# Improving Individual and Population-level Prediction and Prevention at the State and Local Level

*Innovative Data Science Approaches to Assess Suicide Risk in Individuals, Populations & Communities: Current Practices, Opportunities, and Risks*

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JOHNS HOPKINS

BLOOMBERG SCHOOL
*of* PUBLIC HEALTH

Innovative Data Science Approaches to Assess Suicide Risk in Schools

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN®

**AAP-AACAP-CHA Declaration of a National Emergency in Child and Adolescent Mental Health**

**Pediatric Mental Health Crisis** Reaches **Critical Tipping Point**

American Academy of Pediatrics

# PROTECTING YOUTH MENTAL HEALTH

*The U.S. Surgeon General's Advisory*

2021

# GoGuardian

- Leading provider of K-12 safety and learning software, supporting 50% of students in North America.

- Overall, 14,000 schools and district organizations use a GoGuardian product, encompassing 23M+ students.

# GoGuardian Beacon

GoGuardian Beacon identifies online activity on school-issued accounts that indicates suicide risk, self harm or possible harm to others

- Real-time alerts that notify designated responders in the school or district
- Schools develop response protocol for during and after school hours
- Optional 24/7/365 service

**GoGuardian** Beacon®

## The student safety solution for K-12

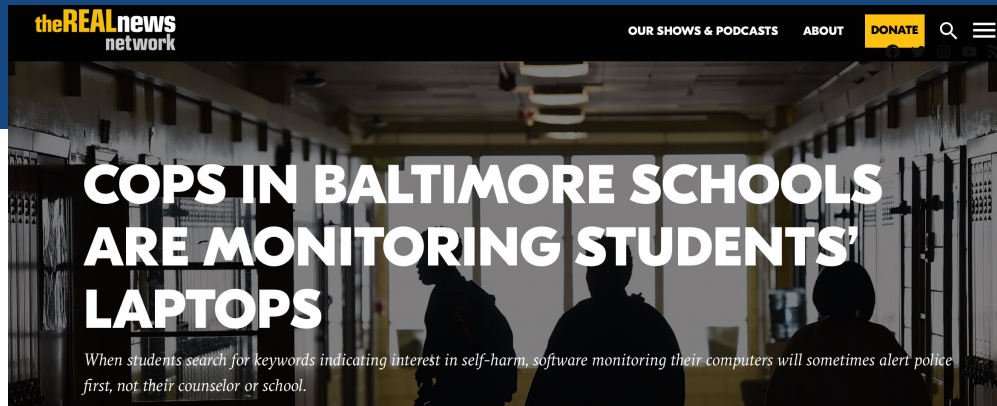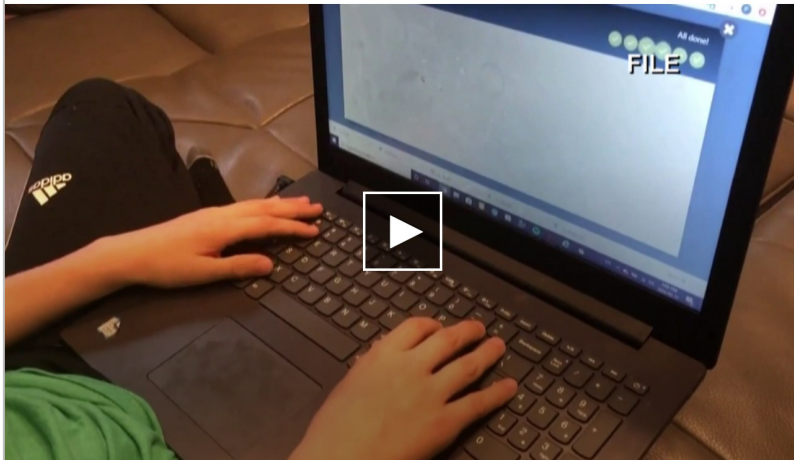Identify students who are at risk of suicide or possible harm to others through threats, violence, and bullying.[1]

Get more info    Watch the demo

# Interesting contrast

## CCSD's GoGuardian software saves 12-year-old boy's life

by Tiffany Lane | Saturday, December 19th 2020

OUR SHOWS & PODCASTS    ABOUT    DONATE

## COPS IN BALTIMORE SCHOOLS ARE MONITORING STUDENTS' LAPTOPS

When students search for keywords indicating interest in self-harm, software monitoring their computers will sometimes alert police first, not their counselor or school.

