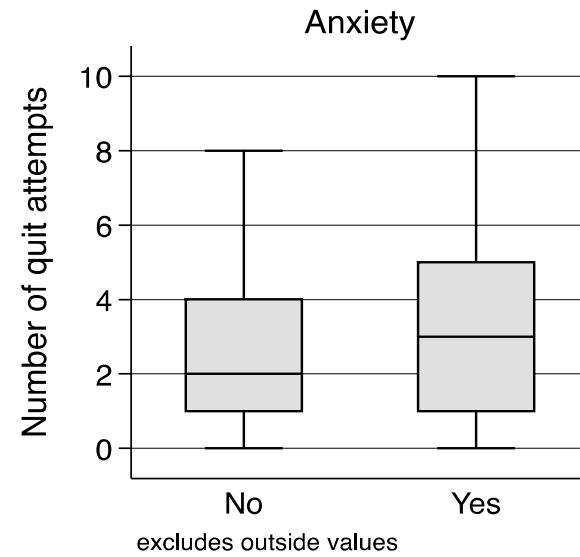
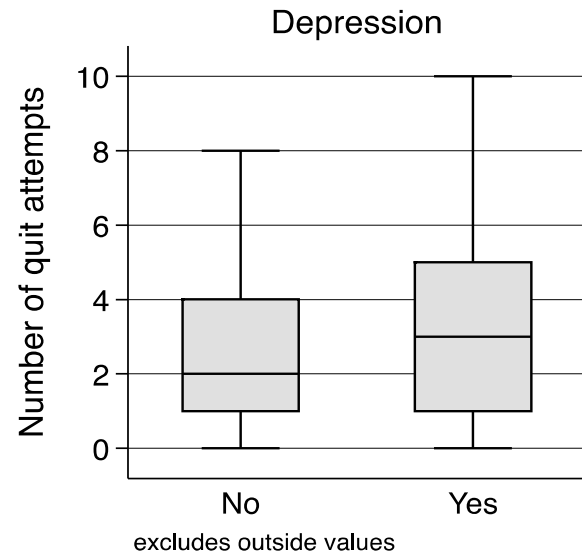


	Mean	Median
Full Sample	5.35 (13.41)	2 (1, 4)

# Median Recovery Attempts by Primary Drug



# Number of Recovery Attempts by Clinical and Recovery Support Services Use



# Outline

Why long-term remission/recovery important?

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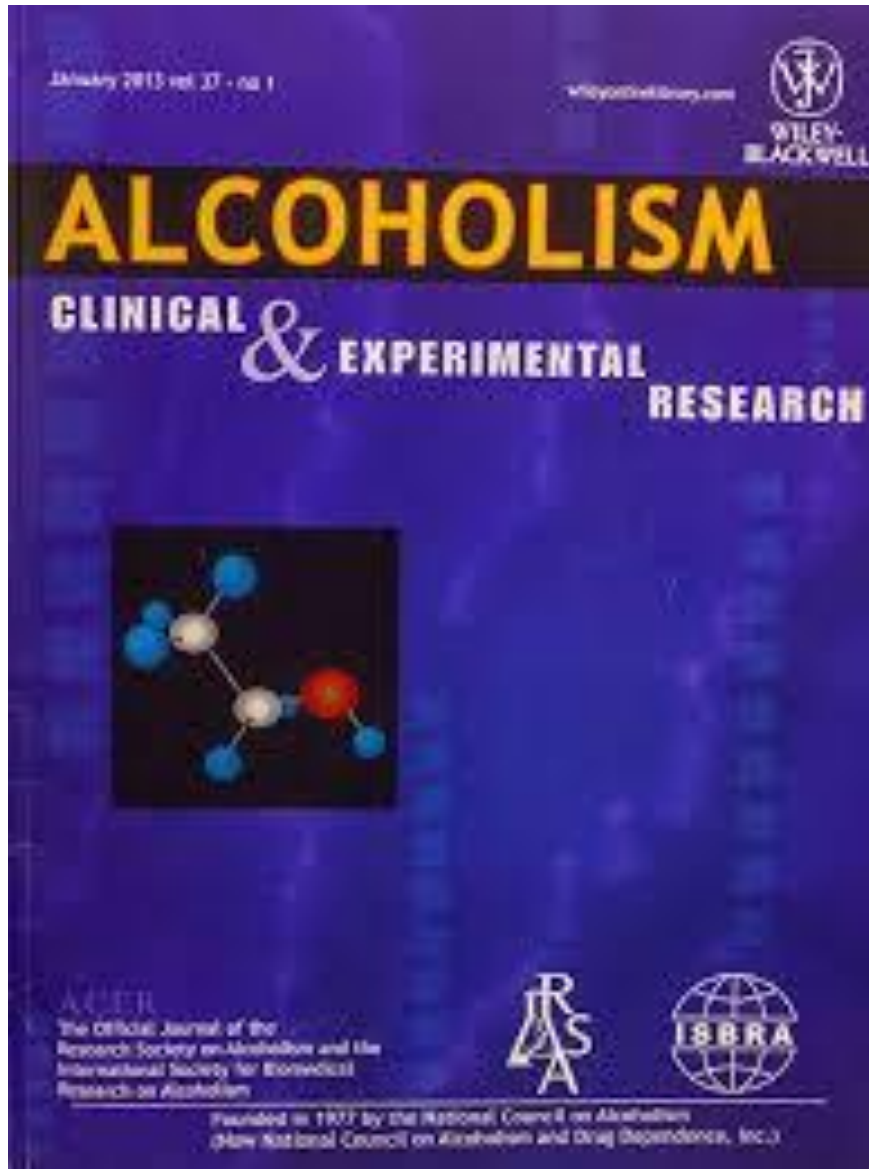
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## Beyond Abstinence: Changes in Indices of Quality of Life with Time in Recovery in a Nationally Representative Sample of U.S. Adults

John F. Kelly , M. Claire Greene, and Brandon G. Bergman

**Background:** Alcohol and other drug (AOD) treatment and recovery research typically have focused narrowly on changes in alcohol/drug use (e.g., “percent days abstinent”) with little attention on changes in functioning or well-being. Furthermore, little is known about whether and when such changes may occur, and for whom, as people progress in recovery. Greater knowledge would improve understanding of recovery milestones and points of vulnerability and growth.

**Methods:** National, probability-based, cross-sectional sample of U.S. adults who screened positive to the question, “Did you used to have a problem with alcohol or drugs but no longer do?” (Response = 63.4% from 39,809; final weighted sample  $n = 2,002$ ). Linear, spline, and quadratic regressions tested relationships between time in recovery and 5 measures of well-being: quality of life, happiness, self-esteem, recovery capital, and psychological distress, over 2 temporal horizons: the first 40 years and the first 5 years, after resolving an AOD problem and tested moderators (sex, race, primary substance) of effects. Locally Weighted Scatterplot Smoothing regression was used to explore turning points.

