Annotation/Coding Guideline

Coding /annotation scheme:

According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. To treat opioid use disorder, doctors often prescribe patients **Medications for Opioid Use Disorder** (MOUD), e.g., Suboxone, Subutex, Sublocade, Methadone, Naltrexone, etc. These medications are also opioids and can also be addictive. In general, we are interested in the following labels for each piece of text.

- **Accessing MOUD (AM):** Logistical issues or barriers that prevent individuals from accessing MOUD, such as Insurance, pharmacy, provider-specific issues, family problems, not knowing what is needed to access, not knowing where to access, etc.
- **Taking MOUD (TM):** MOUD-based medication regimen details, e.g., questions about timing, dosage, frequency of taking a MOUD, concerns about splitting a dose, and missing a dose.
- **Experiencing Psycho-physical effects during recovery (EP):** The psychological and/or physical effects _caused by the MOUD_ (e.g., side effects, withdrawal, etc.) We assume that the mentioned medication is prescribed unless indicated otherwise. This class covers the physical and psychological effects of different medications for opioid use disorder (what to experience, what to expect). This includes prescribed and/or legal over-the-counter medications used for managing psychophysical problems (including side effects associated with using MOUD): depression, anxiety, sleep trouble, and constipation. Also, this class covers Interaction effects between MOUD and prescribed medications or over-the-counter medications.
- **Relapse (RL) / Co-occurring substance usage:** Discussion about relapsing or using other substances during recovery. Such substance use can be attributed to recreational purposes or for self-medication (e.g., marijuana for sleep) to manage psychophysical effects. We follow NIDA's definition of a Commonly Used Drug to identify what counts as a substance/drug.
- **Tapering MOUD (TP):** Information seeking related to quitting, coming off, or reducing the dose or frequency of the MOUD.
- **Other:** Samples seek information but do not belong to the defined five categories.

For each sample, there can be single or multiple labels. Please select all the appropriate labels. When there is confusion about whether an annotation label could be X or Y, use the MOST APPROPRIATE/RELEVANT label. Try to avoid inferences about the text context – focus specifically on the text itself.

Please take a look at the following examples. Note that the order of the labels is not essential.

Sample coded/annotated data:

Example 1:
Title: Going from Subutex to Oxy to Suboxone
Body: *I have a friend (literally lol) who was on ==8mg Subutex==. He got kicked from the program 2-3 days ago and has been taking about ==100 MG of Oxy a day since== then. He should be ==picking up his script for Suboxone tablets== tomorrow. Does he need to wait until the Oxy is out of his system first? It's been so long since I started subs that I can't remember what I was told to do.*
Labels: 1) Taking MOUD (TM), 2) Relapse/ Co-occurring subtance usage (RL)

Example 2:
Title: ==Starting Suboxone this week:== I have questions
Body: I'm taking about ==50 MGs of Percocet a day now== - spread out over a few hours in the evening - but I'm trying to kick it. It sucks!

- ==How much Suboxone should I take to get an equivalent== of what I take now before ==tapering== the Suboxone? 16? 12? 8? Any recommendations on ==spacing the doses?==

- Does ==Suboxone cause insomnia for you==? I already have insomnia sometimes and I'm wondering if it will make it worse or just basically act about the same as Percocet (just less euphoria)?

- When I go through ==withdrawal==, the physical agitation is the worst for me. Pent up, restless, jump out of my skin feeling. Will I feel this while on Suboxone? If so, what do you do to help manage it?

- ==How long does the Naloxone part of the medication block other opioids==? Something I'm curious about in case I ever really needed pain killers. For example, I do need knee surgery at some point this year.

Labels: 1) Taking MOUD (TM), 2) Experiencing Psychophysical effect (EP), (3) Tapering (TP)

Example 3:
Title: how bad is the jump?
Body:i tapered to under 1 mg for a couple weeks and I took (hopefully) my last dose yesterday around 6 am which was under .25 mg. maybe around .15 mg. I just wanted to see today if I would even need it and it is about 1 pm and so far so good. is It about to hit me? it hasn't been easy getting down this low, I can tell i've been ==withdrawling in my sleep based on how much i've been sweating.== but so far I feel fine really. I wonder if it's about to hit me. I never took really large doses so hopefully it's not too bad.

Labels: 1) Tapering (TP), 2) Experiencing Psychophysical effect (EP)

Example 4:
Title: ==Tapering subs, SUDDENLY, emotions are back==
Body:"I've been on subs only 2 months. On some kind of drug for several years before the subs.

Last several days, I've been between 2 & 4 mg a day. The last 2 days, it seems like ALL ==of my emotions are coming back- wide open! The drugs & subs covered up most all of my emotions over the last bunch of years.==

It's weird feeling again. Kinda embarrassing to almost start crying over some movie!

I welcome the emotions! I want to be whole again! Just very different not being able to control them with some kind of dope.

Anyone else experience this? How long did it take you to get used to this or to have little control over how you allow those emotions to show??"