EDUCATION

## Baltimore City student laptops are monitored for mentions of suicide. Sometimes, the police are called.

By LIZ BOWIE

BALTIMORE SUN | OCT 12, 2021

# Future Opportunities

►Study the use of GoGuardian Beacon as a tool for suicide prevention in school-based settings.

►Do different suicide alert response protocols lead to different outcomes?

►Which students benefit and under what circumstances.

# Innovative Data Science Approaches to Assess Suicide Risk in Healthcare Settings

# Maryland's Statewide Suicide Data Warehouse (MSDW)

► Individual risk factors for suicide often lack precision, need for a shift in focus to machine learning-based risk algorithms (Franklin et al., 2017)

► Data linkage is underutilized and can provide greater diversity of predictors

► Data linkage can facilitate the study of policies and programs [988 implementation]

► 2012-2021 HIE linkage of data on ~6 million MD residents, hospital data, >40 outpatient facilities

# Sources of Data

| Source | Type of data |
|---|---|
| CRISP | HIE, patient linkages, geoid |
| OCME | decedent information, MOD |
| HSCRC | hospital discharge records (similar to claims) |
| JHMI | electronic health records (EHR) |
| AAMC | EHR |
| PRMC | EHR |
| VHA | EHR |
| MHCC | medical claims, commercial |
| Medicaid/Medicare | medical claims, CMS |
| GSAP | Census-derived geographical data |

# MSDW - Variables

| Table | Data Source | Examples |
| --- | --- | --- |
| death | OCME | manner of death, forensic findings, toxicology, place of death, time of death |
| demographic | HSCRC, EHR and claims | age, sex, race, ethnicity, marital status |
| encounters | HSCRC, EHR and claims | health utilization, insurance provider, other service markers (e.g. psychiatric admission) |
| diagnoses | HSCRC, EHR and claims | ICD-10-CM coded diagnoses, dates observed, medical Hx |
| procedures | HSCRC, EHR and claims | CPT-4, HCPCS, ICD-10-PCS coded procedures, dates observed |
| medications | EHR and claims | NDC, RxNorm coded medication orders, fills, prescribed dose, frequency, days supply, route and form |
| labs | EHR | LOINC coded values for routine or specific laboratory findings, toxicology, vaccinations |
| surveys | EHR | ASQ, PHQ-9, CSSRS, SAFE-T, GAD-7 |
| text | EHR | progress notes, discharge notes |
| geography | GSAP | FIPS coded locations, ACS features, ADI and components |

