



The Road, Home: Challenges of and Responses to Homelessness in State Transportation Environments

Jacob L. Wasserman^{a,1}, Anastasia Loukaitou-Sideris^{b,2,*}, Hao Ding^{a,b,3}, Claire Nelischer^{a,b,4}

^a UCLA Institute of Transportation Studies, Los Angeles, CA 90095, USA

^b UCLA Luskin School of Public Affairs, Los Angeles, CA 90095, USA

ARTICLE INFO

Keywords:

Homelessness

Freeways

State departments of transportation

ABSTRACT

In recent decades, homelessness has become an increasingly major challenge in the U.S., reaching about half million unhoused people. Many of them seek shelter in settings such as freeways, underpasses, and rest areas. State departments of transportation (DOTs) are responsible for the health and safety of these settings and their occupants, housed and unhoused. This study synthesizes existing literature and findings from interviews with staff from 13 state DOTs and eight service providers and organizations responding to homelessness. Homelessness represents a recognized and common challenge for DOTs, which face jurisdictional, financial, and legal hurdles in addressing it. DOT staff employ both “push” and “pull” strategies, the most common of which is encampment removals (“sweeps”). However, the effectiveness of such removals is limited, as encampments often reappear in nearby sites. Other strategies include “defensive design” and, more proactively, establishing or partnering with low-barrier shelters, providing shelters and sanitation on DOT land, and coordinating rehousing and outreach efforts. Our findings suggest that DOTs should acquire better data on homelessness on their lands, create a homelessness coordinating office, establish formal partnerships with nonprofits/service providers, and evaluate the necessity of encampment removals, through the development and utilization of prioritization criteria.

1. Introduction

In recent decades, homelessness has become an increasingly major challenge in the U.S. Over half a million people per night lacked a regular roof over their heads in the U.S. in 2022 (U.S. HUD, 2022). While eviction moratoria and rental assistance may have slowed the growth of homelessness since the onset of the Coronavirus Disease 2019 (COVID-19) pandemic, they have generally expired (Capps, 2022; Cuellar Mejia et al., 2022; Vives and Smith, 2022). Thus, the human costs of homelessness have become more urgent and visible since the start of the pandemic.

The limited capacity of shelters and social service agencies to meet the needs of a rapidly growing unhoused population has forced many individuals experiencing homelessness to look for shelter in various

public spaces. Many turn to settings under the auspices of state departments of transportation (DOTs), including freeway and state route rights-of-way, under- and overpasses, rest areas, parking lots, maintenance facilities, and DOT-managed urban streets and sidewalks. The COVID-19 pandemic exacerbated these problems. The fear of infection in shelters and reduced shelter capacity due to physical distancing requirements drove unhoused people onto the streets and into transportation settings.

Thus, homelessness is also a transportation issue (Loukaitou-Sideris et al., 2020, 2021). Given the severe scarcity of affordable housing in many urban areas and the inadequacy of existing safety nets, state and municipal transportation departments are also confronted with issues of homelessness and should adapt and implement measures from policy realms outside of transportation to address them. Some are already

* Corresponding author.

E-mail addresses: jacobwasserman@ucla.edu (J.L. Wasserman), sideris@ucla.edu (A. Loukaitou-Sideris), haoding@ucla.edu (H. Ding), cnelischer@ucla.edu (C. Nelischer).

¹ ORCID: 0000-0003-2212-5798.

² ORCID: 0000-0003-0186-4751.

³ ORCID: 0000-0001-5286-3367.

⁴ ORCID: 0000-0001-9496-9178.

doing so. Their response is critical for the welfare of unhoused denizens but also for ensuring a safe, operational road network.

In this paper, we first synthesize the academic and professional literature on the extent of, challenges of, and responses to homelessness in DOT-managed settings. We then present the findings from our empirical work, which involved interviews or responses from representatives of 13 state DOTs and staff from eight nonprofits/partner organizations from seven different states. We synthesize the information gleaned from these interviews to describe the challenges faced in addressing homelessness, common responses, and opportunities for humane and effective actions. We conclude with a summary of our findings and reflections on paths forward.

2. Literature Review

2.1. Living on DOT land: Scope and Effects

Driven to take shelter near freeways by broader forces, such as unaffordable housing and accentuated poverty, an uncounted number of people experience homelessness on DOT land. We could not find published studies nor reports that count the numbers of unsheltered people near freeways and on DOT property, disaggregated from other locations, in different cities and states at a given point in time. State DOTs across the country, however, have noticed people taking shelter on their land, with 20 of 24 DOTs surveyed by Kraus et al. (2022) reporting usual, unauthorized encampments on their rights-of-way.⁵ In a 2018 survey, one third of adults experiencing homelessness in Minnesota had sheltered at a highway rest area or a transit vehicle, stop, or station in the past year (Pittman et al., 2020). Though some DOTs report that unauthorized sheltering on their land is less commonly observed in rural areas, the majority of DOTs surveyed by Kraus et al. (2022) reported no differences in issues of homelessness (and responses to them) in urban, suburban, and rural areas.

Studies of homelessness on public transit systems, a comparable environment, reveal that the number of unhoused people sheltering in transportation settings is higher than might be expected—but also varies by region, climate, season, time of day, transit hours of operation, and other factors (Loukaitou-Sideris et al., 2021; Ding et al., 2022). From 2005 to 2020, New York City's annual "point-in-time" (PIT) count found significant portions of the city's unsheltered population on subways; these ranged from a high of 62 percent of the city's unsheltered residents (8% of the overall unhoused population)—around 2,000 people—to a low of 19 percent of the city's unsheltered residents (4% of the overall unhoused population) (New York City Department of Homeless Services, 2012, 2020; New York State Comptroller, 2020; U.S. HUD, 2022; Loukaitou-Sideris et al., 2021). Hennepin County, Minnesota, home of Minneapolis, counted an astounding 72 percent of its unsheltered residents on transit vehicles or at transit stops (18% of the overall unhoused population) on one particularly cold night (Legler, 2019; Minnesota HMIS, 2020; U.S. HUD, 2022; Loukaitou-Sideris et al., 2021). Warmer places without nearly as many shelter beds per unhoused person, such as San Francisco and Los Angeles (U.S. HUD, 2022; Loukaitou-Sideris et al., 2021), observed much lower shares of unhoused individuals on transit, as measured before the pandemic, but they also had less comprehensive count data than Minneapolis and New York City (Caplan, 2020; U.S. HUD, 2022; Loukaitou-Sideris et al., 2021). During the COVID-19 pandemic, counts of unsheltered people rose on some transit systems like the Los Angeles County Metropolitan Transportation Authority (LA Metro) (LA Metro, 2021; Jones et al., 2022; Loukaitou-Sideris et al., 2021), but not on others like San Francisco Bay Area Rapid Transit (BART) (Chan, 2021; Loukaitou-Sideris et al., 2021).

⁵ Of the state DOTs both surveyed by Kraus et al. (2022) and contacted for this report (See Table 2), all of the overlapping DOTs answered "yes" to this question.

Surveys and counts show that those taking shelter on transit are more likely than their unhoused peers elsewhere to be chronically unhoused, be men, be Black, have low incomes, have been incarcerated, or have a mental illness (Loukaitou-Sideris et al., 2021; Ding et al., 2022; Wilder Research, 2019; Nichols and Cázares, 2011; Wiggins, 2017). As our interviewees reported (discussed below), the same is likely true of freeway environments. DOTs thus face particular challenges in responding to an especially at-need population on their land.

Freeway environments might offer certain advantages to unhoused individuals compared to residential or commercial settings (e.g., shelter from the elements under bridges, isolation from displeased housed neighbors, etc.). Additionally, group encampments can offer comparative benefits to their occupants, including providing a sense of safety and security, developing community, maintaining autonomy, and ensuring stability (Junejo, 2016). But freeway environments are also dangerous. Living close to freeways and major streets raises the chance of getting injured by an automobile (Bernhardt and Kockelman, 2021); for instance, seven in ten pedestrian deaths in Portland, Oregon in 2021 were of unhoused pedestrians (Portland Bureau of Transportation, 2022). Proximity to freeways also causes many adverse health impacts from the air and noise pollution that freeways generate (Mortimer et al., 2002; Wjst et al., 1993; Gauderman et al., 2007; Volk et al., 2011; Künzli et al., 2003; Wilhelm and Ritz, 2003). Additionally, encampments near freeways can create hazards for motorists and those in neighboring residences and businesses and also pose problems for DOTs, including threats to employee safety, damages to equipment and infrastructure, and unsafe debris, like needles, or refuse that may require specialized clean-up teams (Ricord, 2020).

2.2. DOT Responses and Challenges

Despite the significance of this issue, only a few studies directly address the specific challenges posed by homelessness in DOT rights-of-way and how DOTs can respond to them. A common theme identified in these studies is that DOTs may become more effective when they work with external partners in law enforcement, social services, and/or local government to respond to homelessness.

Bassett et al. administered a survey and conducted interviews with DOT staff from 25 U.S. states and from British Columbia in Canada (Bassett et al., 2013; Tremoulet et al., 2012). They found that 48 out of the total 69 staff respondents had themselves (or others at their agency) encountered homeless encampments as part of their work, and 27 said that their agency considered homelessness an operational challenge. A survey conducted by Washington State DOT of 18 other state DOTs found that only two reported not having any challenges relating to homeless encampments in their right-of-way (Ricord, 2020).

The aforementioned survey of DOTs by Kraus et al. (2022) found that their staff encountered three major issues: managing encampments and the people sheltering there, crime and lack of safety, and liability and legal concerns. Staff mentioned trash removal and sanitation at encampments as a particularly resource-intensive issue. Confrontations, drug use and dealing, mental illness, and lack of training to address them were also noted. Lastly, staff reported encampments recurring after clearance in the same areas or at another DOT-managed area nearby.

Some DOTs have implemented a number of strategies in response. One early study looked at how Florida DOT handled encampments in Sarasota in the path of a planned highway widening, forming a community impact assessment team, which worked with local law enforcement, the county parks and recreation department, and social service agencies (Potier-Brown and Pipkin, 2005).