Labels: 1) Experiencing Psychophysical effect (EP), 2) Tapering (TP)

Example 5:

Title: Traveling internationally without Suboxone prescription

Body: ==I'm traveling from the US to Aruba== in a month and I need to bring 1 suboxone strip with me but ==don't have a prescription.== What's the best place to put it? I'm getting a lot of anxiety over it. Last time I traveled to Puerto Rico I had it in a wallet behind cards in my checked bag but I read a lot of people said to keep it in your carry on instead? If anyone's traveled internationally without a script please let me know the best place to put it.

Labels: 1) Accessing MOUD (AM)

Example 6:

Title: Which ==Kratom strain helps with Bupe withdrawal?==

Body: "When I run out of my Suboxone prematurely, I like to keep Kratom on hand for my ==extremely low energy and excessive yawning.==

I have bought all strains, & they don't work.

Until I'm proved wrong, I think Kratom is overrated. 👎"

Labels: 1) Relapse/ Co-occurring substance usage (RL), 2) Experiencing Psychophysical effect (EP)

Example 7:

Title: Sub pharmacy question

Body: "I'm having dental surgery in two weeks. I didn't disclose that I'm on subutex. The dentist office will be calling in my script for meds to take before my appt. can the pharmacist disclose that I'm on subutex?

And before anyone tells me to disclose, I've had nothing but horrible experiences after disclosing."

Labels: 1) others

Drug and medication dictionary:

Mapping of different frequently used drugs with their shorthands and alternate names. To get comprehensive drug mapping, we followed this manually developed this drug dictionary [Drug Mapping]. Sample mapping is illustrated below.

drug_map = {
'**Heroin**': ['bth', 'diacetylmorphine', 'diamorphine','dope', 'ecp', 'goofball', 'goofballs','gunpowder', 'h', 'herion', 'heroin', 'heroine', 'heron', 'smack','speedball', 'speedballing', 'speedballs', 'tar'],
'**Buprenorphine**': ['bup', 'bupe', 'buprenorphine', 'butrans', 'zub', 'zubsolv'],
 '**Suboxone**': ['sub', 'suboxone','subutex', 'subs'],
 '**Hydrocodone**': ['hydro', 'hydrocodone', 'hydrocodones', 'lortab','lortabs', 'norco', 'norcos', 'tuss', 'tussionex', 'vic','vicoden', 'vicodin', 'vicodins', 'vicoprofen', 'vics','vikes', 'viks', 'zohydro'],
'**Codeine**': ['cocodamol', 'codein', 'codeine', 'codiene', 'codine','dhc', 'dihydrocodeine', 'prometh', 'sizzurp', 'syrup'],
 '**Oxymorphone**': ['g74', 'opana', 'opanas', 'oxymorphone', 'panda'],
 '**Tramadol**': ['desmethyltramadol', 'dsmt', 'tram', 'tramadol','ultram'],
 '**Hydromorphone**': ['dil', 'dilauded', 'dilaudid', 'dilaudids', 'dillies', 'dilly', 'dillys','diluadid', 'hydromorph', 'hydromorphone'],
 '**Oxycodone**': ['15s', '30s', 'codone', 'contin', 'ms', 'oc', 'ocs', 'oxy', 'oxycodone','oxycontin', 'oxycontins', 'oxycotin', 'oxys','perc', 'percocet', 'percocets', 'percoset', 'percosets','percs', 'perk', 'roxi', 'roxicodone', 'roxie', 'roxies','roxis', 'roxy', 'roxycodone', 'roxys'],
'**Morphine**': ['kadian', 'morph', 'morphine'],
'**Fentanyl**': ['acetylfentanyl', 'butyr', 'butyrfentanyl', 'carf', 'carfent','carfentanil', 'carfentanyl','duragesic', 'fent', 'fentanyl', 'fents','fentynal', 'fetanyl', 'furanyl', 'sufentanil', 'u47700'],
'**Antagonist**': ['nalaxone', 'naloxone', 'naltrexone', 'narcan', 'narcon', 'revia','viv', 'vivitrol', 'antagonist'],
'**Methadone**': ['mdone', 'methadone', 'methodone']
}

Prompts for information-seeking event detection

For ChatGPT, we break down the multilabel multiclass classification task as a binary classification task. We separately prompt for each class and combine the predicted labels later. We do not define any prompt for the 'Other [OTH]' class. If a sample does not seek information about any of the five defined categories, we assign the class label to others [OTH]. The templates and prompts we used for each class in zero-shot (ZS), few-shot (FS), and chain-of-thought (CoT) settings in both long and short templates are illustrated below.

Templates

1. Zero-Shot Short (ZS-S)

```
### CONTEXT ###
<Short description of the respective class>

### INSTRUCTION ###
Now determine whether the following post asks or inquires
about <Class Name>. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

2. Zero-Shot Long (ZS-L)

```
### INSTRUCTION ###
Identify whether this post asks about <Class Name>.