# MSDW Processing Summary
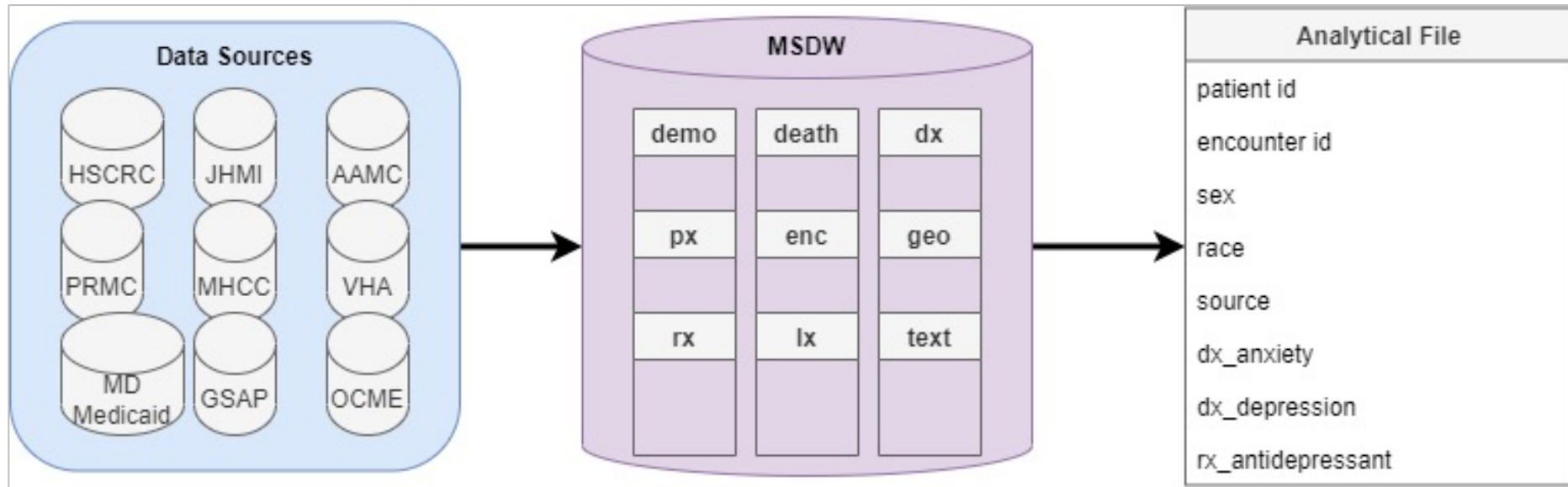
# MSDW - Descriptive Characteristics

| variable | level | Total | Accident | Natural | Suicide | Undetermined |
|---|---|---|---|---|---|---|
| Total | | 114105 | 20061 | 76188 | 5227 | 12585 |
| Sex | Female | 44649 (39.1%) | 7597 (37.9%) | 32349 (42.5%) | 1124 (21.3%) | 3580 (28.4%) |
| | Male | 69456 (60.9%) | 12464 (62.1%) | 43839 (57.5%) | 4148 (78.7%) | 9005 (71.6%) |
| Age | 0-17 | 2378 (2.1%) | 431 (2.1%) | 1289 (1.7%) | 163 (3.1%) | 495 (3.9%) |
| | 18-34 | 10551 (9.2%) | 3297 (16.4%) | 2137 (2.8%) | 1350 (25.6%) | 3767 (29.9%) |
| | 35-44 | 8746 (7.7%) | 1913 (9.5%) | 3478 (4.6%) | 779 (14.8%) | 2576 (20.5%) |
| | 45-54 | 15325 (13.4%) | 2529 (12.6%) | 8777 (11.5%) | 1016 (19.3%) | 3003 (23.9%) |
| | 55-64 | 22348 (19.6%) | 2860 (14.3%) | 16315 (21.4%) | 935 (17.7%) | 2238 (17.8%) |
| | 65+ | 54558 (47.8%) | 8988 (44.8%) | 44043 (57.8%) | 1029 (19.5%) | 499 (4%) |
| Race | African American | 40294 (35.3%) | 5158 (25.7%) | 29945 (39.3%) | 859 (16.3%) | 4332 (34.4%) |
| | Asian | 1422 (1.2%) | 277 (1.4%) | 914 (1.2%) | 150 (2.8%) | 81 (0.6%) |
| | Hispanic_latino | 2503 (2.2%) | 814 (4.1%) | 1251 (1.6%) | 153 (2.9%) | 285 (2.3%) |
| | Native American | 69 (0.1%) | 17 (0.1%) | 45 (0.1%) | 3 (0.1%) | 4 (0%) |
| | other | 1397 (1.2%) | 229 (1.1%) | 1010 (1.3%) | 71 (1.3%) | 87 (0.7%) |
| | White | 67863 (59.5%) | 13434 (67%) | 42656 (56%) | 4022 (76.3%) | 7752 (61.6%) |
| Geography | MD | 102299 (89.7%) | 17607 (87.8%) | 68726 (90.2%) | 4976 (94.4%) | 10990 (87.3%) |
| | Other State | 11927 (10.5%) | 2463 (12.3%) | 7513 (9.9%) | 315 (6%) | 1636 (13%) |

# National Patient Safety Goal (NPSG) on Suicide Prevention in Healthcare Settings

**The Joint Commission**

**Compliance with NPSG 15.01.01**

**Suicide Prevention Recommendations**

- Suicide – emergency department
- Suicide – inpatient
- Suicide — offsite within 72 hours (these are defined in the Sentinel Event Policy)

**EP 1: Environmental Risk Assessment** +

**EP 2: Validated/ Evidence Based Screening Tools** +

**EP 3 & 4: Validated/ Evidence Based Suicide Risk Assessment Tools** +

**EP 6: Safety Planning Upon Discharge** +

Suicide
Prevention

Epic

# OUR FOCUS

## 1 Identification

Screening

Risk stratification

Risk assessment

## 2 Brief Intervention

Safety planning

Lethal means reduction

## 3 Follow Up

Referral to treatment

Caring Contacts

# SAFETY PLANNING

- ▶ Stanley-Brown Safety Planning Model

- ▶ Share plans across care settings

- ▶ Share Safety Plans in MyChart

- ▶ May 2021 with SU's back to November 2020

Scalability of community approach implemented by crisis services/hotlines

**asQ**

Ask Suicide-Screening Questions

**Suicide Risk Screening Tool**

**Ask the patient:**

1. In the past few weeks, have you wished you were dead?  ○ Yes  ○ No

2. In the past few weeks, have you felt that you or your family would be better off if you were dead?  ○ Yes  ○ No

3. In the past week, have you been having thoughts about killing yourself?  ○ Yes  ○ No

4. Have you ever tried to kill yourself?  ○ Yes  ○ No

    If yes, how? _____

    _____

    _____

    When? _____

    _____

*If the patient answers* **Yes** *to any of the above, ask the following acuity question:*