In their surveys of DOTs, Bassett et al. (2013) and Kraus et al. (2022) found that relying on law enforcement agencies to remove encampments was the most common response. But many DOTs relying only on law enforcement to remove encampments often witnessed their reappearance in their previous locations (Bassett et al., 2013). In contrast, strategies that achieved a more long-term reduction in homelessness in DOT

environments employed partnerships between DOTs and both social services and law enforcement agencies and combined both “push” and “pull” forces (Bassett et al., 2013, p. 5). Law enforcement, on one hand, “pushes” encampment residents by setting firm deadlines for moving, imposing sanctions if they do not move, and implementing continued surveillance to prevent encampments from re-establishing. Social service providers, on the other hand, “pull” encampment residents by conducting outreach and case management and offering a pathway to temporary or permanent housing, employment, and other resources.

Ricord’s (2020) survey of 18 state DOTs identified two other common strategies, also spotlighted by Kraus et al. (2022). First, some DOTs have adopted a multi-agency approach, partnering with local law enforcement and social service agencies to remove encampments and clean up the sites, and also coordinating with municipalities and other government departments. DOTs also apply “defensive” design strategies to prevent camps from forming or re-forming. Examples include modifying the landscape to eliminate natural cover for camps, installing deterrents such as fences, walls, and other structures to keep people experiencing homelessness away from DOT properties, and vegetation management such as pruning and mowing to keep areas visible and clear.

Kraus et al. (2022) report that a few DOTs have considered using sites they control for homeless shelters, so as to stem the flow of unsheltered homelessness. However, none of the DOTs responding to their survey had begun such programs, citing sanitation, utility, security, and legal barriers. In the meantime, Washington DOT had turned a plot of their land into a sanctioned campsite for unsheltered individuals.

DOTs may already own homes on their land, purchased for stalled or canceled highways. In 2020 in the El Sereno neighborhood of Los Angeles, a group of housing-insecure and unhoused individuals occupied long-vacant homes owned by the California Department of Transportation (Caltrans), in the path of the canceled Interstate 710 extension. After protests, Caltrans allowed them to live in the homes for two years—but served them eviction notices in March 2023. The City of Los Angeles is developing a plan to purchase them as subsidized affordable housing, while the “reclaimers” are pushing for a community land trust to buy them instead (Castle, 2021; Dillon, 2021; Tso, 2022, 2023).

Table 1 lists “push” and “pull” strategies documented in the literature that DOTs, local governments, law enforcement agencies, and external partners adopt in response to homelessness on DOT-controlled land.

DOTs operate in a complex legal system. States and jurisdictions tend to have laws empowering DOTs or other bodies to prevent trespassing and misuse of public lands. At the same time, constitutional protections against illegal seizures; constitutional guarantees of assembly, travel, due process, and equal protection; and federal laws and orders on equity and environmental justice, among others, also affect and determine DOT responses (Kraus et al., 2022). Of note, the 2019 *Martin v. Boise* decision by the U.S. Ninth Circuit Court of Appeals disallowed blanket anti-

camping laws in Western states as unconstitutional cruel and unusual punishment, in the absence of available shelter beds (Harvard Law Review, 2019; Kraus et al., 2022)—though Missouri, not covered by the decision, banned sleeping on all public land, including highways (Olaidipo, 2023). Likewise, the patchwork of land ownership, jurisdiction, and enforcement responsibilities between DOTs, municipalities and counties (which may have their own laws on homelessness), and other government agencies complicates responses (Kraus et al., 2022). For instance, after an anti-camping initiative passed in Austin, a Texas DOT spokesperson disclaimed responsibility for addressing encampments on DOT land in the city, specifically those under DOT bridges (Garnham, 2021; Kraus et al., 2022). Finally, DOTs often face lawsuits over their enforcement and clearance strategies of unhoused individuals on their properties. In 2020, Caltrans reached a \$5.5 million settlement over discarding the belongings of people experiencing homelessness in their rights-of-way in Northern California; advocates sued Washington DOT in a comparable lawsuit in 2017. Caltrans also faced a lawsuit after a DOT worker operating construction equipment accidentally killed an unhoused woman after breaking various protocols (Gerike and Tracy, 2021; Kraus et al., 2022; Venteicher and Tracy, 2020).

2.3. Local Government Responses

DOTs are not the only public land owners on whose land unhoused individuals find shelter, nor are they the only public agencies responding to homelessness. Because DOTs often adopt and adapt strategies from other public agencies, we also review a broader literature of studies about these strategies. The approaches of entities such as the police and local governments may differ from those of DOTs in terms of the scope of their engagement, the resources that can be mobilized, and their objectives, not the least because they have different responsibilities, expertise, and funding. Nonetheless, DOTs can either learn from or be part of their strategies.

Guidelines on homelessness response for the Office of Community-oriented Policing Services at the U.S. Department of Justice recommend modifying the physical environment through defensive architecture, closing encampments, and opening resource centers. They also suggest creating specialized units with the necessary expertise and training to engage effectively with a variety of unhoused individuals. Other strategies discussed include regulating physical structures, installing public toilets, and upkeeping encampments, as well as promoting a “housing first” model (which prioritizes unconditional housing for people experiencing homelessness, as opposed to requiring treatment programs, sobriety, etc. for access to housing), and lobbying for more resources to address mental health and substance abuse. According to the guidelines, relying on law enforcement alone tends to only produce short-term effects and worsen the relationships between police and unhoused individuals and their advocates (Chamard, 2010).

Indeed, scholars have long pointed out the ineffectiveness of law enforcement in addressing homelessness. The past three decades have

Table 1
Strategies for Responding to Homelessness on DOT Land

	DOT Strategies	Local Government and External Partner Strategies
“Push” Strategies	<ul style="list-style-type: none"> • Clearance/displacement of encampments • Removal and no-trespass notices • Preventive maintenance • “Defensive” architecture/hardscapes 	<ul style="list-style-type: none"> • Clearance/displacement of encampments • Ticketing/monetary fines • Citations/arrests • “Defensive” architecture/hardscapes
“Pull” Strategies	<ul style="list-style-type: none"> • Accommodation of people/encampments in place • Arrangement for short-term shelter elsewhere • Arrangement for long-term housing elsewhere • Partnerships with homeless service providers to conduct outreach • Hiring a DOT staff coordinator or dedicated team for homelessness • Use of DOT land for building shelters • Sanctioned campsites on DOT land • Housing individuals in DOT-owned homes 	<ul style="list-style-type: none"> • Specialized staff/teams with outreach expertise • Upkeeping encampments/providing amenities like toilets • Resources for mental health and substance abuse • Resource centers • Low-barrier shelters • Providing/connecting to housing opportunities • Coordination among a diverse set of partners • Temporary shelters/“tiny homes” on surplus/vacant land near freeways • Sanctioned campsites near DOT land

witnessed increasing criminalization of homelessness in public spaces, including in many transportation environments and facilities. Jurisdictions intensified policing, adopted ordinances restricting activities associated with the unhoused population, and employed defensive design in public spaces. Policing of homelessness has been a common strategy employed by municipalities, business improvement districts, and transportation agencies. It has also intensified over time in more subtle ways: from dispersing homeless encampments, issuing citations, and making arrests in the 1980s and 1990s to relying more on “move along” orders, confiscating properties, making threats of arrests, and involuntarily committing unhoused individuals into psychiatric treatment in more recent years. Scholars have criticized these actions as ineffective because they only disperse or displace homelessness rather than reduce it. More recent policing may involve simply “shuffling burdens,” spatially and bureaucratically, to other departments and areas, without addressing the root causes of homelessness (Berk and MacDonald, 2010; Hartmann McNamara et al., 2013; Goldfischer, 2019; Herring, 2019; Ding et al., 2022). The use of defensive design (or “hostile architecture”), such as benches with middle armrests and ledges with spikes or metal studs, complements exclusionary ordinances and regulations to make public spaces less hospitable for the unhoused population (Petty, 2016; Rosenberger, 2017; Johnsen et al., 2018).

A 2020 study for the U.S. Department of Housing and Urban Development (HUD) examines how local governments and their partners in nine different U.S. cities are responding to encampments. In all, the mayor’s office or a relevant city department coordinates a diverse set of partner organizations. The study indicates that cities still address homeless encampments with a primary goal of removing them, though they often also offer services to help encampment residents (Dunton et al., 2021). In addition to enforcement actions alone, municipalities also engage in “clearance and closure with support,” requiring people to leave but aim to ensure that every encampment resident has somewhere to go (Dunton et al., 2021, p. 15). However, offers of shelter made to unhoused individuals under duress do not always turn out to be real or useful, especially if shelter placements are unavailable or very short-term. A major encampment clearance at Los Angeles’ Echo Park Lake in 2020 resulted in only 17 people placed in long-term housing one year later, of the 183 displaced in official statistics—with at least six deaths of displaced people (Roy et al., 2022). Other data from Los Angeles County show that under ten percent of unhoused people engaged by outreach staff as part of encampment removal operations ended up in temporary shelter, and under one percent reached permanent housing (Ray, 2022).

A newly popular local government strategy is the erection of “villages” often adjacent to freeways and composed of “tiny homes,” buildings the size and appearance of a shed with a single bed (or, increasingly, two beds for two people), with shared restrooms and laundry (Stevens and Fassbender, 2021; Walker, 2021; Plotnikova, 2022). Proponents praise this strategy for providing a roof cheaply and quickly and also giving a sense of control to unhoused residents (Stevens and Fassbender, 2021). However, activists and urban designers have criticized tiny home villages for creating unhealthy, polluted living conditions and for the heavy levels of surveillance and regulation (Plotnikova, 2022; Walker, 2022). Additionally, tiny homes in at least four locations in California have burned down, raising fire hazard concerns (Cuniff, 2022; Ionescu, 2022; Slayton, 2022; Walker, 2022). Since the onset of the pandemic, localities also have created sanctioned campsites, while traditional shelters reduced their capacity due to physical distancing requirements (Kraus et al., 2022).

Contrary to most strategies taken by local governments, Junejo (2016) argues that homeless encampments could offer benefits to their occupants, which alternatives like shelter or living alone unsheltered cannot offer. These may include providing a sense of safety and security, developing community, maintaining autonomy, ensuring stability, and increasing visibility. Encampment removals force some of their occupants to move to more remote locations, farther away from services and

police presence. They may have detrimental impacts on encampment residents’ emotional and psychological health and personal property. According to analyzed data, they are costly and have not been effective in reducing total unhoused counts. Though Junejo (2016) recommends that encampments only be removed if they pose true threats to public health and safety, he also concludes that encampments should only serve as a short-term solution: cities should aim in the long term to provide adequate and affordable permanent housing to their unhoused populations.