### CONTEXT ###
<A long description of MOUD and respective class>

Now determine whether the following post asks or inquires
about <Class Name>. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

3. Few-Shot Short (FS-S)

```
### CONTEXT ###
<Description of MOUD>

### INSTRUCTION ###
Now determine whether the following post asks or inquires
about <Class Name>. Answer it as a 'Yes/No' question.

<Description of the corresponding class>

###EXAMPLES###
POST: <A post outside test set>
Label: <Corresponding ground-truth label>

POST: <A post outside test set>
Label: <Corresponding ground-truth label>

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

4. Few-Shot Long (FS-L)

```
### INSTRUCTION ###
Identify whether this post asks about <Class Name>.

### CONTEXT ###
<A long description of MOUD>

<Long description of corresponding class>

###EXAMPLES###
POST: <A post outside test set>
Label: <Corresponding ground-truth label>

POST: <A post outside test set>
Label: <Corresponding ground-truth label>

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

5. Chain-of-Thought (CoT)

```
### CONTEXT ###
<Long description of MOUD>

### INSTRUCTION ###
Now determine whether the following post asks or inquires
about <Class Name>. Answer it as a 'Yes/No' question.

<Short description of the corresponding class>

###EXAMPLES###
POST: <A post outside test set>
REASONING: <Reasoning about the ground-truth label>
Label: <Corresponding ground-truth label>

POST: <A post outside test set>
REASONING: <Reasoning about the ground-truth label>
Label: <Corresponding ground-truth label>

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

Example Prompts

Zero-Shot Short (ZS-S) Prompts

```
%% Accessing MOUD [AM]
AM_prompt = """
### CONTEXT ###
"Accessing MOUD" concerns logistical issues or barriers to lack of
access to medications for opioid user disorder (MOUD), such as
Insurance, pharmacy, provider-specific issues, family problems, not
knowing what is needed to access, not knowing where to access, etc.

### INSTRUCTION ###
Now determine whether the following post asks or inquires about
'Accessing MOUD'. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""
```

```
%% Tapering [TP]
TP_prompt = """
### CONTEXT ###
'Tapering' concerns quitting, coming off, or reducing the dose or
frequency of the medication for opioid use disorder (MOUD).

### INSTRUCTION ###
Now determine whether the following post asks or inquires about
'Tapering.' Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""


%% Taking MOUD [TM]
TM_prompt = """
### CONTEXT ###
Taking Medications for opioid user disorder (MOUD) concerns the
medication regimen details such as questions about timing, dosage,
frequency of taking a MOUD, concerns about splitting a dose, and
missing a dose.

### INSTRUCTION ###
Now determine whether the following post asks or inquires about
'Taking MOUD'. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""


%% Experiencing psychophysical effects [EP]
EP_prompt = """
### CONTEXT ###
Experiencing Psychophysical effects concerns the physical and
psychological effects of different medications for opioid use
disorder (MOUD) (what to experience, what to expect). This includes
prescribed and/or legal over-the-counter medications used for
managing psychophysical problems (including side effects associated
with using MOUD): depression, anxiety, sleep trouble, and
```

constipation. Also, this class covers Interaction effects between MOUD and prescribed medications or over-the-counter medications.

INSTRUCTION
Now determine whether the following post asks or inquires about the 'Psychophysical effect'. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Relapse or co-occurring substance usage [RL]
RL_prompt = """
CONTEXT
Relapse or co-occurring substance usage covers two things: discussion about relapsing or using other substances during recovery. Such substance use can be attributed to recreational purposes or for self-medication (e.g., marijuana for sleep) to manage psychophysical effects. For the drugs that count towards co-occurring substance usage class, we follow National Institute of Drug Abuse (NIDA's) definition of Commonly Used Drug,

[Alcohol, Ayahuasca, Cannabis (Marijuana/Pot/Weed), Central Nervous System Depressants (Benzos), Cocaine (Coke/Crack), Fentanyl, GHB, Hallucinogens, Heroin, Inhalants, Ketamine, Khat, Kratom, LSD (Acid), MDMA (Ecstasy/Molly), Mescaline (Peyote), Methamphetamine (Crystal/Meth), Opioids, Over-the-Counter Medicines—Dextromethorphan (DXM), Over-the-Counter Medicines—Loperamide (e.g., Imodium), PCP (Angel Dust), Prescription Opioids (Oxy/Percs), Prescription Stimulants (Speed), Psilocybin (Magic Mushrooms/Shrooms), Rohypnol® (Flunitrazepam/Roofies), Salvia, Steroids (Anabolic), Synthetic Cannabinoids (K2/Spice), Synthetic Cathinones (Bath Salts/Flakka), Tobacco/Nicotine and Vaping, Xylazine, Poly, Morphine, Poppy pods]

INSTRUCTION
Now determine whether the following post asks about 'Relapse or co-occurring substance usage' issues. Answer it as a 'Yes/No' question.
POST: <A post from the test set>
Label: <Label predicted by ChatGPT>

```
"""
```

Zero-Shot Long (ZS-L) Prompts

```
%% Accessing MOUD [AM]
AL_prompt = """
### Instruction ###
Identify whether this post asks about 'Accessing MOUD'.