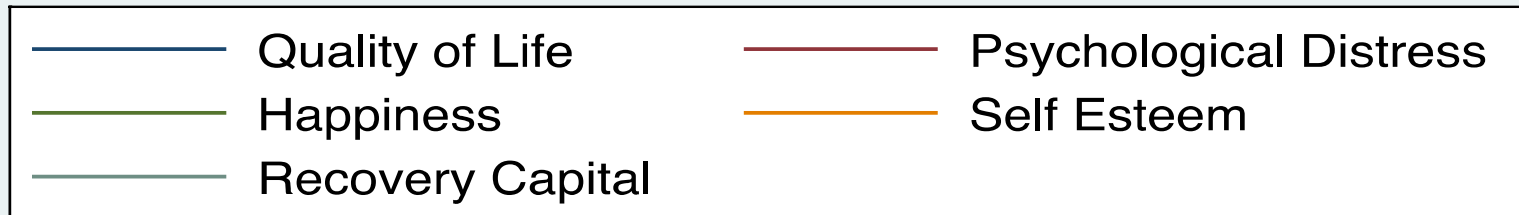
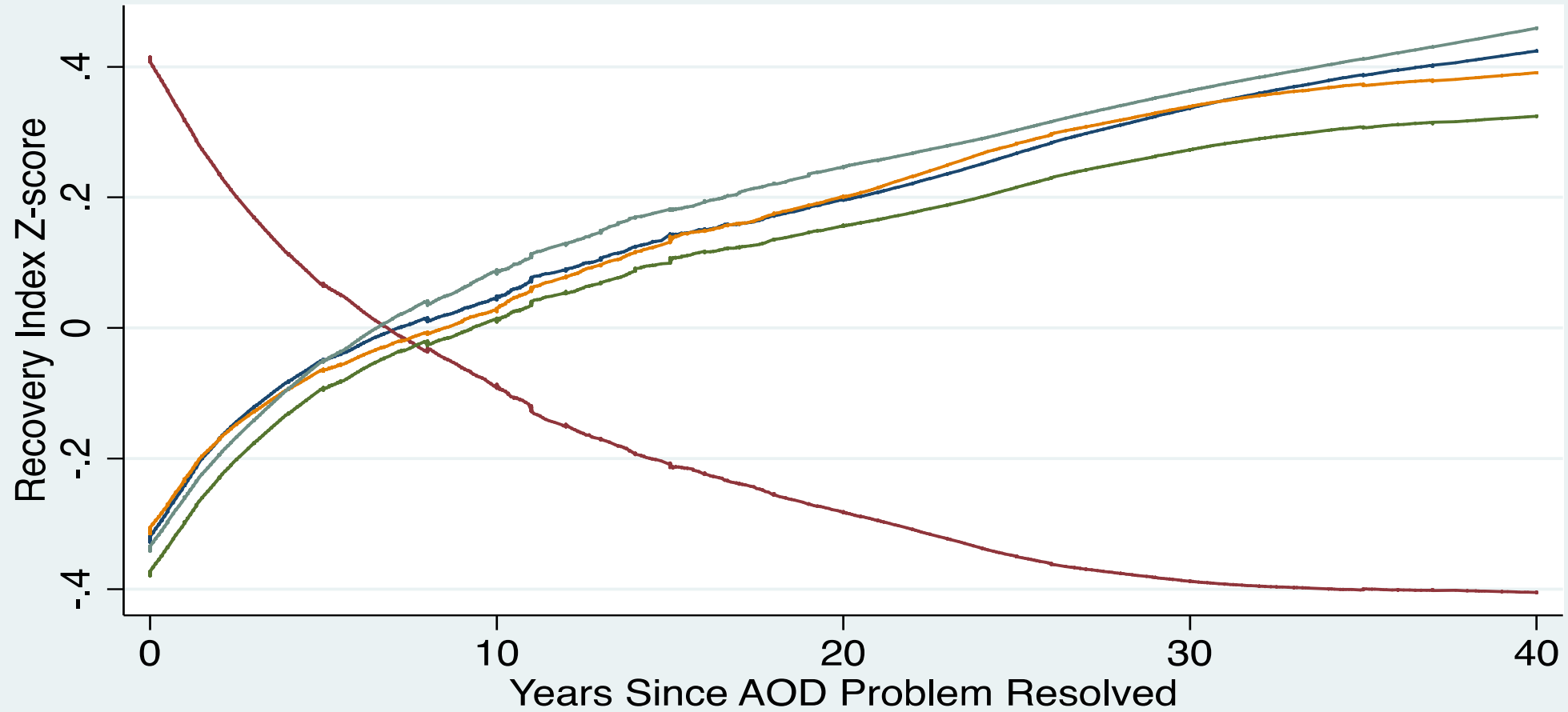
**Results:** In general, in the 40-year horizon there were initially steep increases in indices of well-being (and steep drops in distress), during the first 6 years, followed by shallower increases. In the 5-year horizon, significant drops in self-esteem and happiness were observed initially during the first year followed by increases. Moderator analyses examining primary substance found that compared to alcohol and cannabis, those with opioid or other drugs (e.g., stimulants) had substantially lower recovery capital in the early years; mixed race/native Americans tended to exhibit poorer well-being compared to White people; and women consistently reported lower indices of well-being over time than men.

**Conclusions:** Recovery from AOD problems is associated with dynamic monotonic improvements in indices of well-being with the exception of the first year where self-esteem and happiness initially decrease, before improving. In early recovery, women, certain racial/ethnic groups, and those suffering from opioid and stimulant-related problems appear to face ongoing challenges that suggest a need for greater assistance.