As demonstrated by the aforementioned studies, integrating outreach efforts is important and more effective in the long term in helping unhoused residents and addressing the negative effects of homeless encampments. Drawing on interviews and agency documentation, we discuss below how such efforts apply to DOTs.

3. Methodology

To gather data for this study, we collected information available online on state DOT websites and conducted two types of interviews. We interviewed a set of relevant staff from thirteen different state DOTs and a set of staff from eight external organizations involved in homelessness response on state DOT rights-of-way. These latter interviews included representatives of local, nonprofit homeless service providers, regional continua of care (the federally-mandated bodies that coordinate and fund homeless services and housing, often coordinated by municipal or county homelessness or housing departments), and advocacy organizations. A few of these nonprofits are established partners of DOTs, while most do not have formal collaborations but nonetheless operate in the same areas and serve unhoused populations. A few disagree with DOT approaches or oppose them in court.

3.1. Selection of Interviews

To select DOTs for our interviews, we first did an online scan of the official websites of the departments of transportation of all 50 U.S. states and the District of Columbia to look for documents, policies, guidelines, news, and other information about how DOTs are addressing homelessness within their rights-of-way. Only 11 DOTs had relevant information on their websites, as of October 2021. Additionally, we estimated the numbers of unhoused populations per 10,000 residents for all 50 states and the District of Columbia, using data from the 2020 “point in time” count⁶ (taken before the onset of the COVID-19 pandemic in the U.S.) and the 2020 U.S. Census (U.S. HUD, 2022; U.S. Census Bureau, 2020) (See Table 2). From these data, we identified that the District of Columbia, New York, and Alaska had the highest numbers of unhoused individuals per capita among jurisdictions without relevant homelessness information on their DOT websites (placing first, second, and seventh among all states). We expected that DOTs in these states face—and should respond to—homelessness frequently, so we added them to our sample (See Table 2). Finally, other DOT staff mentioned that Minnesota DOT pioneered criteria for the selection (prioritization) of encampment removals and was engaging in various response efforts. Thus, in addition to the 11 DOTs identified originally through our website scan, we added four DOTs, for a total of 15 from which we requested interviews. This set captures those DOTs that are responding to homelessness and/or particularly face it, but excludes DOTs that face homelessness at relatively lower rates and/or take fewer actions to respond to it.

For our interviews with nonprofits, service providers, and external stakeholders, we identified organizations in each of the 15 states that conduct work on homelessness in DOT-managed environments through

⁶ The annual count of people experiencing homelessness (both unsheltered and sheltered in temporary housing) in regions across the U.S., mandated by U. S. HUD (Loukaitou-Sideris et al., 2021).

Table 2
Characteristics of Contacted DOTs

State/Jurisdiction Contacted	Unhoused Population in Early 2020 (Pre-pandemic)	Unhoused Population per 10,000 Residents
Alaska	1,949	26.6
Arizona	10,979	15.4
California	161,548	40.9
Delaware	1,165	11.8
District of Columbia	6,380	92.5
Florida	27,487	12.8
Hawai'i	6,458	44.4
Indiana	5,625	8.3
Minnesota	7,940	13.9
Nevada	6,900	22.2
New Mexico	3,333	15.7
New York	91,271	45.2
North Carolina	9,280	8.9
Oregon	14,655	34.6
Washington	22,923	29.8

Data sources: U.S. HUD, 2022; U.S. Census Bureau, 2020

a purposive sampling process that began with a web search and was followed by e-mail outreach, conducted between January and February 2022. In some cases, we used snowball sampling from both DOT and external partner staff referrals to identify other relevant organizations to interview.

3.2. Data Collection

We contacted staff at the selected DOTs by searching their websites and online for contact information and asking for a referral to the staff person/people most involved in homelessness response. We conducted oral interviews with seven of these DOTs from December 2021 to May 2022 (including multiple interviews with different divisions at DOTs and some follow-up questions thereafter), while six additional DOTs sent us written responses to our questions. We did not hear back from two DOTs.

We interviewed a total of eight external organizations, representing seven states. We conducted e-mail outreach to organizations from five other states but were unable to secure interviews from them. In both cases, the pandemic made staff extremely and understandably busy.

The study team conducted semi-structured interviews with one or more representatives of each of the DOTs and service providers/nonprofit organizations, with the goal to understand their organizations' experiences with and approaches to homelessness in DOT-managed spaces. Interviews were held over Zoom video conferencing and lasted between 30 and 60 minutes. We asked interviewees a series of pre-established questions, which focused on the nature and extent of unsheltered homelessness in DOT-managed spaces; organizational responses to encampments and their removal; relationships and collaboration between state DOTs, law enforcement, and social service agencies; challenges encountered; and desired approaches to homelessness. During the interviews, the study team asked additional, unstructured follow-up questions to clarify some responses. We recorded (with the permission of the respondent) and transcribed interviews, and in some cases, we followed up with respondents by e-mail to clarify responses, request additional information or documents, or seek referrals to other organizations. Representatives from six DOTs requested that we submit our questions in writing and sent us back their written responses.

3.3. Analysis

We analyzed interviews using a thematic analysis approach, reading and reviewing interview transcripts and noting down emergent themes. Following an initial review of the data, we summarized each transcript by applying to the data *a priori* codes from a standard summary template

developed by the study team, which closely followed the structure and questions of the interview protocol. We then analyzed these summaries using an open coding process, in which codes were developed based on meaningful concepts emerging from the interview data and then applied and refined over time. The coding terms and concepts are summarized in Table 3. Coding was completed by a single coder and reviewed by the study team. Codes were classified into categories and finally reduced into themes that reflected similarities, patterns, and insights observed across interviews.

4. Findings

In the sections that follow, we summarize findings from our scan of DOT websites and our interviews on the challenges presented by homelessness in DOT environments, the "push" and "pull" responses that DOTs engage in, and the types of responses that service providers would like to see in the future.

4.1. Available Information Online

Our scan of the official websites of DOTs of all 50 U.S. states and the District of Columbia revealed the varied degrees of engagement of DOTs with the unhoused population. Our search showed that eleven DOTs published information about how they approached the issue of homelessness. Such information mostly acknowledges that there is a need to address the problem of homelessness and encampments on DOT rights-of-way in particular, which interfere with the daily operation of DOTs. Some DOTs published policies and protocols for addressing homeless encampments, the most common approach for which was encampment removal. These policies, while intended to guide the removal of encampments, also emphasize the need to ensure the safety of DOT personnel and encampment residents, as well as the need to balance the rights of encampment residents and the function and maintenance of transportation infrastructure. Some DOTs also mention partnerships or collaborations with other agencies and organizations or report on efforts to reduce encampment numbers and recurrence.

On the whole, though, little information on homelessness response among DOTs is publicly available across all states, with the posted information spotty even among those DOTs with available documentation. We turn next to our findings from interviews with staff at DOTs facing homelessness and/or implementing these policies.

4.2. Issues and Challenges

4.2.1. Characteristics of and Data about Encampments

The existence and, in some cases, proliferation of encampments poses a challenge for each of the DOTs interviewed. Interviewees noted safety concerns and crimes at encampments, including assaults, selling illicit drugs, prostitution, and even trafficking. With flammable refuse and makeshift shelters common, encampment fires also pose a particular danger to individuals and infrastructure, especially in areas where fires can grow and spread quickly.

Our interviews revealed that encampment locations share some common characteristics. First, encampments tend to be in spaces sheltered either by physical infrastructure, such as bridges and freeway overpasses, or by vegetation and landscaping, such as in wooded areas. Second, encampments tend to be in locations proximate to services and opportunities needed or frequented by people experiencing homelessness. As a result, encampments are more common in urban areas, where those services and opportunities are more easily accessible. Given the variation in the conditions of these locations, the sizes of individual encampments vary considerably: those under freeway overpasses may be as small as a few tents, while those in large, vacant properties, often shielded by vegetation, can reportedly grow to as big as a hundred tents. Encampments tend to be less common in areas with harsh climatic conditions, like Alaska, where living unsheltered outdoors is not

Table 3
Code Summary

Interview Type	<i>A Priori</i> Codes	Concepts
	Based on Interview Protocol	Emerging from Interview Data
State DOTs	<ol style="list-style-type: none"> 1. Encampments <ol style="list-style-type: none"> 1.1. Extent, size, and location 1.2. DOT policies and data collection 1.3. Removals/sweeps (frequency, location, processes, outcomes, etc.) 1.4. Challenges 2. Partnerships (with local governments, nonprofits, and social service agencies) 3. Outreach efforts 4. Impacts of COVID-19 (on homelessness, encampments, and DOT response policies) 5. Successes and alternatives (policy effectiveness and possible alternative responses) 6. Costs and funding 	<ol style="list-style-type: none"> 1. Encampments <ol style="list-style-type: none"> 1.1. Extent, size, and location <ol style="list-style-type: none"> 1.1.1. Fluctuating size of encampments 1.1.2. Locations tending to be sheltered and near services 1.2. Lack of data collection 1.3. Removals/sweeps <ol style="list-style-type: none"> 1.3.1. Similar protocols for removals/sweeps across DOTs 1.3.2. DOTs differing in prioritization and level of engagement 1.4. Challenges <ol style="list-style-type: none"> 1.4.1. The “service-resistant camper” 1.4.2. The long and complicated path to housing 1.4.3. The problem of multiple jurisdictions 1.4.4. The time-limited nature of pandemic measures 1.4.5. Lack of funding and staff 1.4.6. Extreme weather conditions in some states 1.4.7. Increasing pressure for freeway maintenance, repair, and reconstruction 2. Partnerships <ol style="list-style-type: none"> 2.1. Rarity of formal partnerships 2.2. Common presence of some form of coordination 3. Outreach efforts <ol style="list-style-type: none"> 3.1. Few DOTs conducting outreach activities 3.2. Mixed results from experiments to contract out outreach to third parties 4. Impacts of COVID-19 <ol style="list-style-type: none"> 4.1. More encampments due to reduced shelter capacity 4.2. Removals/sweeps generally paused at the start of the pandemic but most later resumed 4.3. Some success in placing encampment residents into shelter/temporary housing using pandemic relief funding 5. Successes <ol style="list-style-type: none"> 5.1. Project Off-ramp 5.2. Statewide coordinating office/system 5.3. Partnerships with outreach agencies 6. Costs and funding <ol style="list-style-type: none"> 6.1. Limited funding and funding restrictions
Service Providers/ External Organizations	<ol style="list-style-type: none"> 1. Description (of the agency and its role in addressing homelessness) 2. Partnerships (with DOTs and other entities) 3. Encampments <ol style="list-style-type: none"> 3.1. Extent, size, and location 3.2. Characteristics of occupants 3.3. Impacts of COVID-19 4. Removals/sweeps (agency involvement and outcomes) 5. Challenges (in addressing homelessness) 6. Successes (in addressing homelessness) 7. Desirable approaches (and strategies to address homelessness) 	<ol style="list-style-type: none"> 2. Partnerships <ol style="list-style-type: none"> 2.1. Few partnerships 2.2. “We don’t want to be seen as true partners” 3. Encampments <ol style="list-style-type: none"> 3.1. Extent, size, and location influenced by local context 3.2. Characteristics of occupants <ol style="list-style-type: none"> 3.2.1. Increase in family homelessness 3.2.2. Prevalence of mental health and substance use issues 3.2.3. Overrepresentation from communities of color 3.3. Impacts of COVID-19 <ol style="list-style-type: none"> 3.3.1. Heightened visibility 3.3.2. “It brought us all to the table” 3.3.3. Low-barrier shelter space 4. Removals/sweeps <ol style="list-style-type: none"> 4.1. Little coordination with DOT 4.2. “How much can we advocate about tweaking a system that we believe to be inherently harmful?” 5. Challenges <ol style="list-style-type: none"> 5.1. “Common myth about the service-resistant camper” 5.2. “Spectrum of need” among the unhoused 5.3. “Confusing patchwork” of land ownership 5.4. “Shell game of people” 5.5. “Outreach is only as good as the resources on the back end” 7. Desirable approaches <ol style="list-style-type: none"> 7.1. “Homelessness is everybody’s issue” 7.2. Ensuring safety while avoiding displacement 7.3. “Get everyone to the table” 7.4. “Housing is the answer to homelessness”