### Context ###
According to the National Institute of Drug Abuse (NIDA), Opioids are
a class of addictive drugs that include heroin, fentanyl, oxycodone,
hydrocodone, and others. Medications for Opioid Use Disorder (MOUD)
are the most effective treatment options for OUD. Examples of MOUD
include Suboxone, Subutex, Sublocade, Methadone, etc. However, these
recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post discusses or
inquiries about logistical issues or barriers to lack of access to
MOUD, such as Insurance, pharmacy, provider-specific issues, family
problems, not knowing what is needed to access, not knowing where to
access, etc. Such posts should be labeled as 'Accessing MOUD'.

Now determine whether the following post asks about 'Accessing MOUD'
issues. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""


%%Tapering [TP]
Taper_prompt = """
### Instruction ###
Identify whether this post asks about 'Tapering'.
```

Context

According to the National Institute of Drug Abuse (NIDA), Opioids are
a class of addictive drugs that include heroin, fentanyl, oxycodone,
hydrocodone, and others. Medications for Opioid Use Disorder (MOUD),
are the most effective treatment options for OUD. Examples of MOUD
include Suboxone, Subutex, Sublocade, Methadone, etc. However, these
recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post asks for advice
or inquiries about quitting, coming off, or reducing the dose or
frequency of the MOUD. Such posts should be labeled as 'Tapering'.

Now determine whether the following post asks about 'tapering'.
Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Taking MOUD [TM]

TM_prompt = """
Instruction
Identify whether this post asks about 'Taking MOUD'.

Context
According to the National Institute of Drug Abuse (NIDA), Opioids are
a class of addictive drugs that include heroin, fentanyl, oxycodone,
hydrocodone, and others. Medications for Opioid Use Disorder (MOUD),
are the most effective treatment options for OUD. Examples of MOUD
include Suboxone, Subutex, Sublocade, Methadone, etc. However, these
recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post inquires about
MOUD-based medication regimen details such as questions about timing,
dosage, frequency of taking a MOUD, concerns about splitting a dose
and missing a dose. Such posts should be labeled as 'Taking MOUD'.

Now determine whether the following post asks about 'Taking MOUD' issues. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

Experiencing psychophysical effects [EP]

EP_prompt = """
Instruction
Identify whether this post asks about 'Psychophysical effect''.

Context
According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post inquires about psychological and/or physical effects caused by the MOUD. Experiencing Psychophysical effects concerns the physical and psychological effects of different MOUD (what to experience, what to expect). This includes prescribed and/or legal over-the-counter medications used for managing psychophysical problems (including side effects associated with using MOUD): depression, anxiety, sleep trouble, and constipation. Also, this class covers Interaction effects between MOUD and prescribed medications or over-the-counter medications.

Now determine whether the following post asks about the 'Psychophysical effect'. Answer it as a 'Yes/No' question.

POST: <A post from the test set>

```
Label: <Label predicted by ChatGPT>
"""


%%Relapse or co-occurring substance usage [RL]
RL_prompt = """
### Instruction ###
Identify whether this post asks about 'Relapse or co-occurring
substance usage '


