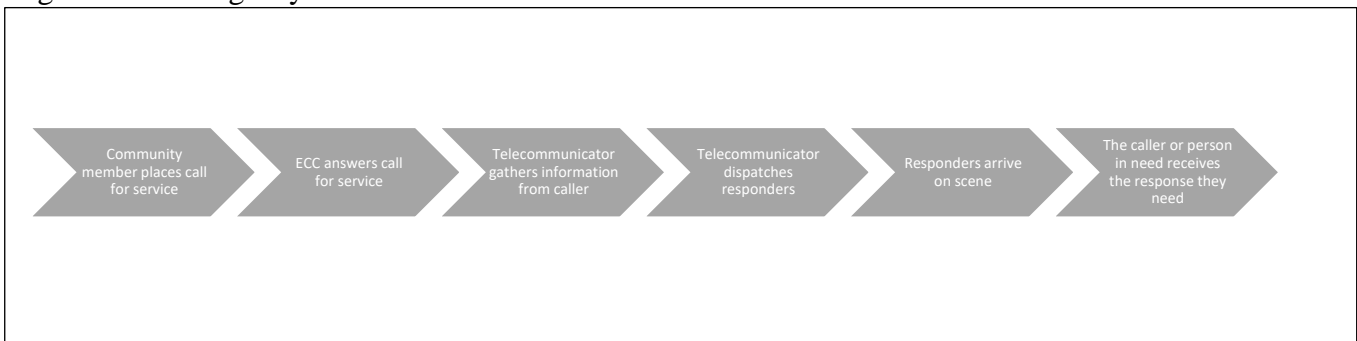


Chapter 4: Emergency Communications Center Operations

Introduction

When a member of the public places a call to 911, a series of processes are initiated that have significant consequences for the caller, for the subject of the call, and for first responders. The steps taken are determined by policies and procedures governing whether and to whom the call is routed, and by how the 911 professional who answers the call captures information about the situation, assesses the level of urgency and risk, and resolves the call on their own or transfers it to another service provider or dispatcher. The role of 911 professionals thus goes beyond answering and routing calls. They must employ active listening skills to assess the nature and exigency of the call; provide information and referrals to calls for information; apply (often-complex) rules or guidelines associated with which calls should result in police dispatch; impart contextual information to ensure the safety of assigned responders; communicate with the caller to provide critical guidance until the arrival of responders; and record any updates to the nature of the call and its resolution into the computer-aided dispatch (CAD) system. These processes may appear straightforward on the surface, but they are influenced by the complex interplay of technologies, organizational structures and processes, and human decision-making. Emergency Communications Centers (ECCs), also known as Public Safety Answering Points (PSAPs) are essential in ensuring that these processes are delivered in a manner that resolves callers' needs efficiently and effectively.

Figure 4.1: Emergency Communications Center Process



While many of the processes associated with emergency communications are governed by the agency in which the ECC is housed,¹ faithful execution of these measures is squarely in the domain of the ECC. Their activities influence when police officers are sent to the scene and what those officers anticipate they will encounter upon arrival. Together with sound governance and standard operating procedures, optimal ECC processes can guide what share of calls are resolved without the need for field response, which ones should be diverted to alternative first responders, such as a mental health professional, and which might be addressed through specialized responses such as Crisis Intervention Team or co-responder models.

¹ Depending on the state or locality, ECCs may be housed in fire departments, law enforcement agencies, other public agencies, or occasionally in private entities. For more details, see the [911 Governance chapter](#) in this volume.

This brief examines 911 call-handling processes, including the use of triaging guidelines, call-taking scripts, and dispatching protocols. It also addresses ECC policies, procedures, and protocols that enable the valid and reliable collection of information about calls for service, support call classification and triage reliability, and promote the efficient and effective dissemination of that information to traditional first and alternative first responders. Given that other briefs in this volume address issues pertaining to the recruitment and training of 911 professionals, technology issues and advances in 911, and 911 governance issues, this brief is focused primarily on call-taking and dispatching processes and technologies, ECC operational structures, accountability mechanisms, and stakeholder engagement and accountability.