5. Are you having thoughts of killing yourself right now?  ○ Yes  ○ No

    If yes, please describe: _____

SAMHSA U79SM061751

*Dear (patient's first name), we hope you are doing well. We are thinking about you and are wishing you the best. If you need any help, please contact your regular psychologist or psychiatrist. You may also contact the crisis hotline at (insert Maryland Crisis Hotline telephone number). Sincerely, Mary Cwik, Ph.D. Sent on behalf of your treatment team at Johns Hopkins Hospital.*

- 78% reported the text messages had a positive impact on their mental health
- 67% said the texts reduced their SI 74% said the texts helped prevent them from engaging in SB

Ryan et al., Psychiatric Services 2022

# Feeling Overwhelmed?

## You're Not Alone. 211 Maryland Can Help.
## Sign Up For Inspiring Messages Of Support From
## MDMINDHEALTH / MDSALUDMENTAL.

SIGN UP NOW       REGÍSTRATE AHORA

Text MDMindHealth to 898-211. Para Español, texto MDSaludMental a 898-211. Message frequency may vary. Message and data rates may apply. Text STOP to unsubscribe. **Privacy Policy and Terms of Service.**

# #escapingsadness

# How It Works

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## 1 Text

Text **MDMindHealth** to 898-211

Para Español, texto
**MDSaludMental** a 898-211

*Message frequency may vary.
Message and data rates may apply.
Text STOP to unsubscribe. Privacy
Policy and Terms of Service.*

## 2 Get Support

We'll send supportive text
messages. You're in the drivers
seat. Talk to a live professional or
opt out at any time.

## 3 Join The Community

Join our community to find others
who can relate and get continued
support.

# MD Young Minds

► Text messages sent through the program provide supportive youth-focused mental health messages, but also remind recipients that immediate access to mental health services are available. If in distress, individuals can call 211, chat through the 211 website (pressone.211md.org), or text 898-211. All actions will link the individual to a call specialist available 24/7.

► Examples of texts
  ► Having a regular mindfulness practice may help someone who struggles with thoughts of suicide to notice when they need help. How do you practice mindfulness? Watch this video for more information: https://nowmattersnow.org/skill/mindfulness
  ► Mental Health 101: Depression is more than just being sad. It's a feeling of sadness, hopelessness, or worthlessness that lasts longer than 2 weeks along with a change in being able to enjoy things that you used to. Find out more: https://go.usa.gov/xFWnV
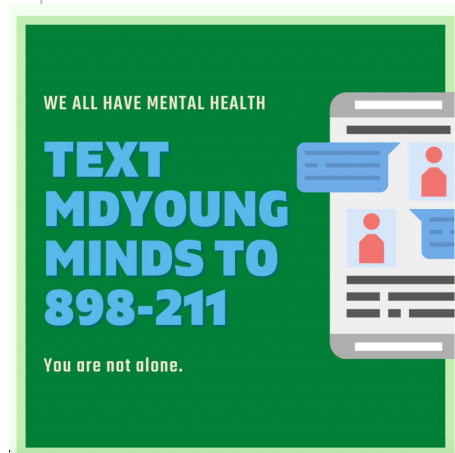


WE ALL HAVE MENTAL HEALTH

TEXT MDYOUNG MINDS TO 898-211

You are not alone.

Share Page

- Do I have depression?
- How do I get help for depression?
- Share the Infographic on Social Media

# Teen Depression: More Than Just Moodiness

Being a teenager can be tough, but it shouldn't feel hopeless. If you have been feeling sad most of the time for a few weeks or longer and you're not able to concentrate or do the things you used to enjoy, talk to a trusted adult about depression.

## Do I have depression?

- Do you often feel sad, anxious, worthless, or even "empty"?
- Have you lost interest in activities you used to enjoy?
- Do you get easily frustrated, irritable, or angry?
- Do you find yourself withdrawing from friends and family?
- Are your grades dropping?
- Have your eating or sleeping habits changed?

# Thank you!

_____

Contact:
hwilcox1@jh.edu

# Responsible Reporting on Suicide for Journalists

Live: May 18, 2022



https://www.coursera.org/learn/responsible-reporting-on-suicide-for-journalists/home/welcome