### Context ###
According to the National Institute of Drug Abuse (NIDA), Opioids are
a class of addictive drugs that include heroin, fentanyl, oxycodone,
hydrocodone, and others. Medications for Opioid Use Disorder (MOUD),
are the most effective treatment options for OUD. Examples of MOUD
include Suboxone, Subutex, Sublocade, Methadone, etc. However, these
recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post discusses or
inquires about 'relapse or co-occurring substance usage' by a user.
Relapse or co-occurring substance usage covers two things: discussion
about relapsing or using other substances during recovery. Such
substance use can be attributed to recreational purposes or for
self-medication (e.g., marijuana for sleep) to manage psychophysical
effects. For the drugs that count towards co-occurring substance
usage class, we follow National Institute of Drug Abuse (NIDA's)
definition of Commonly Used Drug, [ Alcohol, Ayahuasca, Cannabis
(Marijuana/Pot/Weed), Central Nervous System Depressants (Benzos),
Cocaine (Coke/Crack), Fentanyl, GHB, Hallucinogens, Heroin,
Inhalants, Ketamine, Khat, Kratom, LSD (Acid), MDMA (Ecstasy/Molly),
Mescaline (Peyote), Methamphetamine (Crystal/Meth), Opioids,
Over-the-Counter Medicines—Dextromethorphan (DXM), Over-the-Counter
Medicines—Loperamide (e.g., Imodium), PCP (Angel Dust), Prescription
Opioids (Oxy/Percs), Prescription Stimulants (Speed), Psilocybin
(Magic Mushrooms/Shrooms), Rohypnol® (Flunitrazepam/Roofies), Salvia,
Steroids (Anabolic), Synthetic Cannabinoids (K2/Spice), Synthetic
Cathinones (Bath Salts/Flakka), Tobacco/Nicotine and Vaping,
Xylazine, Poly, Morphine, Poppy pods]
```

Now determine whether the following post asks about 'Relapse or co-occurring substance usage' issues. Answer it as a 'Yes/No' question.

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

Few-Shot Short (FS-S) Prompts

%% Accessing MOUD [AM]

AM_prompt = """
Context
Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction
Your task is to identify whether or not this post asks about "Accessing MOUD".

"Accessing MOUD" concerns logistical issues or barriers to lack of access to medications for opioid user disorder (MOUD), such as Insurance, pharmacy, provider-specific issues, family problems, not knowing what is needed to access, not knowing where to access, etc.

###EXAMPLES###
POST: Jumping off 0.125mg on Tuesday! Just about 2 years of tapering. I'm very excited even though it might suck. i will definitely keep you guys updated throughout the detox.
LABEL: No

POST: I am currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple of weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?

LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

Tapering [TP]

TP_prompt = """
Context

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about "Tapering".

'Tapering' concerns quitting, coming off, or reducing the dose or frequency of the MOUD.

EXAMPLES

POST: What's helped me the most quitting is exercise. Some days are hard getting in there, but once I do, I feel so good getting that natural high. I've come a long way in a year, I used to be a total Junkie. Heroin/Meth/Benzos. The only thing I've used in the past year is Suboxone. I finally jumped off that 2 weeks ago. I'm still using a little Kratom, but I plan to jump off that this week.

LABEL: Yes

POST: I am currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple of weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?

LABEL: No

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Taking MOUD [TM]

TM_prompt = """

Context

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about 'Taking MOUD'.

Taking MOUD concerns the medication regimen details such as questions about timing, dosage, frequency of taking a MOUD, concerns about splitting a dose, and missing a dose.

###EXAMPLES###

POST: Was on bunavail for a couple years, then switched back to the suboxone strips. Anyone else on bunavail? I really enjoyed bunavail, I felt like it absorbed better. It goes on the side of your cheek instead of under your tongue so you don't lose as much of your dose. They actually taste 1000x better too. Just curious if anyone else takes bunavail & how their experience has been with it.

LABEL: YES

POST: I reduced my Suboxone dosage to 2mg and eventually ran out. To cope, I've turned to taking around 5g of kratom three times daily over the last three days. However, I've struggled with kratom addiction in the past, which comes with its own severe withdrawals. I'm seeking guidance on the duration of my suboxone withdrawal symptoms and how long I can safely use kratom without falling into another addiction.

LABEL: NO

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%% Experiencing psychophysical effects [EP]

EP_prompt = """
Context
Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction
Your task is to identify whether or not this post asks about 'Psychophysical effect'.

Experiencing Psychophysical effects concerns the physical and psychological effects of different medications for opioid use disorder (MOUD) (what to experience, what to expect). This includes prescribed and/or legal over-the-counter medications used for managing psychophysical problems (including side effects associated with using MOUD): depression, anxiety, sleep trouble, and constipation. Also, this class covers Interaction effects between MOUD and prescribed medications or over-the-counter medications.

EXAMPLES

POST: I'm currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?

LABEL: No

POST: Hi I'm 20 years old, and I have been taking opiates recreationally for about a year and a half now, anywhere from just a Narco or two a day to maybe 12 mg of Dilaudid a day it would vary. But I have been taking 2 mg of suboxone for the past 6 days and I only have one 2 mg strip left would it be safe for me to try and completely be done with everything? If so, how bad would the withdrawals be?

LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Relapse or co-occurring substance usage [RL]

RL_prompt = """
Context

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about 'relapse or co-occurring substance usage'.

Relapse or co-occurring substance usage covers two things: discussion about relapsing or using other substances during recovery. Such substance use can be attributed to recreational purposes or for self-medication (e.g., marijuana for sleep) to manage psychophysical

effects. For the drugs that count towards co-occurring substance usage class, we follow National Institute of Drug Abuse (NIDA's) definition of Commonly Used Drug,

[Alcohol, Ayahuasca, Cannabis (Marijuana/Pot/Weed), Central Nervous System Depressants (Benzos), Cocaine (Coke/Crack), Fentanyl, GHB, Hallucinogens, Heroin, Inhalants, Ketamine, Khat, Kratom, LSD (Acid), MDMA (Ecstasy/Molly), Mescaline (Peyote), Methamphetamine (Crystal/Meth), Opioids, Over-the-Counter Medicines—Dextromethorphan (DXM), Over-the-Counter Medicines—Loperamide (e.g., Imodium), PCP (Angel Dust), Prescription Opioids (Oxy/Percs), Prescription Stimulants (Speed), Psilocybin (Magic Mushrooms/Shrooms), Rohypnol® (Flunitrazepam/Roofies), Salvia, Steroids (Anabolic), Synthetic Cannabinoids (K2/Spice), Synthetic Cathinones (Bath Salts/Flakka), Tobacco/Nicotine and Vaping, Xylazine, Poly, Morphine, Poppy pods]

EXAMPLES
POST: Interested in online treatments such as Bicycle Health? I've been experiencing severe withdrawal symptoms and I'm in need of assistance. However, I'm hesitant due to numerous accounts of people being scammed. I'm unsure about the appropriate course of action.

LABEL: No

POST: Drinking on Subs. Just a positive thing, can anyone else not drink on subs / just don't have any cravings whatsoever? I got drunk like once since starting in November and drank a beer yesterday. Felt like dog shit until I went to bed from just one.

LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

Few-Shot Long (FS-L) Prompts

%% Accessing MOUD [AM]
AM_prompt = """

Instruction

Identify whether this post asks about 'Accessing MOUD'.

Context

According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post discusses or inquiries about logistical issues or barriers to lack of access to MOUD, such as Insurance, pharmacy, provider-specific issues, family problems, not knowing what is needed to access, not knowing where to access, etc. Such posts should be labeled as 'Accessing MOUD'.

###EXAMPLES###
POST: Jumping off 0.125mg on Tuesday! Just about 2 years of tapering. I'm very excited even though it might suck. i'll definitely keep you guys updated throughout the detox.
LABEL: No

POST: I'm currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?
LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Tapering [TP]

TP_prompt = """
Instruction

Identify whether this post asks about 'Tapering'.

Context

According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post asks for advice or inquiries about quitting, coming off, or reducing the dose or frequency of the MOUD. Such posts should be labeled as 'Tapering'.

EXAMPLES

POST: What's helped me the most quitting is exercise. Some days are hard getting in there, but once I do I feel so good getting that natural high. I've came along ways in a year, I use to be a total Junkie. Heroin/Meth/Benzos. The only thing I've used the past year is Suboxone. I finally jumped off that 2 weeks ago. I'm still using a little Kratom but plan to jump off that this week.
LABEL: Yes

POST: I reduced my Suboxone dosage to 2mg and eventually ran out. To cope, I've turned to taking around 5g of kratom three times daily over the last three days. However, I've struggled with kratom addiction in the past, which comes with its own severe withdrawals. I'm seeking guidance on the duration of my suboxone withdrawal symptoms and how long I can safely use kratom without falling into another addiction.
LABEL: No

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Taking MOUD [TM]