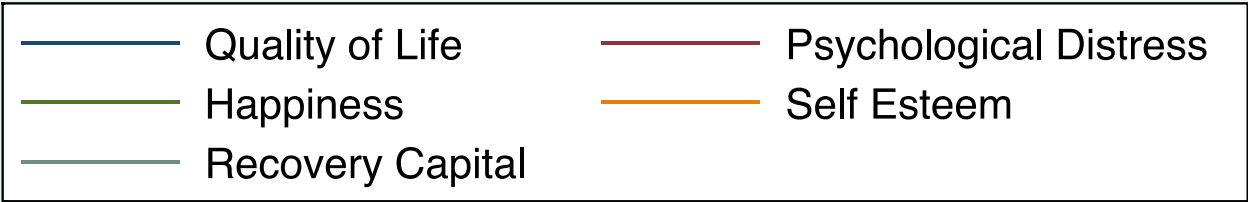
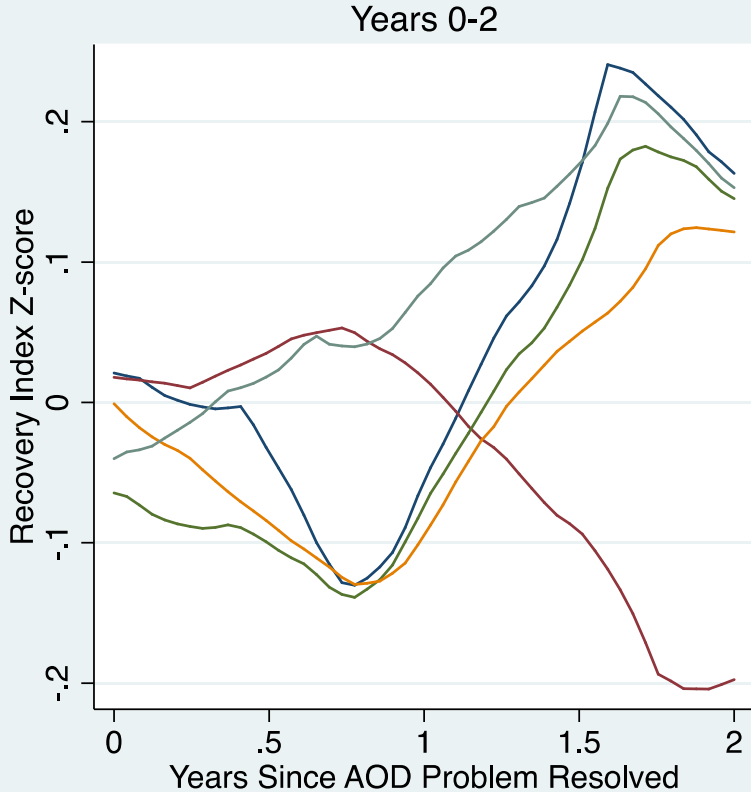
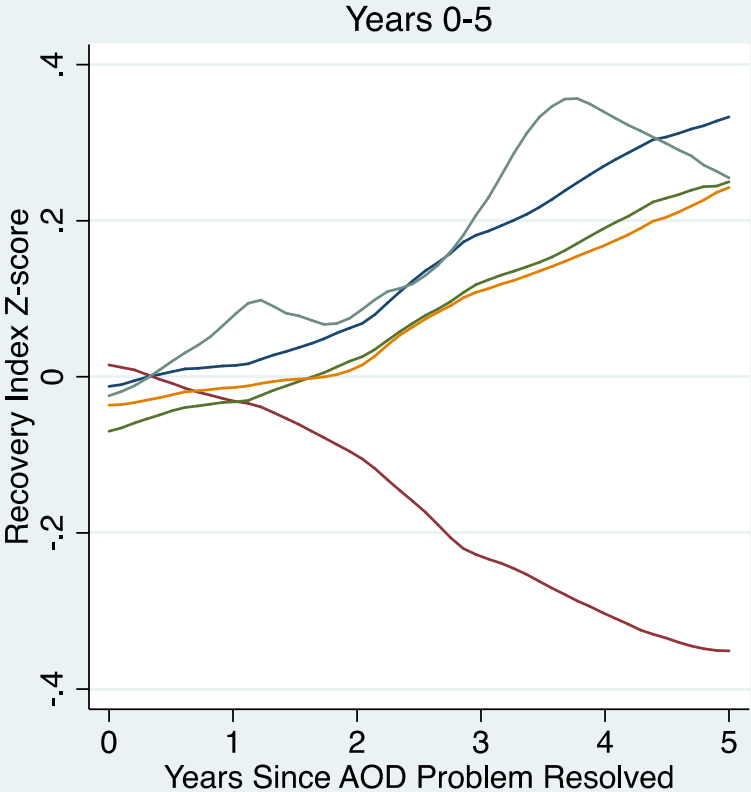
**Key Words:** Recovery, Remission, Alcohol Use Disorder, Quality of Life, National, Epidemiology.