possible for several months of the year. For areas with milder climates, the total numbers of encampments and the sizes of individual encampments can also fluctuate significantly over the course of the year due to changing weather conditions; encampments are usually fewer and smaller during the winter months.

Such fluctuations—and a lack of resources, staff, and priority—make it challenging to keep accurate data about encampments. Many DOT staff indicated that they were generally aware of where encampments were located within their right-of-way but did not keep track of their total numbers and did not have more detailed data about individual encampments' locations, size, etc. A few DOTs, such as Caltrans, the Indiana DOT (IndOT) and the Minnesota DOT, keep track of such data to monitor encampments, but the level of collected information and detail varies.

Such examples notwithstanding, many DOTs lack detailed counts, and most interviewees from both state DOTs and nonprofits and service providers could not accurately describe the characteristics or numbers of those living in encampments on DOT properties. But speaking anecdotally or in broad strokes based on recent PIT counts, many respondents referenced a high prevalence of mental health and substance use issues amongst those living in encampments and an overrepresentation of Black and American Indian individuals and other people of color among their occupants. Several respondents also noted an increase in family homelessness in recent years.

One trend most interviewees noted is the recurrence of encampments or individual shelters in the same or nearby locations after their removal. As DOT budgets are limited and cannot always secure areas through infrastructural improvements, many spaces for encampments remain accessible, including areas with relatively good shelter and proximity to resources where encampments may particularly recur.

4.2.2. Impact of the Pandemic

Interviewees noted many negative impacts of the COVID-19 pandemic on homelessness in DOT environments. The most mentioned effect was reduced capacity at shelters broadly and at particular partner shelters of DOTs, which created upward pressure on the number of people experiencing homelessness and living unsheltered on DOT rights-of-way. However, because of the lack of data, interviewees generally could not quantify these impacts. Encampments became more visible, as many DOTs, at least for a time, followed Centers for Disease Control and Prevention (CDC) guidance to leave people in encampments who had no alternative individual housing options (CDC, 2020). DOTs reduced enforcement activities and paused encampment removals during the first months of the pandemic. According to an interviewee from the Oregon Law Center, "Because the CDC guidance has required that people remain in place, it's less of a hidden problem than it has been before. It's harder for people who are not immediately impacted to look away."

Deeming the emergency conditions of the initial pandemic to have ended, most DOTs, according to our interviewees, have resumed enforcement efforts—although the CDC's published guidance has not substantively changed since mid-2020, as of this writing (CDC, 2020, 2022).

4.2.3. The So-called "Service-resistant Camper"

Many interviewees from state DOTs noted that encampments often return after they are removed, because many individuals living in encampments are not absorbed into the shelter system. Short-term shelters may have restrictions, discussed further below, that make them unpalatable or unavailable to some individuals sheltering on DOT land. Additionally, some people experiencing homelessness suffer from mental health issues and substance dependence, which, per interviewees, interfere with their ability to respond to outreach. Moreover, rarely do offers of shelter include long-term housing or even a clear path to it. Thus, even with intensive outreach, some encampment residents do not accept offers of shelter and other services and instead move to a different encampment after a removal, either on DOT right-of-way or on

other public lands.

Intake systems and service providers may label these individuals as "service-resistant." Some interviewees from state DOTs suggested that whether these individuals accept services depends not on what a DOT does but what the social service agencies can offer. Likewise, poor past experiences of unhoused individuals with particular service providers can lead them to refuse to accept services, and conversely, poor past experiences of service providers with particular unhoused individuals can lead them to refuse requests to follow up with those individuals, as a DOT staffer with outreach experience recounted.

Indeed, many interviewees from nonprofits and service providers pointed out that there is a pervasive mismatch between the "spectrum of needs" of people experiencing homelessness, as one interviewee put it, and the actually available shelter, housing, and related resources. Mental health, trauma, and substance abuse issues may make staying indoors and at congregate settings untenable for some. Others may be unable to access shelter options, given family composition (e.g., a couple or a parent and adult child), pet ownership, or sex offender status. Site-specific rules like curfews at shelters can result in a loss of autonomy for residents. Individuals working at night may not be able to enter a shelter space following their shift.

This mismatch may have been overlooked because of the "common myth about the service-resistant camper," as an interviewee at a social service organization characterized it. The narratives that describe people experiencing homelessness as reluctant to accept help mask the many complex reasons why they might be unwilling or unable to access available shelter options and other services. As the interviewee from the Oregon Law Center reflected:

"We fool ourselves into thinking that people have a choice in the matter, because we hold up a tent under a freeway bridge versus a cot in a congregate shelter as the options, but what we don't take into account is that those options are not functionally accessible for a lot of people. There are a lot of reasons why someone might feel safer in the community of their campsite versus not only their physical safety [but also] their emotional or mental health safety and their public health in a pandemic safety...being in a congregate shelter."

4.2.4. Coordination across Multiple Jurisdictions

The most persistent encampments tend to be located in areas abutting multiple jurisdictions. According to an interviewee, this "confusing patchwork" of land ownership on and near DOT-owned properties has become a unique challenge to addressing encampments. It can be difficult for staff to understand if land is owned by the DOT, a city, a private utility, a transit agency, or another owner, which can make determining responsibility for encampment response difficult. This is especially true as responsibility and ownership may be divided in complex ways at under- and overpasses and in areas with easements. In such circumstances, coordination among affected jurisdictions on responsibilities, field operations, and cost-sharing can become very complicated. This need for coordination between nearby jurisdictions creates a "shell game of people," according to one homelessness agency interviewee. When one agency removes an encampment, its residents often simply move to a nearby spot in a different jurisdiction.

4.2.5. Funding and Resources

In circumstances where service providers are able to conduct outreach to encampment residents in advance of an encampment removal, interviewees from these organizations emphasized the importance of ensuring that appropriate funding and resources are available to address the needs of encampment residents. Without available, accessible, low-barrier shelter spaces and long-term investments in affordable housing to meet demand, interviewees at external and partner organizations tended to view any short-term expenditures of time and financial resources for encampment outreach as a waste of scarce resources. As one interviewee from the Los Angeles

Table 4
Counts of Strategies Mentioned

DOT Strategies		Number of DOTs (out of 13) Mentioning the Use of Such Strategies
“Push” Strategies	Clearance/displacement of encampments	12
	Preventive maintenance, “defensive” architecture/hardscapes, and/or no-trespass notices	9
“Pull” Strategies	Accommodation of people/encampments in place	5
	Arrangement for short-term shelter elsewhere	2
	Arrangement for long-term housing elsewhere	2
	Collaboration/coordination with homeless service providers to conduct outreach	9
	Hiring a DOT staff coordinator or dedicated team for homelessness	2
	Housing individuals in DOT-owned homes	1

Homeless Services Authority (LAHSA) commented, “Outreach is only as good as the resources on the back end.”

Even as funding became available in many areas during the pandemic for purchasing or renting hotels/motels to expand shelter/temporary housing capacity, concerns remained about the stability and longevity of such resources. Some interviewees were worried about what will happen after such programs end. Likewise, DOT funding sources often have restrictions on how they can be spent, and many non-infrastructure responses to homelessness have political or legal difficulties securing funding eligibility.

4.3. Responses: “Push” Strategies

Faced with these challenges, state DOTs have begun responding to homelessness through formal programs and informal practices. While efforts even among the set of relatively more engaged DOTs in our sample are often still nascent or scattered, interviewees described a variety of “push” and “pull” responses, in various stages of development and deployment. Table 4 counts strategies mentioned by the interviewees at the 13 responding DOTs.

4.3.1. Encampment Removal

The discussion was dominated by one most prominent response: encampment removal (characterized by external organizations and advocates as “sweeps”), the expulsion of unhoused people from DOT property under legal or physical force or the threat thereof. According to interviewees, removals follow the following steps:

- An encampment is usually identified from police reports, public complaints, and/or DOT staff reports during maintenance or inspection operations.
- DOTs often notify outreach providers first, directly or through police or local municipalities, and give them some time to engage encampment residents and offer services and assistance.
- DOTs then post official notifications about eviction or encampment removal prior to the actual removal day.
- On the day of removal, DOT staff and/or law enforcement officers enforce the removal of people from the site, and then DOT staff and/or contractors clean the site and collect trash, debris, and hazardous materials.
- After the removal of the encampment, DOTs often seek to secure the sites using fences, locks, etc. or employ defensive designs to prevent encampments from returning.