```
TM_prompt = """
### Instruction ###
Identify whether this post asks about 'Taking MOUD'.

### Context ###
According to the National Institute of Drug Abuse (NIDA), Opioids are
a class of addictive drugs that include heroin, fentanyl, oxycodone,
hydrocodone, and others. Medications for Opioid Use Disorder (MOUD),
are the most effective treatment options for OUD. Examples of MOUD
include Suboxone, Subutex, Sublocade, Methadone, etc. However, these
recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post inquires about
MOUD-based medication regimen details such as questions about timing,
dosage, frequency of taking a MOUD, concerns about splitting a dose
and missing a dose. Such posts should be labeled as 'Taking MOUD'.

###EXAMPLES###
POST: Was on bunavail for a couple years, then switched back to the
suboxone strips. Anyone else on bunavail? I really enjoyed bunavail,
I felt like it absorbed better. It goes on the side of your cheek
instead of under your tongue so you don't lose as much of your dose.
They actually taste 1000x better too. Just curious if anyone else
takes bunavail & how their experience has been with it.
LABEL: YES

POST: I reduced my Suboxone dosage to 2mg and eventually ran out. To
cope, I've turned to taking around 5g of kratom three times daily
over the last three days. However, I've struggled with kratom
addiction in the past, which comes with its own severe withdrawals.
I'm seeking guidance on the duration of my suboxone withdrawal
symptoms and how long I can safely use kratom without falling into
another addiction.
LABEL: NO