# Recovery Indices by Years Since Problem Resolution



# Recovery Indices by Years Since Problem Resolution



## Recovery Indices by Years Since Problem Resolution

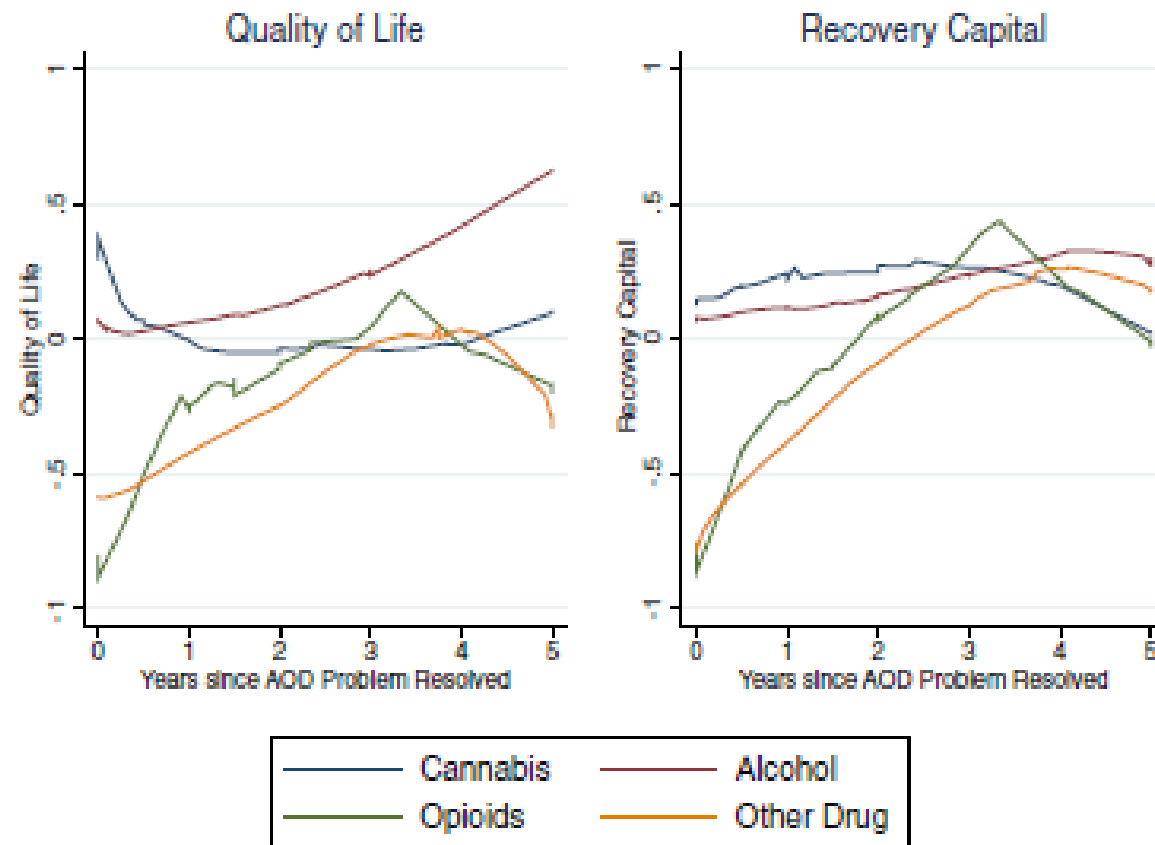


Fig. 5. Locally Weighted Scatterplot Smoothing (LOWESS) analysis of recovery indices by years since problem resolution stratified by primary substance.

# Results Summary



9.1% or 22.35 Million Americans resolved sig. AOD prob.



Only about half self-identify as “in recovery” –those with less severe histories; similar crises but greater ability to stop sans help



Approximately half resolve these problems without any external assistance- related to less severity/complexity



Mean problem resolution attempts is around 5.5 but this number heavily skewed; Mdn number = 2; with high variability around estimates



QOL indices monotonic improvements over time, with steeper increases first 5 years, then ongoing, shallower, improvement; post “pink cloud” drop early; opioid/stimulant tougher time early on



# Implications

- **RESEARCH AND POLITICAL ADVOCACY:** Estimates here similar to prior national/regional, non probability-based estimates suggesting approximately 9.1% (20-25M) of adult Americans “in recovery”. (UK?) Could learn more from this large, diverse, group; mobilize for change?
- **PUBLIC HEALTH & POLICY COMMUNICATION:** Although term “recovery” used in past estimates, only about half identify as “in recovery”. Label adoption may serve adaptive funx; qualitative analyses suggest many resolving AOD may not relate and/or oppose this term; thus to engage more people public health and policy communication efforts might include “problem resolution” in addition to “recovery”.
- **HOW TO REACH MANY NOT SEEKING SERVICES, LESSEN IMPACT:** In keeping with other studies, half resolved problem without help – those with lower severity and higher recovery capital. This large group still cause harm; how to reach/lessen impact.
- **RECOVERY NEEDS DYNAMIC, VARY BY SUBGROUP:** QOL changes suggest “pink cloud” phase end may create early challenge; 1-yr things looking rosier; continue to improve; marginalized opioid/meth groups need recovery capital/support early on
- **REASONS FOR OPTIMISM:** Prior estimates of quit/recovery attempts, may be “mean” averages, thus biased upwards (with skew); while reflective of high variability, medians should be used. These were low in non-clinical (Mdn=1) and higher in clinical (Mdn=3) samples (overall = 2 serious attempts prior to resolution; Mean=5.6; SD=13.41). Hopeful.



Thank you for your attention!

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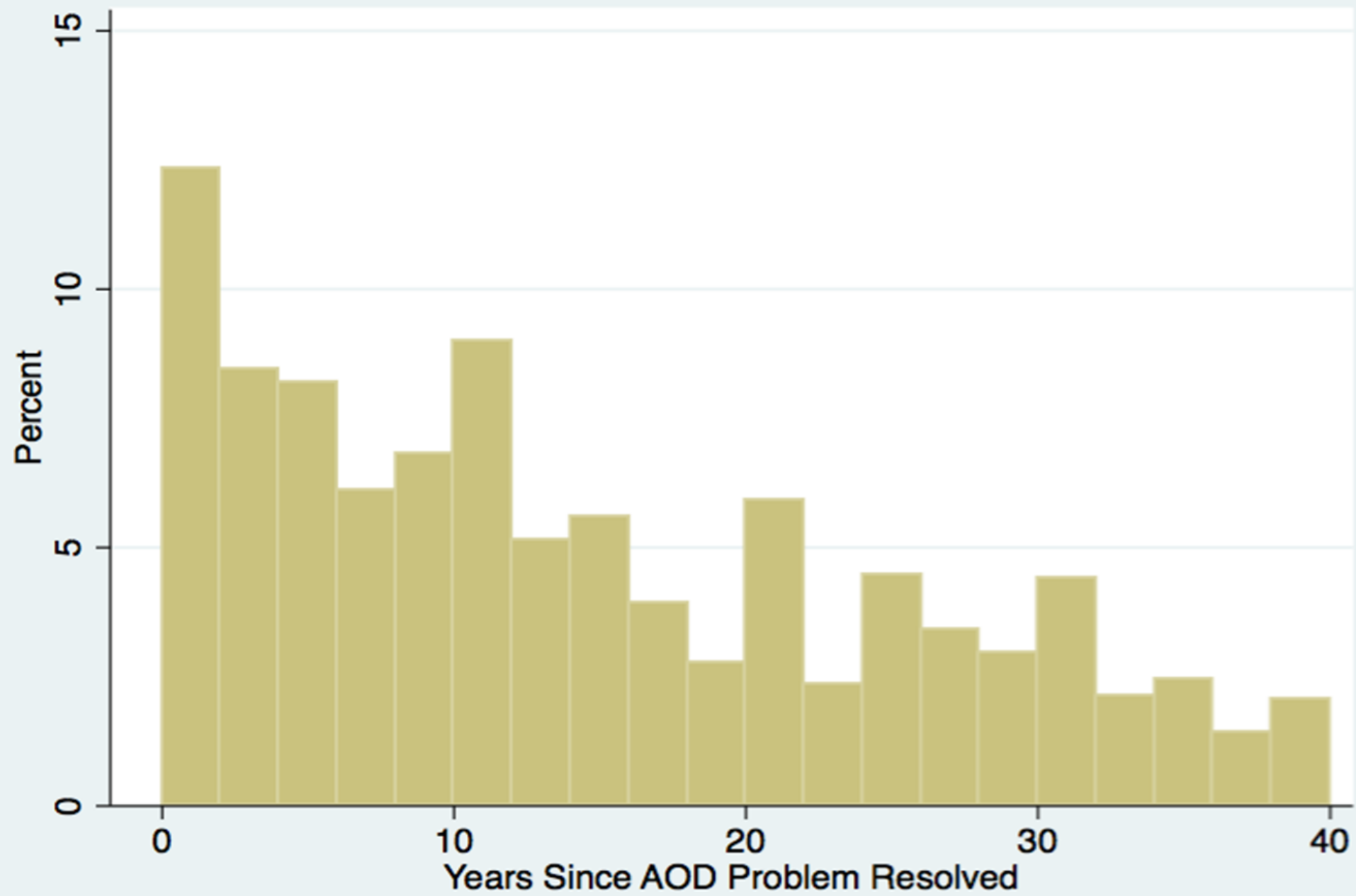