Most DOTs request law enforcement to be present, at least on the day of the removal, to engage with anyone still at the site. According to most interviewees, though, this is rarely the case: whether due to earlier social service engagement, police interactions, or simply the notices themselves, staff report that encampment residents tend to have left by the actual removal date—though the same individuals or others may end up returning to the same spot later. Most DOTs offer to store personal belongings for a period of time for free, though a staffer at InDOT did not

recall anyone actually retrieving their belongings after a removal. The cleaning process can extend longer and often involves DOTs bringing in hazardous materials contractors. Because of specialized costs like these, law enforcement time, etc., encampment removal can prove expensive: in Southern California, the largest encampments can cost \$300,000 to \$400,000 to clear, according to interviewees. Pre-pandemic, Caltrans’ expenses for clearing encampments reached \$10.04 million in Fiscal Year 2017, 34.2 percent higher than the previous year (Caltrans Division of Maintenance Office of Strategic Management, 2018).

The above process varies among DOTs in two aspects: presence or absence of prioritization criteria and level of engagement. Some DOTs, facing the challenge of addressing a large number of encampments using limited resources, adopt a prioritization strategy for encampment removal. Prioritization is often based on perceptions of health and safety risks for encampment residents, interference with traffic flow and risks of traffic accidents, damages to transportation infrastructure, and interference with scheduled construction and maintenance work. Seven of the interviewed DOTs prioritize encampment removals in some way; two of these DOTs have a formal policy with a tiered prioritization scheme, pioneered by Minnesota DOT. The scheme categorizes encampments into high-, medium-, and low-priority sites based on the size of the encampment and its impacts on important infrastructure and the surrounding community, as well as the safety and health risks associated with the encampment, as assessed by DOT staff.

Five other interviewed DOTs, in Oregon, Indiana, Delaware, Washington, and Alaska, lack a formal tiered policy but informally prioritize encampment clearance, mostly based on safety and health risks. When asked about whether they prioritize encampments for removal, an Oregon DOT staffer responded, “in reality, yes, but formally, no, because they are all illegal.” This demonstrates that the underlying impetus for prioritization plans is, in large part, a lack of resources to address all encampments, rather than a concerted policy to accommodate unhoused people in place on DOT land. These plans, if executed as intended, do serve to move DOTs away from complaint-driven responses. But especially in smaller states and states with lower rates of unsheltered homelessness, DOTs instead attempt to clear any encampment brought to their attention.

The extent to which DOTs employ external social service partners in pre-removal outreach and what services and housing they offer varies. While all other interviewed DOTs refrain from having their own staff engaging with encampment residents in person, Hawai’i DOT staff are actively involved in outreach (discussed further below). LAHSA receives a weekly list from Caltrans about priority encampment locations and sends outreach teams to offer services and resources to residents in advance of encampment removal, as part of an agency agreement. Less formally, Partners in Care O’ahu has frequent and ongoing communication with Hawai’i DOT regarding issues or needs at encampment sites. In most cases, there is no formal partnership between DOT and service providers, so most service providers are typically instead contacted by the local municipality or police in advance of a removal.

Moreover, the amount of notice time and the form of notice given to encampment residents varies significantly: some are comparable to an

eviction notice required to evict a resident of an actual housing unit, while others are less stringent. Often, no notice is required for a subsequent removal action on the same site. Some service providers told us that they may learn about a removal only during or after it has occurred, if notified by residents or advocates. The last statement contradicts what we heard from interviews with staff from these DOTs, who insisted that they notify outreach agencies and service providers as part of the encampment removal process.

4.3.2. Infrastructure “Hardening” and “Defensive” Design

A few interviewees from state DOTs also mentioned that they employ preventive maintenance, defensive design/“hostile architecture,” and hardscaping. While post-removal cleaning may also include projects to restore streams or wetlands, reverse or prevent erosion, add plants for beautification purposes, etc., these particular infrastructural strategies aim to block off areas from access and/or make it uncomfortable to shelter there. Defensive design, including fencing, walls, rocks, bushes, etc., discourages people without shelter from coming back and re-occupying former encampment sites. These longer-term infrastructural strategies are not as common as encampment removals. Some DOT interviewees noted that their department pursues such strategies only for spaces that can be effectively secured (e.g., fully fenced off) and only if resources are available.

4.4. Responses: “Pull” Strategies and Innovative Practices

Many interviewees, including DOT staff, admitted that conducting encampment removals does not address the root causes of homelessness and hence often results in moving encampments around rather than reducing the numbers of unhoused individuals on DOT properties—much less in helping those individuals. But a few DOTs offer case studies of innovative practices that have led to more positive outcomes. We discuss some of these practices below. We do not necessarily recommend them as “best practices” per se, as they may have some flaws and limitations, but among DOT practices in effect today, the examples below offer definite promise.

4.4.1. DOT Office/Dedicated Staff for Homelessness Coordination

Only two DOTs of those interviewed, in Hawai‘i and California, have established a special office within their agency that coordinates their homelessness response. Led by a homelessness coordinator/lead, this office interacts with other public agencies and nonprofits involved in homelessness response; its staff may even undertake outreach to unhoused individuals themselves.

The homelessness coordinator at Hawai‘i DOT works closely with a homelessness coordinator at the governor’s office and is part of an Interagency Council on Homelessness with other state agencies like the Department of Land and Natural Resources. Together, they have developed consistent strategies and written documentation on homelessness response on all public land; organize outreach, shelter, and other homeless services (with external partners); and conduct cleanup of sites and storage of belongings. Hawai‘i DOT’s coordinator personally actively engages with individuals living in encampments and over time has developed strong relationships with them. This has proven to be an important factor for some individuals classified by other service providers as service resistant to accept help and move into shelter and housing.

Similarly, Caltrans has established a homelessness coordinator program, which assigns a coordinator in each of the agency’s districts and has statewide coordination staff. District coordinators organize all aspects of encampment response and serve as the primary contact for external partners and internal staff in various departments (Caltrans Division of Maintenance, 2023). In Southern California, the region’s coordinator’s office partners with LAHSA to offer street medicine and case management to unhoused individuals camping on DOT properties.

In such a large state as California, the effectiveness of such

collaborations varies in different regions, as some service providers are overwhelmed or unresponsive. Staff in Hawai‘i noted that working in a small state, where DOT staff and even leadership can conduct personal outreach and become familiar with particular people and locations, lies behind their success. Nonetheless, while the same ground-level model may be more challenging in a larger state, having a coordinator’s office is important for the opposite reason: establishing consistency across a complex and subdivided bureaucracy and promulgating guidelines like encampment response prioritization schemes, discussed above.

In addition to state and district homelessness coordinators, Caltrans launched its Housing and Homelessness Solutions Program in March 2022. The initiative’s planners will consider ways for Caltrans to work with other entities to prevent homelessness in the first place, through upstream interventions such as displacement protection around transportation projects and coordinated community investments.

4.4.2. Low-barrier Emergency Shelters

Another response, employed particularly during the pandemic, is the opening of low-barrier emergency shelters. Many interviewees stated that public agencies or external partners in their state had opened low-barrier shelters or that they wished more were available. In part, these shelters opened because of the need to reduce capacity at congregate shelters to adhere to physical distancing requirements. Often converted motel and hotel rooms, as in California’s Project Roomkey, some of these shelter spaces that were opened in many communities during the pandemic are still operating at the time of this writing. Though state law restricts Caltrans from providing housing directly, the agency has set up leases at a number of these emergency shelters. While such shelters are typically part of broader efforts of homelessness agencies and organizations unconnected to DOTs, in some cases, DOTs, in collaboration with other agencies, have been able to place encampment residents into them. And while one DOT interviewee noted the expense of these projects, federal pandemic relief funding has covered or reimbursed much of their cost.

Many interviewees from nonprofits and service providers emphasized the importance of these spaces in providing much-needed, low-barrier shelter space. They noted an increased uptake amongst unsheltered individuals who might otherwise be unwilling or unable to access conventional shelter space, particularly at some religiously affiliated, drug-free, or other more restrictive shelters. Some saw this as evidence of the ongoing need for and impact of low-barrier shelter space and other “housing first” approaches that can accommodate people of various needs, identities, and family configurations.

4.4.3. Shelters and Sanitation on DOT Land

In 2020, the governor of California directed state land-owning agencies, including Caltrans, to identify surplus or underused parcels that could be used for emergency shelter (Mizes-Tan, 2020), by leasing them to or otherwise arranging their use by a housing agency or organization. Unlike the examples above, this strategy represents a more proactive measure. However, its implementation may run into issues. In Delaware, for instance, a proposal to use a publicly owned parcel next to a highway for shelter and/or longer-term supportive housing was not approved by the legislature, due, according to a partner interviewee, to dispute over whether to use it for mental health treatment instead. In Minnesota, the DOT rejected the idea, because the potentially available parcels were too far from population centers, service providers, and unhoused individuals’ support networks and because the logistics of security, disability access, etc. for the sites were daunting. On the other hand, as the interviewee from Delaware noted, these potential locations had fewer neighbors who might object to and obstruct their use as shelters. All told—with the appropriate, central locations and the help of housing/shelter providers—at least some DOT surplus land may have promise for sheltering unhoused people.

On a smaller scale, DOTs and municipalities have provided sanitation services to unhoused people on DOT land. Minnesota DOT, for

instance, removes trash from encampments on their land, on a growing basis and not as part of an encampment removal. Our interviewee at Minnesota DOT reported that doing so, while requiring resources, helps avoid the much greater expenses of cleaning up a long-term, previously uncleaned encampment after a full clearance. The DOT receives support in this effort from municipalities, which collect needles, distribute Narcan kits at encampments to reverse the effects of opioid overdoses, and set up containers for needle disposal, portable restrooms, and hand-washing stations, especially during the pandemic.

4.4.4. Project Off-ramp

Project Off-ramp was a partnership between the City of Fresno in central California, Caltrans, and California Highway Patrol to address homeless encampments along freeways during the pandemic. Prior to the initiative, homelessness along freeway rights-of-way was common and dangerous to encampment residents, with three traffic fatalities occurring within a two-week period and 618 fires in 2020 (Miller, 2021).

This project offered individuals living in encampments individual rooms in triage centers (temporary, low-barrier shelters adapted from a model from San Francisco, with pets, partners, and possessions allowed; no curfews; and intensive services), converted from motels and purchased by the City using federal pandemic relief money. Those placed in the motels can stay there up to two years, with a typical duration of 90 days. The City was, as of this writing, converting some triage centers to permanent affordable housing units to increase the local affordable housing stock and ensure that there is sufficient stock for individuals experiencing homelessness to transition into.