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
```

"""

Experiencing psychophysical effects [EP]

EP_prompt = """
Instruction
Identify whether this post asks about 'Psychophysical effect''.

Context
According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post inquires about psychological and/or physical effects caused by the MOUD. Experiencing Psychophysical effects concerns the physical and psychological effects of different MOUD (what to experience, what to expect). This includes prescribed and/or legal over-the-counter medications used for managing psychophysical problems (including side effects associated with using MOUD): depression, anxiety, sleep trouble, and constipation. Also, this class covers Interaction effects between MOUD and prescribed medications or over-the-counter medications.

EXAMPLES
PROMPT: I'm currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?
LABEL: No

POST: Hi I'm 20 years old and I have been taking opiates recreationally for about a year and a half now anywhere from just a Narco or two a day to maybe 12 mg of dilaudid a day it would vary. But I have been taking 2 mg of suboxone for the past 6 days and I only have one 2 mg strip left would it be safe for me to try and

completely be done with everything. If so how bad would the withdraws be?
LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%% Relapse or co-occurring substance usage [RL]

RL_prompt = """
Instruction
Identify whether this post asks about 'Relapse or co-occurring substance usage'.

Context
According to the National Institute of Drug Abuse (NIDA), Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

We want to determine from Reddit posts whether a post discusses or inquires about 'relapse or co-occurring substance usage' by a user. Relapse or co-occurring substance usage covers two things: discussion about relapsing or using other substances during recovery. Such substance use can be attributed to recreational purposes or for self-medication (e.g., marijuana for sleep) to manage psychophysical effects. For the drugs that count towards co-occurring substance usage class, we follow National Institute of Drug Abuse (NIDA's) definition of Commonly Used Drug,

[Alcohol, Ayahuasca, Cannabis (Marijuana/Pot/Weed), Central Nervous System Depressants (Benzos), Cocaine (Coke/Crack), Fentanyl, GHB, Hallucinogens, Heroin, Inhalants, Ketamine, Khat, Kratom, LSD (Acid), MDMA (Ecstasy/Molly), Mescaline (Peyote), Methamphetamine (Crystal/Meth), Opioids, Over-the-Counter Medicines—Dextromethorphan

(DXM), Over-the-Counter Medicines—Loperamide (e.g., Imodium), PCP (Angel Dust), Prescription Opioids (Oxy/Percs), Prescription Stimulants (Speed), Psilocybin (Magic Mushrooms/Shrooms), Rohypnol® (Flunitrazepam/Roofies), Salvia, Steroids (Anabolic), Synthetic Cannabinoids (K2/Spice), Synthetic Cathinones (Bath Salts/Flakka), Tobacco/Nicotine and Vaping, Xylazine, Poly, Morphine, Poppy pods]

EXAMPLES
POST: Interested in online treatments such as Bicycle Health? I've been experiencing severe withdrawal symptoms and I'm in need of assistance. However, I'm hesitant due to numerous accounts of people being scammed. I'm unsure about the appropriate course of action.
LABEL: No

POST: Drinking on Subs. Just a positive thing, can anyone else not drink on subs / just don't have any cravings whatsoever? I got drunk like once since starting in November and drank a beer yesterday. Felt like dog shit until I went to bed from just one.
LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

Chain of Thought (CoT) Prompts

%% Accessing MOUD [AM]
AM_prompt = """
Context
Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about "Accessing MOUD".

"Accessing MOUD" concerns logistical issues or barriers to lack of access to MOUD (e.g., Insurance, pharmacy, provider-specific issues, family problems, etc.).

###EXAMPLES###

POST: Jumping off 0.125mg on Tuesday! Just about 2 years of tapering. I'm very excited even though it might suck. i'll definitely keep you guys updated throughout the detox.

REASONING: The post mainly discusses the tapering process and the person's excitement about jumping off a specific dosage of medication. There is no mention of logistical issues or barriers related to access to MOUD.

LABEL: No

POST: I'm currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?

REASONING: The person is inquiring about whether their insurance provider, Kaiser, covers a specific medication called Sublocade. This relates to the logistical issue of accessing MOUD and determining if their insurance covers the desired medication.

LABEL: Yes

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%% **Tapering [TP]**

TP_prompt = """
Context

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction
Your task is to identify whether or not this post asks about "Tapering".

'Tapering' concerns quitting, coming off, or reducing the usage of MOUD.

EXAMPLES
POST: What's helped me the most quitting is exercise. Some days are hard getting in there, but once I do I feel so good getting that natural high. I've came along ways in a year, I use to be a total Junkie. Heroin/Meth/Benzos. The only thing I've used the past year is Suboxone. I finally jumped off that 2 weeks ago. I'm still using a little Kratom but plan to jump off that this week.

REASONING: The author mentions that they were using Suboxone for a year and had quit it two weeks ago. They also mention their plan to jump off of Kratom. This plan indicates an intention to reduce or come off of their use of MOUD and Kratom, which qualifies this post as a 'Tapering' post under the given definition. Thus, the post is labeled "Yes".

LABEL: Yes

POST: I reduced my Suboxone dosage to 2mg and eventually ran out. To cope, I've turned to taking around 5g of kratom three times daily over the last three days. However, I've struggled with kratom addiction in the past, which comes with its own severe withdrawals. I'm seeking guidance on the duration of my suboxone withdrawal symptoms and how long I can safely use kratom without falling into another addiction.

REASONING: The author of the post is seeking advice on how to manage their withdrawal symptoms after tapering off Suboxone and turning to kratom for relief. However, they do not specifically ask about reducing or tapering their use of any medication, which is required to qualify as a 'Tapering' post under the given definition. Thus, since this post does not explicitly ask about tapering a medication for opioid use disorder, the post is labeled as "No".

LABEL: No

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%% Taking MOUD [TM]

TM_prompt = """
Context

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about 'Taking MOUD '.

Taking MOUD concerns the medication regimen details (e.g., timing, dosage, missed dosage, etc., regarding medication) of MOUD drugs, as well as self-administration of MOUD drugs.

###EXAMPLES###

POST: Was on bunavail for a couple years, then switched back to the suboxone strips. Anyone else on bunavail? I really enjoyed bunavail, I felt like it absorbed better. It goes on the side of your cheek instead of under your tongue so you don't lose as much of your dose.

They actually taste 1000x better too. Just curious if anyone else takes bunavail & how their experience has been with it.

REASONING: This post discusses the experience of switching from bunavail to suboxone and the impacts of making this switch (the differences in taste / losing less of the drug because it doesn't go under the tongue). This fulfills the criteria of inquiring about MOUD-based medication regimen detail, and this IS an example of the MOUD-Administration class.

LABEL: YES

POST: I reduced my Suboxone dosage to 2mg and eventually ran out. To cope, I've turned to taking around 5g of kratom three times daily over the last three days. However, I've struggled with kratom addiction in the past, which comes with its own severe withdrawals. I'm seeking guidance on the duration of my suboxone withdrawal symptoms and how long I can safely use kratom without falling into another addiction.

REASONING: This post discusses the effects of withdrawal and asks about how long the symptoms of withdrawal will last. There is no discussion of the administration or impact of a changing MOUD regimen, meaning that this post is not an example of the MOUD administration class.

LABEL: NO

POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""

%%Experiencing Psychophysical Effect [EP]

EP_prompt = """
Context
Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

Instruction

Your task is to identify whether or not this post asks about 'Psychophysical effect'.

'Experiencing Psychophysical effect' concerns psychological and/or physical effects caused by the Medications for opioid user disorder (MOUD), such as side effects, withdrawals, etc. This class covers the medications used for managing psychophysical effects (including side effects): depression, anxiety, sleep trouble, constipation, and Interaction effects of different prescribed medications with MOUDs.

EXAMPLES

PROMPT: I'm currently a Suboxone patient with Kaiser as my insurance provider. I don't see my Dr for a couple weeks so I figured I could ask here. Does anyone know if Kaiser covers sublocade?

RESPONSE: This post asks about insurance coverage for a specific MOUD called Sublocade, which is a monthly injection of buprenorphine. The post does not mention any psychological or physical effects of Sublocade or any other MOUD. Therefore, this post does not ask about psychophysical effects and is labeled as "No", for Psychophysical Effect.

LABEL: No

POST: Hi I'm 20 years old and I have been taking opiates recreationally for about a year and a half now anywhere from just a Narco or two a day to maybe 12 mg of dilaudid a day it would vary. But I have been taking 2 mg of suboxone for the past 6 days and I only have one 2 mg strip left would it be safe for me to try and completely be done with everything. If so how bad would the withdraws be?

REASONING: The user is inquiring about the potential withdrawal symptoms they may experience after stopping suboxone and how severe they may be. Withdrawal symptoms are a physical effect caused by the MOUD and fall under the category of psychophysical effects. Therefore, this post is labeled "Yes" for Psychophysical Effects.

LABEL: Yes