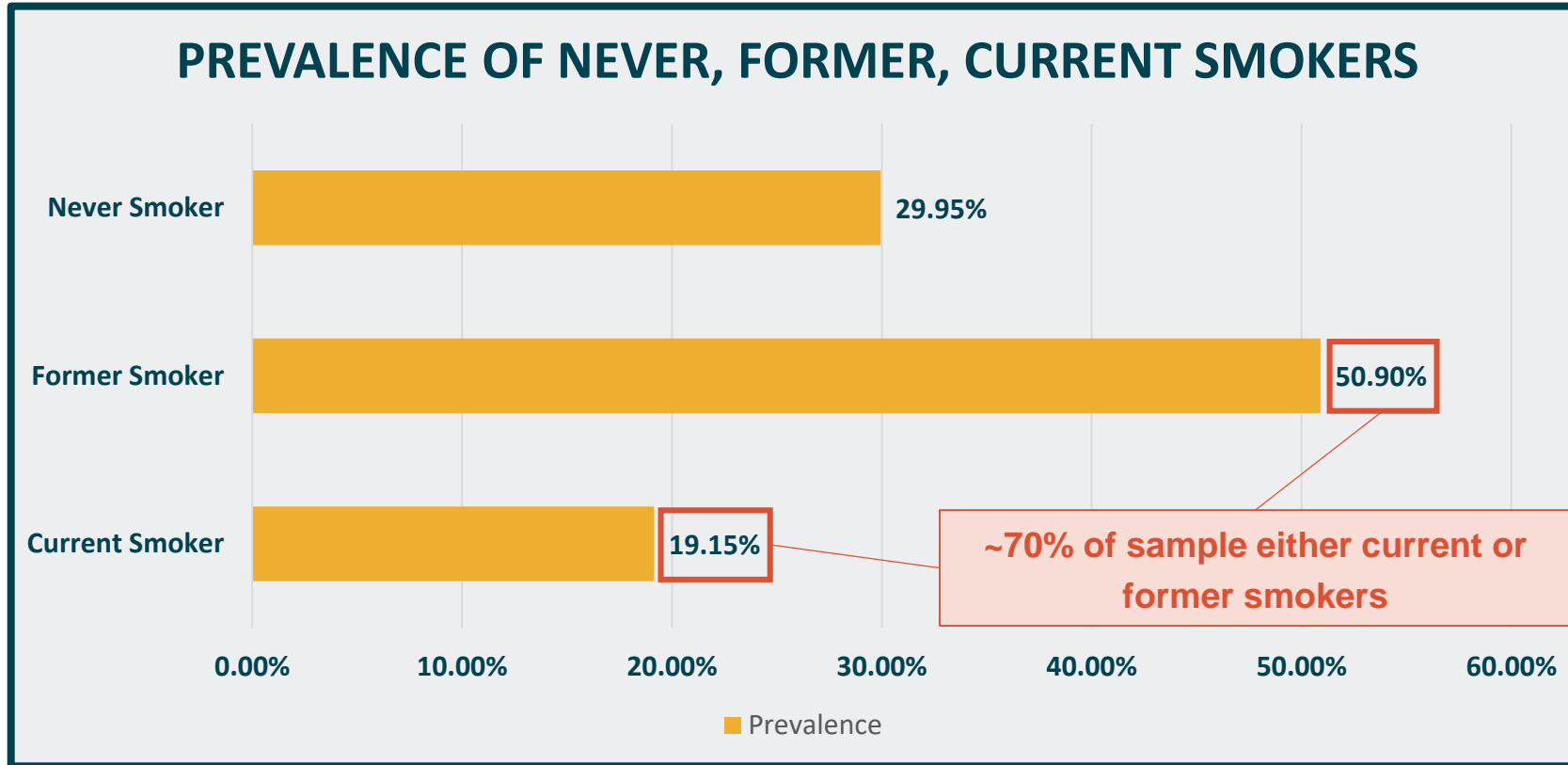








# SMOKING CESSATION: National Recovery Study



**Findings consistent with other studies reporting high rates of tobacco use histories among individuals who use alcohol and other drugs**

# SMOKING CESSATION: National Recovery Study

**Table 1. Demographic and clinical characteristics of the sample (cont'd)**

	Never Smokers (NS; 19.15%)	Former Smokers (FS; 50.90%)	Current Smokers (CS; 29.95%)	FS vs. NS R <sup>2</sup> (p)	CS vs. NS R <sup>2</sup> (p)	CS vs. FS R <sup>2</sup> (p)
<b>Primary substance, n(%)</b>				.00 (.692)	.01 (.001)	.01 ( $<.001$ )
<b>Marijuana</b>	35.7(12.06)	111.4(12.45)	70.0(13.05)			
<b>Alcohol</b>	198.1(66.89)	565.2(63.13)	249.1(46.41)			
<b>Other Drug</b>	62.4(21.06)	218.7(24.42)	217.6(40.54)			
<b>Age of onset (primary substance), M(SE)</b>	19.4 (.49)	19.94 (.26)	20.37 (.44)	.00 (.329)	.00 (.144)	.00 (.41)
<b>Number of substances used, M(SE)</b>	2.52 (.14)	3.40 (.11)	3.89 (.17)	.02 ( $<.001$ )	.05 ( $<.001$ )	.01 (.019)
<b>Age when resolved substance use problem, M(SE)</b>	32.75 (.91)	36.55 (.53)	34.41 (.67)	.02 ( $<.001$ )	.00 (.145)	.01 (.013)
<b>Years since substance use problem resolution, M(SE)</b>	11.40 (.77)	13.54 (.42)	10.11 (.54)	.01 (.015)	.00 (.17)	.02 ( $<.001$ )

• CS more likely to report primary substance had been drug other than alcohol or marijuana relative to FS & NS

• NS reported using fewer substances than FS and CS  
• NS were younger when resolved AOD problem relative to FS