The City contracted with a nonprofit organization for 18 frontline outreach workers, some themselves formerly unhoused, to work with unhoused residents. After outreach was conducted in different sectors, residents were referred to housing, and a notice of at least a week was given (longer than the previous typical Highway Patrol notice of three days), Highway Patrol cleared the section and thereafter enforced no camping along it. Caltrans then conducted repairs and repeated the process at other sites.

According to city staff interviewed, the project had about an 80 percent acceptance rate (individuals placed into temporary housing), a marked increase from before, and about a 50 to 60 percent safe exit rate (individuals exiting the triage centers into permanent housing). However, staff noted that a few individuals who did not transfer into Project Off-ramp shelters moved from one freeway section to another, as each encampment was cleared. Others moved elsewhere in Fresno—at least away from the dangers of the freeway, as staff characterized it. Through this project, all encampments on Caltrans' right-of-way were cleared and about 500 individuals were relocated and placed into temporary housing.

This success comes with some caveats. For one, the motel conversions and services were funded by one-time federal pandemic relief funds. While staff characterized the situation along freeways as much improved compared to before the pandemic, the flow of homelessness means that this may not last, without additional funding and repeat outreach efforts. Moreover, complaints from housed residents, not a safety-based prioritization scheme, prompted Project Off-ramp, according to staff and media reports (Price, 2021), and the project also faced pushback from state public health officials wanting to abide by CDC guidance and leave encampments in place. In the end, the program succeeded in sheltering higher numbers of people and offering a clearer path to longer-term housing than other efforts, using trained, unarmed outreach, and convening a coalition of different agencies. Nevertheless, the reliance on enforcement strategies and blanket clearance merits some pause.

4.4.5. InDOT's Partnership with Horizon House

InDOT in Indiana has contracted with Horizon House, a homeless service provider, for outreach in the Indianapolis area. Under the

contract, Horizon House is responsible for conducting outreach and coordinating efforts among different service agencies on behalf of InDOT, when InDOT determines the need to clear an encampment in their right-of-way. InDOT pays for one full-time Horizon House employee working on this task and part of this employee's manager's salary. This partnership has achieved some modest positive outcomes: between ten and 50 percent of individuals living in targeted encampments were placed into temporary housing.

In contrast, Minnesota DOT had a pilot program that established a similar partnership with a nonprofit outreach agency, but the program was not continued because "it didn't really significantly change response times and benefits," according to our interviewee. Nonetheless, the comparable contracting arrangement at InDOT allowed the DOT to have a trained outreach worker effectively on call, while also still connecting to the broader resources and experience of the service provider.

4.5. Desirable Approaches: Views from the Service Providers

While we highlighted several innovative practices that some state DOTs have employed, we also note that the role of DOTs is often limited and that collaboration and coordination with other organizations are critical to better outcomes. While echoing the need for a more coordinated and comprehensive approach to homelessness, interviewees from nonprofits and service providers also urged DOTs to play a bigger role. Below, we relay their recommendations.

- *Homelessness is everybody's issue*

Respondents from nine out of 13 state DOTs emphasized that they are a transportation agency rather than a social service agency, so dealing with homelessness is beyond their responsibility, expertise, and resource constraints. As one interviewee from Caltrans contended, "[Homelessness] is a social issue that we are not used to"; another noted, "We're experts in transportation and infrastructure, but [for] housing, we just don't know what to do." An interviewee from Minnesota DOT noted their dependence on other agencies for outreach activities: "People finally getting the level of support that they need is really important... [Yet,] simply because we don't do the more social-services side of it, it has to occur at the city and county level." Interviewees from New York DOT cited violent incidents which resulted in their practice to completely avoid engagement with encampment residents.

In contrast, all interviewees from service providers and nonprofits believed that DOTs have a role and responsibility in addressing homelessness on their properties. On a practical level, because people are taking shelter on DOT land, DOTs must respond in some way, regardless of their capacity. But on another level, some external interviewees emphasized that, despite DOTs' constraints, DOTs should consider how transportation and homelessness are intertwined and respond accordingly. An interviewee from LAHSA emphasized that "homelessness is everybody's issue. We are all accountable and responsible for it."

- *Get everyone to the table*

Because the presence of homelessness, its intersecting policy realms, and responsibility for addressing it are each incredibly widespread, it is important to get all relevant parties involved and invested for responses to be effective. As an interviewee from the Alaska Coalition on Housing and Homelessness argued, "We really just need that top-level coordination to get everyone to the table." Interviewees viewed such a coordinated approach as important in addressing the existing fragmented landscape of homelessness and corresponding housing responses. As we have discussed, state DOTs tend not to play a central role in coordination, even in cases where they are actively engaged in a coordinated effort to address homelessness, such as in Project Off-ramp and in Hawai'i's statewide effort. Yet, service providers and advocates generally expressed support for DOTs to assume a stronger role as

coordinators and collaborators in region- or statewide responses to addressing encampments on their properties, including by bringing together service providers, policymakers, and local authorities to develop standard protocols and plans.

Some interviewees emphasized the need for DOTs to build partnerships with local service providers in particular, given that nonprofit organizations are already, in the words of a nonprofit interviewee from North Carolina, “engaged and doing this work. We know the resources on the ground; we’ve been watching the patterns over the years.” While previous research and our interviews found many partnerships between homeless service providers and other service agencies, local government, and local law enforcement, partnerships with state DOTs appear uncommon. Of the eight service providers interviewed, only LAHSA has a formal partnership (letter of consent) with the state’s DOT, while Partners in Care O’ahu has a collaborative relationship without a contractual agreement. Because of restrictions on many current DOT funding sources, the ability for DOTs to bring in other external partners and service providers may rely on using or obtaining more flexible sources of funding—and on advocates, departments, and partners lobbying funding bodies to provide more (and more flexible) funds for DOT homelessness response.

One obstacle to forming stronger ties and more formal partnerships is the sentiment among many service providers that they should resist becoming part of a system that focuses on encampment removals. They saw a fine balance between cooperating with DOTs in order to minimize harm to encampment residents and actively engaging in removals. Thus, several interviewees from service providers suggested that maintaining organizational independence was important to them, so as to not be perceived as supporters or facilitators of encampment clearance. This dilemma was captured in a statement from a representative of Partners in Care O’ahu: “We’re not supporters of sweeps, but at the same time, if they’re going to happen, we want to be there to help whenever we can. But we don’t want to be too close and be seen as true partners.” On the other hand, an interviewee at the Oregon Law Center, which does not collaborate with Oregon DOT, stated, “How much can we advocate about tweaking a system that we believe to be inherently harmful?...Do we nibble around the edges of sweeps protocol, when really what we want is no sweeps?”

- *Ensure safety while avoiding displacement*

The above observation reflects a fundamental problem—the goal of DOTs may conflict with the goal of service providers. For DOTs, the goal is usually to avoid having encampments on their properties because they raise safety concerns—from traffic and infrastructure but also from crime—both for those traveling on freeways and for encampment residents. However, several interviewees from service providers argued that while responses to encampments on DOT properties are clearly linked to safety, which is a DOT priority, state-owned rights-of-way should be safe for all users, including those sleeping outdoors near freeway environments. While many interviewees noted the very real safety risks present in freeway environments, several also observed the risks of displacement, especially without available and accessible housing or shelter. Especially when conducted without a prioritization strategy, displacement and encampment removals can, intentionally or not, cause losses of property, medicines, documents, etc.; disrupt informal support networks; and push people to new areas no safer than before.

- *The ultimate solution is housing*

Interviewees from service providers emphasized that encampment outreach services must be matched with temporary and especially permanent housing resources, supported by sustained funding. As one interviewee from Housing Alliance Delaware stated: “We certainly believe that housing is the answer to homelessness....If DOT is trying to move encampments,...temporary shelter in our state is not a solution;

permanent housing is.” Other interviewees echoed this need to offer an “exit strategy...to permanent housing.” Many DOT interviewees agreed: as one interviewee from Minnesota DOT commented, “The existing model of shelter and path to housing doesn’t work. That has to be fixed.”

5. Conclusion

In recent years, the numbers of individuals living without shelter have multiplied in many U.S. cities. The COVID-19 pandemic intensified this phenomenon, making homelessness even more pronounced in public spaces and transportation environments (Loukaitou-Sideris et al., 2023). Some of these environments, such as freeway embankments, on- and off-ramps, rest areas, parking lots, and interchanges are under the auspices of state departments of transportation. Thus, DOTs are responsible for the health and safety of these settings and of their occupants (housed and unhoused; drivers, workers, and other road system users) and have to devise strategies to respond to homelessness.

This study synthesized existing literature and empirical findings from interviews with staff from 13 state DOTs and eight service providers and organizations who are involved in responding to homelessness in state transportation settings. We found that homelessness represents a recognized challenge for DOTs, but the numbers and location of unhoused individuals in state transportation settings vary and fluctuate. One common problem is that most DOTs lack accurate information about the extent of homelessness on their lands and the socio-demographic composition of the unhoused individuals that occupy them. This often creates hurdles in designing effective responses.

We found that DOTs employ both “push” and “pull” strategies to respond to homelessness, but the most common strategy is encampment removal, which they often undertake in conjunction with law enforcement agencies. However, the effectiveness of these removals is limited, as they merely push unhoused individuals from one setting to another, and often a camp reappears at the same spot or adjacent to where it was cleared. Indeed, scholarly work has shown that law enforcement strategies are ineffective at reducing homelessness and often harmful to those experiencing it. Some scholars argue that, in the absence of a better housing solution, encampments provide shelter to unhoused individuals and should not be dispersed, unless they are dangerous for residents’ or others’ safety.

We also found that DOTs are increasingly partnering with law enforcement but also other local government agencies and service providers to respond to homelessness. Partnerships with service providers help towards more effective responses, as they can connect unhoused individuals with needed services and temporary or more long-term housing. Nevertheless, with the exception of a few DOTs, these partnerships are not formal but mostly ad hoc and informal. They require interagency coordination, but only a handful of DOTs have established dedicated coordinating offices.