```
POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""
```

%% Relapse or co-occurring substance usage [RL]

```
RL_prompt = """
### Context ###
```

Opioids are a class of addictive drugs that include heroin, fentanyl, oxycodone, hydrocodone, and others. Medications for Opioid Use Disorder (MOUD), are the most effective treatment options for OUD. Examples of MOUD include Suboxone, Subutex, Sublocade, Methadone, etc. However, these recovery medications themselves can also be addictive.

```
### Instruction ###
```

Your task is to identify whether or not this post asks about 'Relapse or co-occurring substance usage'.

Relapse or co-occurring substance usage: This class covers the following.

co-occurring substance usage for recreational purposes

co-occurring substance usage for self-medication (e.g., marijuana for sleep),

For the drugs that count towards co-occurring substance usage class, we follow National Institute of Drug Abuse (NIDA's) definition of Commonly Used Drug,

[Alcohol, Ayahuasca, Cannabis (Marijuana/Pot/Weed), Central Nervous System Depressants (Benzos), Cocaine (Coke/Crack), Fentanyl, GHB, Hallucinogens, Heroin, Inhalants, Ketamine, Khat, Kratom, LSD (Acid), MDMA (Ecstasy/Molly), Mescaline (Peyote), Methamphetamine (Crystal/Meth), Opioids, Over-the-Counter Medicines—Dextromethorphan (DXM), Over-the-Counter Medicines—Loperamide (e.g., Imodium), PCP (Angel Dust), Prescription Opioids (Oxy/Percs), Prescription Stimulants (Speed), Psilocybin (Magic Mushrooms/Shrooms), Rohypnol® (Flunitrazepam/Roofies), Salvia, Steroids (Anabolic), Synthetic

```
Cannabinoids   (K2/Spice),   Synthetic   Cathinones   (Bath   Salts/Flakka),
Tobacco/Nicotine and Vaping, Xylazine, Poly, Morphine, Poppy pods]


### EXAMPLES ##

POST:   Interested   in   online   treatments   such   as   Bicycle   Health?   I've
been   experiencing   severe   withdrawal   symptoms   and   I'm   in   need   of
assistance. However, I'm hesitant due to numerous accounts of people
being scammed. I'm unsure about the appropriate course of action.
REASONING: Nothing about multiple usages of drugs that's why labeled
as 'No'.
LABEL: No


POST: Drinking on Subs. Just a positive thing, can anyone else not
drink on subs / just don't have any cravings whatsoever? I got drunk
like once since starting in November and drank a beer yesterday. Felt
like dog shit until I went to bed from just one.
REASONING: The person is drinking while on subs, that's why labeled
as 'Yes'.
LABEL: Yes


POST: <A post from the test set>
Label: <Label predicted by ChatGPT>
"""
```

Dataset

Anonymized link of the dataset with Train, Validation, and Test Split. [TREAT-ISE]

Codes

All the codes can be found in this link to reproduce our results. [Code Appendix]