• CS more likely to have resolved AOD problem recently relative to FS

**Substance use histories and time since problem resolution differed among CS, FS, and NS**

# SMOKING CESSATION: National Recovery Study

**Table 1. Demographic and clinical characteristics of the sample (cont'd)**

	Never Smokers (NS; 19.15%)	Former Smokers (FS; 50.90%)	Current Smokers (CS; 29.95%)	FS vs. NS R <sup>2</sup> (p)	CS vs. NS R <sup>2</sup> (p)	CS vs. FS R <sup>2</sup> (p)
Any outpatient treatment, M(SE)	37.6(9.91)	145.8(14.48)	149.9(25.29)	.00 (.127)	.03 (<.001)	.01 (<.001)
Any inpatient treatment, M(SE)	33.7(8.90)	125.8(12.50)	137.4(23.19)	.00 (.199)	.03 (<.001)	.01 (<.001)
Number of arrests, M(SE)	4.69 (1.84)	3.55 (.43)	6.40 (.94)	.00 (.546)	.01 (.409)	.02 (.006)
Number of 12-step meetings attended in past 3 months, M(SE)	1.63 (.51)	2.44 (.53)	3.81 (1.35)	.00 (.271)	.00 (.130)	.00 (.345)
Psychological distress, M(SE)	4.65 (.39)	4.01 (.22)	6.47 (.36)	.00(.148)	.02 (.001)	.04 (<.001)
Happiness, M(SE)	3.77 (.07)	3.85 (.04)	3.58 (.06)	.00 (.336)	.01 (.045)	.02 (<.001)
Self esteem, M(SE)	3.59 (.08)	3.61 (.05)	3.3 (.08)	.00 (.894)	.01 (.009)	.01 (.001)
Quality of life, M(SE)	3.65 (.06)	3.78 (.04)	3.43 (.05)	.00 (.064)	.01 (.005)	.03 (<.001)
Recovery capital, M(SE)	45.14 (.91)	48.29 (.41)	45.2 (.61)	.02 (.002)	.00 (.958)	.02 (<.001)

- CS had more AOD tx relative to NS and FS
- No relation to AA/NA participation
- CS had more psychological distress, lower self-esteem and quality of life relative to NS

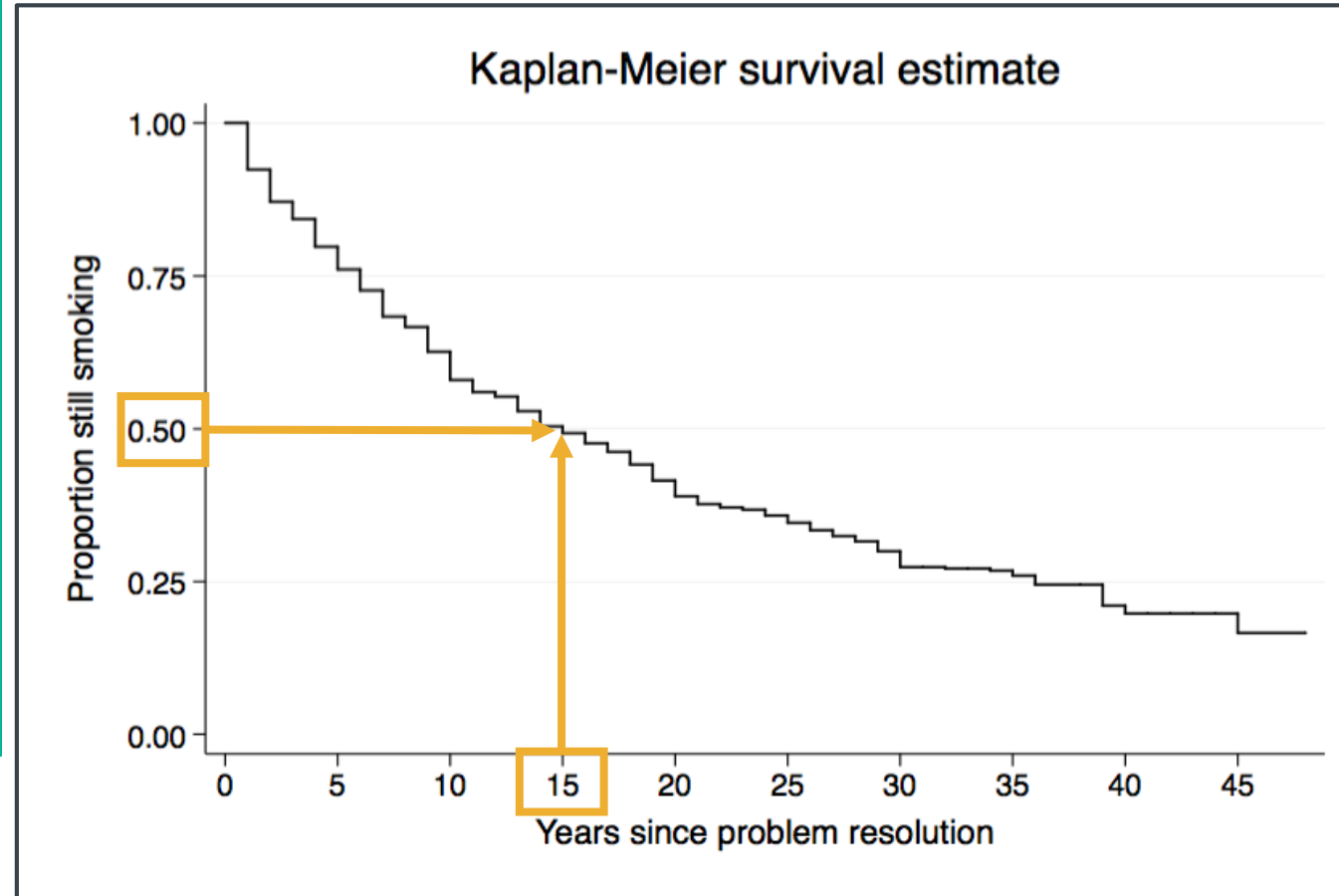
**Current smokers had worse psychosocial functioning, but it remains unclear whether cigarette smoking is a cause, consequence, or correlate of poorer psychosocial functioning**

- CS had poorer psychosocial functioning on *all* domains relative to FS
- CS had more psychological distress, lower self-esteem and quality of life relative to NS



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- Among those in recovery with smoking history, 30% quit smoking prior to entering recovery, 7% quit smoking at time of entering recovery, 26% quit after entering recovery; 27% still smoking.