In response to these findings, we make the following recommendations for DOTs:

- Acquire better data on the extent and composition of homelessness in DOT settings
- Create a homelessness coordinating office within the DOT
- Establish formal partnerships with homeless nonprofits/service providers
- Evaluate the necessity of encampment removals, through the development and utilization of prioritization criteria

Criteria based on legitimate safety concerns, developed in conversation with unhoused people themselves and advocates, should guide encampment policy, rather than complaints from the general public or blanket removal policies. DOTs undertaking encampment clearance should coordinate with social service agencies and nonprofit providers to identify alternative sites and only undertake such removals if their occupants are safely accommodated in such sites. Lastly, past research

makes a strong case for reserving law enforcement for instances of crime against persons instead of trespassing alone by unhoused people seeking shelter.

This study has examined the perspectives of DOT staff and partner organizations. In the future, we hope research can gather and amplify the voices of unhoused individuals themselves. This would fill significant gaps in policymakers' and researchers' understanding of why people choose to shelter on DOT land, what barriers they face to finding housing and other services, and what responses from DOTs would prove most helpful to them.

In the end, addressing the challenge of homelessness in DOT environments is a larger social issue that requires attention and action on the part of DOTs but also support, collaboration, and coordination between DOTs and other public and nonprofit entities.

Funding

This work was supported by funding from the University of California Institute of Transportation Studies (UC-ITS-2022-17) and from the Pacific Southwest Region University Transportation Center (PSR-21-52) via the California Department of Transportation (65A0674, TO 048).

CRedit Authorship Contribution Statement

Jacob L. Wasserman: Conceptualization, Methodology, Investigation, Data curation, Visualization, Supervision, Project administration, Funding acquisition, Resources, Software, Writing – original draft, Writing – review & editing. **Anastasia Loukaitou-Sideris:** Conceptualization, Methodology, Investigation, Supervision, Funding acquisition, Resources, Validation, Writing – original draft, Writing – review & editing. **Hao Ding:** Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **Claire Nelischer:** Investigation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing.

Declaration of Competing Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data availability

The data that has been used is confidential.

References

- Bassett, E., Tremoulet, A., Moe, A., 2013. *Relocation of Homeless People from ODOT Rights-of-way*. Transportation Research and Education Center. <https://doi.org/10.15760/trec.67>.
- Bernhardt, M., Kockelman, K., 2021. An Analysis of Pedestrian Crash Trends and Contributing Factors in Texas. *J. Transp. Health* 22. <https://doi.org/10.1016/j.jth.2021.101090>.
- Berk, R., MacDonald, J., 2010. Policing the Homeless: An Evaluation of Efforts to Reduce Homeless-related crime. *Criminol. Public Policy* 9 (4), 813–840. <https://doi.org/10.1111/j.1745-9133.2010.00673.x>.
- Caltrans Division of Maintenance, 2023. *Encampment Coordinator Reference Guide*. Caltrans.
- Caltrans Division of Maintenance Office of Strategic Management, 2018. *Cost to Clean Up Homeless Camps Climbs: Nearly \$30 Million Spent Since 2012 as State Property under Growing Pressure*. Caltrans. <https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/mile-marker/mm-2018-q1-homeless-camps-all1y.pdf>.
- Caplan, V., 2020. *2019 PIT Tally Dist v2*. San Francisco Municipal Transportation Agency.
- Capps, K., 2022. Why We Don't Know How the Pandemic Affected U.S. Homelessness: The Latest Federal Point-in-time Count on Homelessness Reveals How the Pandemic Disrupted Data-gathering on How Many People Were Living in Shelters and on the Streets of U.S. Cities. *Bloomberg CityLab*. <https://www.bloomberg.com/news/articles/2022-02-04/what-covid-19-did-to-u-s-homelessness>.
- Castle, C., 2021. This Land Was Made for You and Me: Amid the Pandemic and Housing Crisis, an East LA Community Organization Has Fought to Reclaim Homes Owned by Caltrans for a Never-constructed Highway and Give Them Back to the People. *theLand*. <https://thelandmag.com/reclaim-rebuild-our-community-caltrans/>.
- CDC, 2020. Interim Guidance on Unsheltered Homelessness and Coronavirus Disease 2019 (COVID-19) for Homeless Service Providers and Local Officials: Interim Guidance. *Centers for Disease Control and Prevention*. <https://web.archive.org/web/20200831000747/https://www.cdc.gov/coronavirus/2019-ncov/community/homeless-shelters/unsheltered-homelessness.html>.
- Interim Guidance on People Experiencing Unsheltered Homelessness: Interim Guidance. *Centers for Disease Control and Prevention*, 2022. <https://www.cdc.gov/coronavirus/2019-ncov/community/homeless-shelters/unsheltered-homelessness.html>.
- Chamard, S., 2010. *Homeless Encampments*. U.S. Department of Justice. <https://popcenter.asu.edu/content/homeless-encampments-0>.
- Chan, T., 2021. *BART PD Monthly Stats—UCLA*. BART.
- Cuellar Mejia, M., Herrera, J., Johnson, H., 2022. Early Evidence of Shifts in Local Homeless Populations during the Pandemic. *Public Policy Institute of California*. <http://www.pplic.org/blog/early-evidence-of-shifts-in-local-homeless-populations-during-the-pandemic/>.
- Cuniff, M., 2022. Fires Raise Questions about “Tiny Homes” as LA Homeless Settlement Looms: The Pallet Shelter Homes Are in Los Angeles and Elsewhere, but Fires in Oakland and Banning Have Destroyed Structures and Displaced People. *Los Angeles Magazine*. <https://www.lamag.com/citythinkblog/fires-raise-questions-about-tiny-homes-as-l-a-homeless-settlement-looms/>.
- Dillon, L., 2021. Sixty Years after Being Taken for Abandoned LA Freeway, Homes May Get New Life. *Los Angeles Times*. <https://www.latimes.com/homeless-housing/story/2021-12-04/after-failed-freeway-vacant-homes-el-sereno-caltrans>.
- Ding, H., Loukaitou-Sideris, A., Wasserman, J., 2022. Homelessness on Public Transit: A Review of Problems and Responses. *Transp. Res.* 42 (2), 134–156. <https://doi.org/10.1080/01441647.2021.1923583>.
- Dunton, L., Khadduri, J., Burnett, K., Fiore, N., Yetvin, W., Abt Associates, 2021. *Exploring Homelessness among People Living in Encampments and Associated Cost: City Approaches to Encampments and What They Cost*. U.S. HUD. <https://www.huduser.gov/portal/sites/default/files/pdf/Exploring-Homelessness-Among-People.pdf>.
- Garnham, J., 2021. Austin's Camping Ban Returns Tuesday, but It's Not Clear When—or How—it Will Be Enforced. *Texas Tribune*. <https://www.texastribune.org/2021/05/06/austin-camping-ban-homeless/>.
- Gauderman, W., Vora, H., McConnell, R., Berhane, K., Gilliland, F., Thomas, D., Lurmann, F., Avol, E., Künzli, N., Jerrett, M., Peters, J., 2007. Effect of Exposure to Traffic on Lung Development from Ten to 18 Years of Age: A Cohort Study. *Lancet* 369 (9561), 571–577. [https://doi.org/10.1016/S0140-6736\(07\)60037-3](https://doi.org/10.1016/S0140-6736(07)60037-3).
- Gerike, L., Tracy, E., 2021. Caltrans Was Liable for Death at Modesto Homeless Camp. Why It Won't Have to Pay Damages. *Modesto Bee*. <https://www.modbee.com/news/local/article255978387.html>.
- Goldfischer, E., 2019. From Encampments to Hotspots: The Changing Policing of Homelessness in New York City. *Hous. Stud.* 35 (9), 1550–1567. <https://doi.org/10.1080/02673037.2019.1655532>.
- Hartmann McNamara, R., Crawford, C., Burns, R., 2013. Policing the Homeless: Policy, Practice, and Perceptions. *Policing* 36 (2), 357–374. <https://doi.org/10.1108/13639511311329741>.
- Harvard Law Review, 2019. *Martin v. City of Boise*: Ninth Circuit Refuses to Reconsider Invalidation of Ordinances Completely Banning Sleeping and Camping in Public. *Harv. Law Rev.* 133, 699–706. <https://harvardlawreview.org/2019/12/martin-v-city-of-boise/>.
- Herring, C., 2019. Complaint-oriented Policing: Regulating Homelessness in Public Space. *Am. Sociol. Rev.* 84 (5), 769–800. <https://doi.org/10.1177/0003122419872671>.
- Ionescu, D., 2022. “Tiny Home Village” Fires Raise Doubts about Their Sustainability. *Planetizen*. <https://www.planetizen.com/news/2022/03/116634-tiny-home-village-fires-raise-doubts-about-their-sustainability>.
- Johnsen, S., Fitzpatrick, S., Watts, B., 2018. Homelessness and Social Control: A Typology. *Hous. Stud.* 33 (7), 1106–1126. <https://doi.org/10.1080/02673037.2017.1421912>.
- Jones, D., Burrell Garcia, J., Gordon, J., 2022. *Quarterly Update on Metro's Homeless Outreach Efforts* (N. Englund, Ed.). LA Metro. <https://boardagendas.metro.net/board-report/2021-0804/>.
- Junejo, S., 2016. *No Rest for the Weary: Why Cities Should Embrace Homeless Encampments* (S. Skinner and S. Rankin, Eds.). Seattle University School of Law, Homeless Rights Advocacy Project. <https://doi.org/10.2139/ssrn.2776425>.
- Kraus, E., Glover, B., Kuzio, J., Storey, B., 2022. *Encampments of Unhoused Individuals in Transportation Rights-of-way: Laws and State DOT Practices*. National Acad. Sci. Eng. Med. <https://doi.org/10.17226/26739>.
- Künzli, N., McConnell, R., Bates, D., Bastain, T., Hricko, A., Lurmann, F., Avol, E., Gilliland, F., Peters, J., 2003. Breathless in Los Angeles: The Exhausting Search for Clean Air. *Am. J. Public Health* 93 (9), 1494–1499. <https://doi.org/10.2105/ajph.93.9.1494>.
- LA Metro, 2021. Los Angeles Metro Homeless Count. Presented at the LA Metro Board of Directors meeting, Los Angeles. <http://metro.legistar1.com/metro/attachments/1ee432d4-ca96-4292-a33b-7fcf0832bce5.pdf>.
- Legler, M., 2019. *Hennepin County Unsheltered Point-in-time Count for July 24, 2019*. Hennepin County Office to End Homelessness and Saint Stephen's Human Services.
- Loukaitou-Sideris, A., Wasserman, J., Caro, R., Ding, H., 2020. *Homelessness in Transit Environments: Volume I, Findings from a Survey of Public Transit Operators*. UCLA Institute of Transportation Studies. <https://doi.org/10.17610/T6V317>.
- Loukaitou-Sideris, A., Wasserman, J., Caro, R., Ding, H., 2021. *Homelessness in Transit Environments: Volume II, Transit Agency Strategies and Responses*. UCLA Institute of Transportation Studies. <https://doi.org/10.17610/T6JK55>.
- Loukaitou-Sideris, A., Wasserman, J., Caro, R., Ding, H., 2023. Unhoused on the Move: Impact of COVID-19 on Homelessness in Transit Environments. In: Loukaitou-Sideris, A., Bayen, A., Circella, G., Jayakrishnan, R. (Eds.), *Pandemic in the*