**Median number of years to smoking cessation among FS who quit after AOD problem resolution was 15**

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**Table 4. Predictors of time to smoking cessation after AOD problem resolution (in years)**

	Bivariate Associations			
	HR	SE	t	p
<b>Cohort (ref=2006-2015)</b>				
<b>Main Effect (1996-2005)</b>	0.755	0.217	-0.98	0.329
<b>Time-Varying Effect (1996-2005)</b>	1.018	0.050	0.38	0.707
<b>Main Effect (1986-1995)</b>	0.690	0.126	-2.03	0.043
<b>Age (&gt; median age of 56 years)</b>	1.035	0.129	0.28	0.781
<b>Male</b>	1.286	0.169	1.92	0.056
<b>Bachelor's degree or higher education</b>				
<b>Main Effect</b>	2.132	0.429	3.76	<0.001
<b>Time-Varying Effect</b>	0.973	0.017	-1.59	0.111
<b>Income 50,000 USD or greater</b>				
<b>Main Effect</b>	2.216	0.415	4.26	<0.001
<b>Time-Varying Effect</b>	0.967	0.016	-2.03	0.042

Individuals with bachelor's degree or higher education had a shorter time to smoking cessation  
No relationship to AA/NA participation lifetime or recent

Individuals with higher income had a shorter time to smoking cessation

**Higher education and income were associated with sooner smoking cessation, but mechanisms through which confer benefit is unclear**

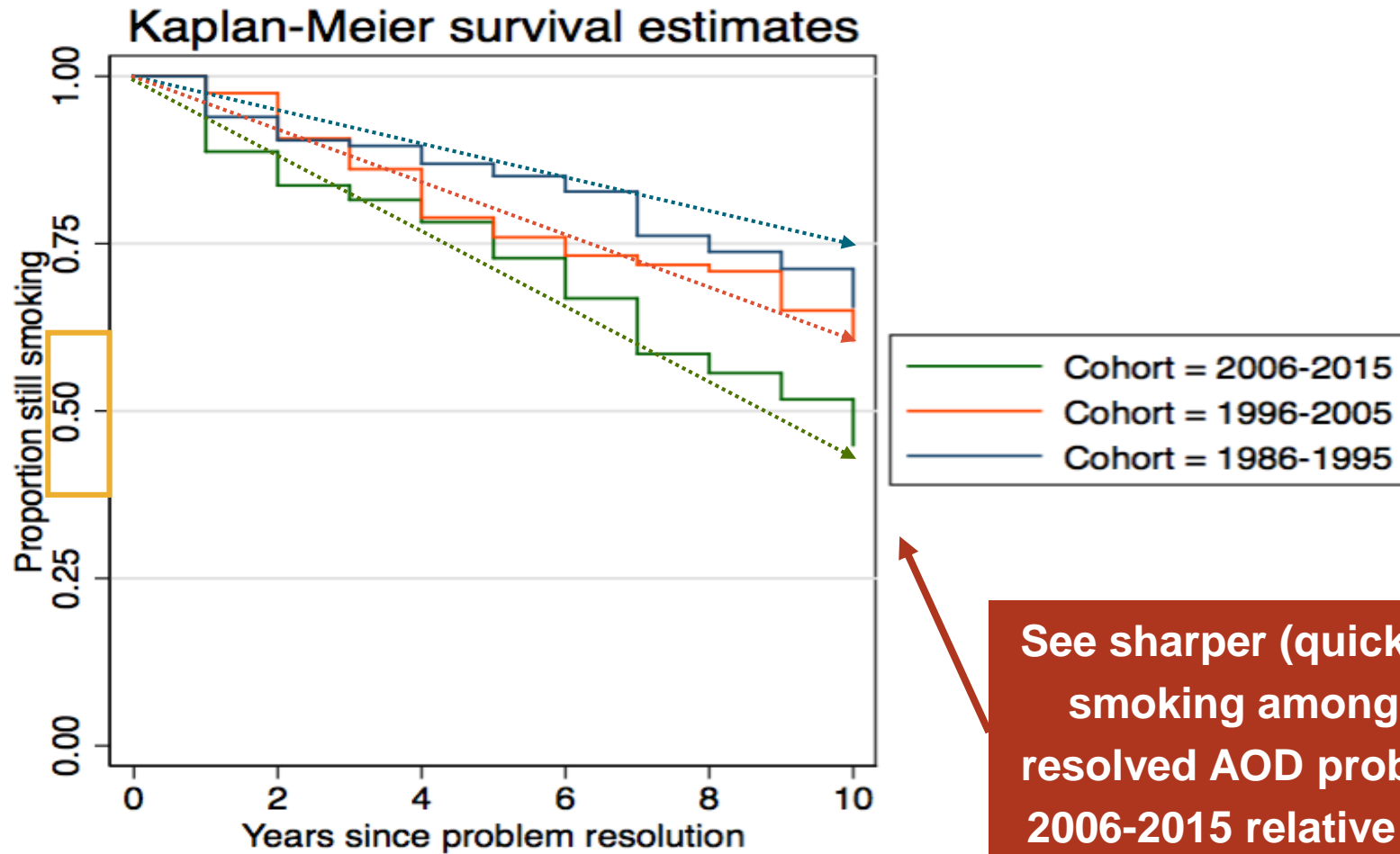
# SMOKING CESSATION: National Recovery Study

**Table 3. Time to smoking cessation by problem resolution cohort (n=915)**

AOD Resolution Cohort (%)	Cumulative incidence (5 years)	Cumulative incidence (10 years)	
2006-2015 (53.95%)	0.2717	0.5513	AOD problem resolved between 2006-2015: 27.17% and 55.13% quit smoking within 5 and 10 years after resolving AOD problem, respectively
1996-2005 (28.70%)	0.2406	0.3949	
1986-1995 (17.34%)	0.1493	0.3447	AOD problem resolved between 1986-1995: 23.34% and 40.77% quit smoking within 5 and 10 years after resolving AOD problem, respectively
<b>Total (100%)</b>	<b>0.2334</b>	<b>0.4077</b>	

**People who resolved their AOD problem more recently took less time to quit smoking relative to those who resolved their AOD problem less recently**

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# Background and Rationale

# Background and Rationale (1)

- In middle and high-income countries globally, tobacco, alcohol, and other drug related problems among most prominent contributors to morbidity, mortality, health care utilization.
- Often cluster together within persons, exponentiating health risks...
- E.g., Smoking exceptionally high among individuals with alcohol and other drug (AOD) problems and, even when stopping AOD use, many in recovery continue to smoke heavily.
- Smoking is a major/the major cause of premature mortality among individuals in recovery.
- Little is known, however, regarding if and when people resolving AOD problems stop smoking, who stops, and whether recent general population trends toward greater smoking cessation are reflected similarly among persons entering AOD recovery nowadays (e.g., in the past 10 years) compared to longer ago.

# Background and Rationale (2)

- In more recent decades in developed nations substantial restrictions placed on where and when people can smoke, and vastly increased taxes have increased costs to consumers.
- Given price and availability two most factors affecting consumption adult population smoking rates have declined steadily in the U.S. from 20.9% in 2005 to 15.5% in 2016 –29% relative decline.
- Yet, cessation among persons with, or recovering from, AOD has remained challenging.
- Part of the reason is that among those with AOD problem histories, nicotine is often the first drug to which people are exposed and often become addicted, and those with AOD problem histories also more nicotine dependent than those without such histories -harder to quit.
- In addition, profile, impact, timing of tobacco-related consequences different than other drugs. Tobacco consequences more delayed, perceived as less dramatic than immediate, pronounced, intoxication-related harms (e.g., accidents, injuries, violence) associated with other drugs

# Background and Rationale (3)

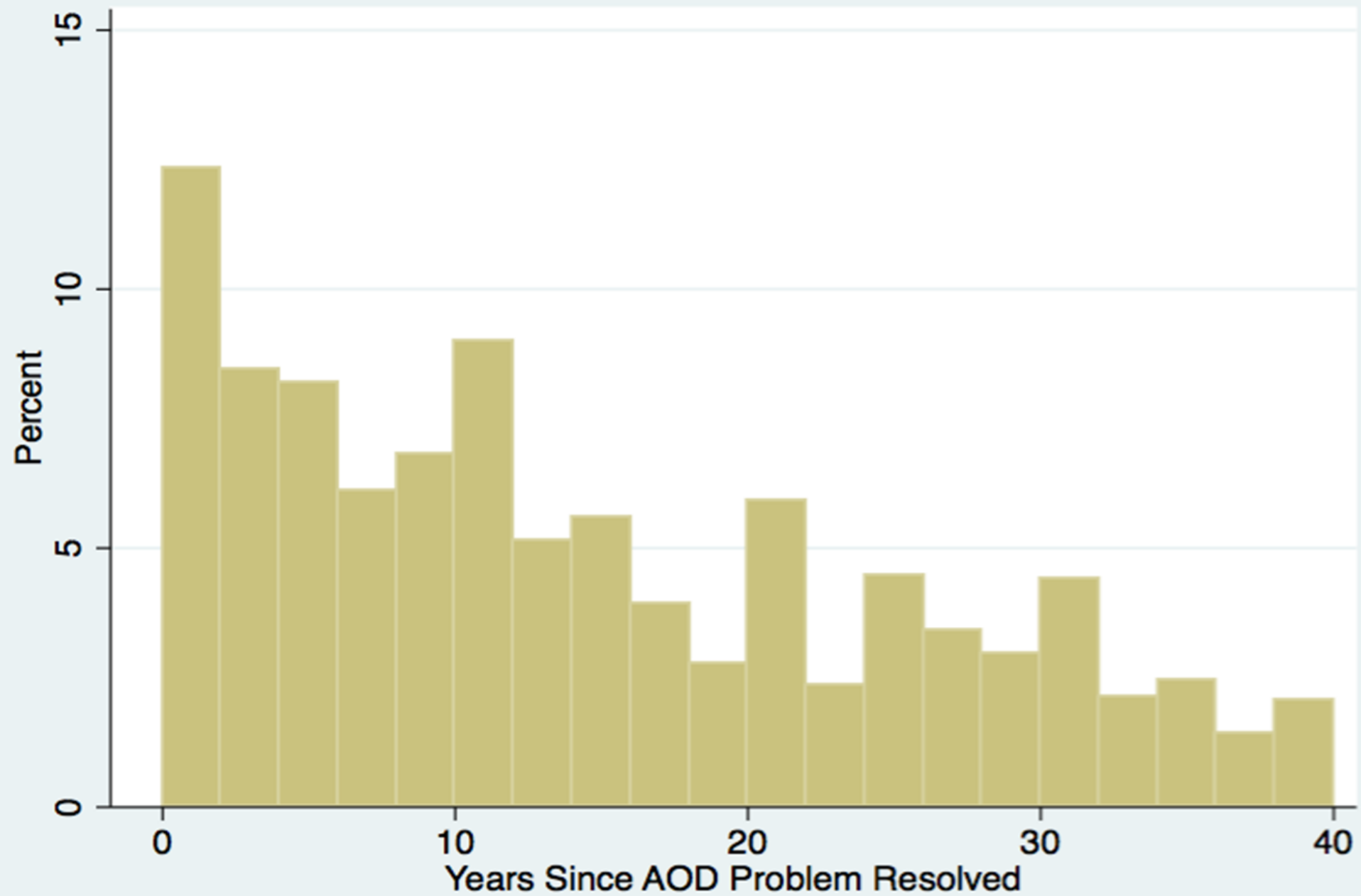
- Thus, though great deal of morbidity/mortality attributable to cigarettes, tobacco use often less of immediate concern relative to other intoxicating drugs.
- Furthermore, AOD-addicted individuals less likely than individuals without AOD problems to want to stop smoking and if they do, most entering treatment prefer to stop sequentially
- Perhaps related to this desire to stop sequentially, are common anecdotes that participation in AA/NA may perpetuate smoking because viewed implicitly as harm reduction tool to utilize while stabilizing abstinence from more immediately life-threatening drug use. Beyond anecdote, however, little is known from a systematic standpoint.
- While efforts made to address smoking during AOD treatment, little known about how smoking status changes in recovery, and whether persons entering AOD recovery nowadays are quitting sooner than in the past before recent cultural and socio-political changes regarding tobacco use occurred.
- Greater knowledge would improve understanding of dynamic changes in natural history of smoking cessation and inform the nature and timing of smoking intervention efforts and policy initiatives.



# Aims

1. Estimate the prevalence of never, former, and current smoking, and if quit, when specifically in relation to their AOD problem resolution, smoking cessation occurred;
2. Test for demographic and clinical predictors of smoking status; and,
3. given recent shifts in socio-cultural factors that have increased price, limited where and when people can smoke, and increased awareness of smoking-related health hazards and access to helpful pharmaceutical cessation aids (e.g., NRT; varenicline), examined cohort effects of smoking cessation.

Method



# Sampling

The KnowledgePanel uses address-based sampling (ABS) to randomly select individuals from 97% of all U.S. households based on the U.S. Postal Service's Delivery Sequence File.

To redress socioeconomic differences in landline telephone use and internet access, GfK provides individuals with web-enabled computer and free Internet service.

Using this approach, GfK is able to include households that a) have unlisted telephone numbers, b) do not have landline telephones, c) are cell phone only, d) do not have current internet access, and e) do not have devices to access the internet.