- Metropolis: Transportation Impacts and Recovery, first ed. Springer, Cham, Switzerland, pp. 31–48. https://doi.org/10.1007/978-3-031-00148-2_3.
- Miller, T., 2021. Fresno, CA Begins Project Off-ramp, House Freeway's Homeless. *Fresno Bee*. <https://www.fresnobee.com/news/local/article248695250.html>.
- Minnesota HMIS, 2020. 2020 Point-in-time Count Infographics. *Minnesota's HMIS*. <http://www.hmismn.org/2020-pointintime-count-infographics>.
- Mizes-Tan, S., 2020. Map: Last Week, Gov. Newsom Made 286 Sites Available for Homelessness Solutions. Here's Where They Are. *Capital Public Radio*. <https://www.capradio.org/146304>.
- Mortimer, K., Neas, L., Dockery, D., Redline, S., Tager, I., 2002. The Effect of Air Pollution on Inner-city Children with Asthma. *Eur. Respir. J.* 19 (4), 699–705. <https://doi.org/10.1183/09031936.02.00247102>.
- New York City Department of Homeless Services, 2012. Statistics and Reports. *NYC Department of Homeless Services*. <https://web.archive.org/web/20120603121512/http://www.nyc.gov/html/dhs/html/statistics/statistics.shtml>.
- New York City Department of Homeless Services, 2020. *NYC HOPE 2020 Results*. New York City Department of Homeless Services. <https://www1.nyc.gov/assets/dhs/downloads/pdf/hope-2020-results.pdf>.
- New York State Comptroller, 2020. *Homeless Outreach Services in the New York City Subway System*. New York State Comptroller. <https://www.osc.state.ny.us/files/state-agencies/audits/pdf/sga-2020-18s59.pdf>.
- Nichols, L., Cázares, F., 2011. Homelessness and the Mobile Shelter System: Public Transportation as Shelter. *J. Soc. Policy* 40 (2), 333–350. <https://doi.org/10.1017/S0047279410000644>.
- Oladipo, G., 2023. Alarm as U.S. States Pass “Very Concerning” Anti-homeless Laws: Homelessness Charities Say Wave of New Bills Unfairly Targets People without Housing as Social-services Funding Is Cut. *Guardian*. <https://www.theguardian.com/us-news/2023/jan/05/us-states-homelessness-laws-alarm>.
- Petty, J., 2016. The London Spikes Controversy: Homelessness, Urban Securitisation, and the Question of “Hostile Architecture”. *Int. J. Crime Justice Soc. Democr.* 5 (1), 67–81. <https://doi.org/10.5204/ijcjsd.v5i1.286>.
- Pittman, B., Nelson-Dusek, S., Gerrard, M., Shelton, E., 2020. *Homelessness in Minnesota: Detailed Findings from the 2018 Minnesota Homeless Study*. Wilder Res. https://www.wilder.org/sites/default/files/imports/2018_HomelessnessInMinnesota_3-20.pdf.
- Plotnikova, S., 2022. A Cage by Another Name: Under the Guise of Housing, LA's Tiny Home Villages Serve to Contain and Banish Unhoused People. *Failed Architecture*. <https://failedarchitecture.com/a-cage-by-another-name/>.
- Potter-Brown, L., Pipkin, G., 2005. Urban Campers as a New Population for Community Impact Assessment: Case Study of US-301 in Sarasota, Florida. *Transp. Res. Rec.* 1924 (1), 118–119. <https://doi.org/10.1177/0361198105192400115>.
- Portland Bureau of Transportation, 2022. *Saving Lives with Safe Streets: Vision Zero Traffic Crash Report 2021*. City of Portland. <https://www.portland.gov/sites/default/files/2022/traffic-crash-report-2021.pdf>.
- Price, N., 2021. Project Off-ramp Finds Housing for 42 Homeless People Camped along Freeway. *GV Wire*. <https://gvwire.com/2021/01/26/project-off-ramp-finds-housing-for-42-homeless-people-camped-along-freeway/>.
- Ray, L., 2022. New L.A. County Data Shows That Homeless “Sweeps” Rarely Lead to Permanent Housing. *LA TACO*. <https://www.lataco.com/care-sweeps-la-homeless/>.
- Ricord, S., 2020. *Impact of Homeless Encampments on State Department of Transportation Right-of-way* (M.S. thesis). University of Washington, Seattle. <https://digital.lib.washington.edu:443/researchworks/handle/1773/45911>.
- Rosenberger, R., 2017. *Callous Objects: Designs against the Homeless*. University of Minnesota Press, Minneapolis.
- Roy, A., Bennett, A., Blake, J., Coleman, J., Cornfield, H., Harrell, L., Klein, T., Lutzker, S., Malson, H., Mendez, J., Orendorf, C., Otzoy, G., Powers, A., Rosenstock, C., Laborde Ruiz, R., Sens, W., Stephens, P., 2022. *(Dis)Placement: The Fight for Housing and Community after Echo Park Lake* (A. Carrasquillo, Ed.). UCLA Luskin Institute on Inequality and Democracy. <https://escholarship.org/uc/item/70r0p7q4>.
- Slayton, N., 2022. Fire Tore through Tiny Homes Sheltering Unhoused Veterans in Los Angeles: No One Was Hurt but Least 11 of the Structures Were Destroyed. *Task and Purpose*. <https://taskandpurpose.com/news/fire-tiny-homes-west-la-va/>.
- Stevens, G., Fassbender, T., 2021. LA Turns to Tiny Homes to Deal with Its Big Homeless Problem: The Tiny-house Movement Has Been Expanded to Homeless Shelters. *The Eastsider*. https://www.theeastsiderla.com/neighborhoods/highland_park/1-a-turns-to-tiny-homes-to-deal-with-its-big-homeless-problem/article_421cbe5a-4bb8-11ec-8104-d7165780dc33.html.
- Tremoulet, A., Bassett, E., Moe, A., 2012. *Homeless Encampments on Public Right-of-way: A Planning and Best Practices Guide*. Transportation Research and Education Center. <https://ppms.trec.pdx.edu/media/137530914651f98d5a443e9.pdf>.
- Tso, P., 2022. Time Is Up for El Sereno “Reclaimers” Who Occupied Caltrans Homes during COVID Lockdown. *LAist*. <https://laist.com/news/housing-homelessness/time-is-up-for-el-sereno-reclaimers-who-occupied-caltrans-homes-during-covid-lockdown>.
- Tso, P., 2023. Fight for Homes Left Vacant by Caltrans Heats up as “Reclaimers” Are Sued by City: After Occupying Empty Homes Owned by Caltrans during the Early Days of the Pandemic, the Reclaimers Struck a Deal with the City of Los Angeles to Stay in Them. Now the City Wants Them Out. *Los Angeles Public Press*. <https://lapublicpress.org/2023/04/fight-for-homes-left-vacant-by-caltrans-heats-up-as-reclaimers-are-sued-by-city-la/>.
- U.S. Census Bureau, 2020. 2020 U.S. Census. *Data.census.gov*. <https://data.census.gov>.
- U.S. HUD, 2022. 2022 AHAR: Part 1—PIT Estimates of Homelessness in the U.S. *HUD Exchange*. <https://www.huduser.gov/portal/datasets/ahar/2022-ahar-part-1-pit-estimates-of-homelessness-in-the-us.html>.
- Venteicher, W., Tracy, E., 2020. Caltrans to Pay up to \$5,500 to Each Homeless Bay Area Resident Affected by Camp Cleanups. *Modesto Bee*. <https://www.modbee.com/news/local/article240490156.html>.
- Vives, R., Smith, D., 2022. Growth in LA County Homeless Population Slowed during Pandemic, Count Finds. *Los Angeles Times*. <https://www.latimes.com/california/story/2022-09-08/1-a-county-homeless-count-shows-homelessness-grew-slightly-a-possible-sign>.
- Volk, H., Hertz-Picciotto, I., Delwiche, L., Lurmann, F., McConnell, R., 2011. Residential Proximity to Freeways and Autism in the CHARGE Study. *Environ. Health Perspect.* 119 (6), 873–877. <https://doi.org/10.1289/ehp.1002835>.
- Walker, A., 2021. L.A. Built a Tiny-House Village for Homeless Residents, and Some Aren't So Sure About It. *Curbed*. <https://www.curbed.com/2021/04/tiny-home-village-homeless-los-angeles.html>.
- Walker, A., 2022. The Oakland Tiny-home Fire Raises Bigger Questions about Homeless Housing. *Curbed*. <https://www.curbed.com/2022/03/oakland-tiny-home-fire-pallet-homeless-housing.html>.
- Wiggins, A., 2017. *Monthly Update on Transit Policing Performance* (S. Wiggins, Ed.). LA Metro. <https://boardagendas.metro.net/board-report/2017-0601/>.
- Wilder Research, 2019. *Metro Transit Riders: A Special Analysis of Data from the 2018 Minnesota Homeless Study*. Metro Transit.
- Wilhelm, M., Ritz, B., 2003. Residential Proximity to Traffic and Adverse Birth Outcomes in Los Angeles County, California, 1994–1996. *Environ. Health Perspect.* 111 (2), 207–216. <https://doi.org/10.1289/ehp.5688>.
- Wjst, M., Reitmeir, P., Dold, S., Wulff, A., Nicolai, T., von Loeffelholz-Colberg, E., von Mutius, E., 1993. Road Traffic and Adverse Effects on Respiratory Health in Children. *Br. Med. J.* 307 (6904), 596–600. <https://doi.org/10.1136/bmj.307.6904.596>.