State of Practice

ECC functions vary based on the local agencies they serve, as well as the geographic characteristics and reach of their purview. Regardless, all ECCs are required to answer and coordinate responses to calls for service (CFS), which involves the use of standard operating procedures governing a wide array of technologies, information services, protocols, and personnel. These procedures are influenced by the overall structure of the ECC, its jurisdictional reach, and the agency in which it is housed.

Call Taking, Triaging, and Dispatching

When a call is placed to an ECC, it must be routed to the nearest answering point, answered by a trained professional and assessed for the nature of the caller's need and degree of urgency (triage). Ultimately, the call must be resolved by the call taker (which may involve providing information or service referral, such as to a government agency, 311, 211, or crisis line), referred to a specialized professional (e.g., a mental health clinician or person trained behavioral health issues), or referred to police, fire or emergency medical service (EMS) dispatch. 911 professionals also may remain engaged with the caller until field responders arrive on the scene, providing treatment or safety guidance.² Dispatchers are responsible for helping to direct field responders to locations in need of service while ensuring that responders have accurate information on the nature of the incident in order to take measures to protect both their safety and that of the public.

911 professionals have both considerable decision-making authority and substantial constraints on their influence of call outcomes, both of which can promote beneficial or harmful outcomes, depending on the context.³ One study found that call takers resolved half of all calls, without having to refer them to dispatch, by responding to requests for information or referring callers to other governmental or community services.⁴ This degree of agency is helpful in preventing unnecessary police response and inefficient allocation of resources, but absent sufficient guidelines, it may also enable excessive subjective decision-making. The way in which 911 professionals interpret and resolve calls affects how field responders perceive the level of risk and nature of the incident. Communications from 911 professionals could prime responders to use force or be influenced by a racially—or otherwise—biased

² S. Rebecca Neusteter et al., "The 911 Call Processing System: A Review of the Literature as it Relates to Policing," Vera Institute of Justice, July 2019, <https://www.vera.org/publications/911-call-processing-system-review-of-policing-literature>.

³ Cynthia Lum et al., "Constrained Gatekeepers of the Criminal Justice Footprint: A Systematic Social Observation Study of 9-1-1 Calltakers and Dispatchers," *Justice Quarterly* 37, no. 7 (2020): 1176-1198, <https://doi.org/10.1080/07418825.2020.1834604>.

⁴ Lum et al., "Constrained Gatekeepers."

perception of the circumstances.⁵ Indeed, studies examining the nature of exchanges between callers and 911 professionals suggest that such communications may compromise objective decision-making on the part of both 911 professional and officer.⁶ In addition, an ethnographic study of 911 professionals documents the difficulties they experience in exercising their functional authority, citing the challenges and emotional toil they experience when officers question or resist their directives.⁷

Scripts and questionnaires are designed to help 911 professionals assess the nature of each call and whether it should lead to police or emergency service dispatch.⁸ This guidance is important to ensure that calls are neither over-triaged (sending a responder when one is not necessary) or under-triaged (underestimating the exigency and risk of the event). Standardized call-taking and triaging protocols exist to provide this guidance, such as the National Emergency Number Association's (NENA) Standard for 911 Call Processing,⁹ the Law Enforcement Dispatch Guidecards and triage protocols developed by the Association of Public Safety Communications Professionals (APCO),¹⁰ the Advanced Medical Protocol Dispatch System developed by the International Academies of Emergency Dispatch, and the proprietary Medical Priority Dispatch system, although the latter two were developed for use by EMS 911 professionals.¹¹ The Criteria Based Dispatch program, which was originally developed for emergency medical services responders, is being adapted for police dispatch in select jurisdictions across the country. In addition, many ECCs develop and use their own tools internally.¹² These protocols differ in their original purposes, and the degree of flexibility and discretion they afford call takers.¹³

Call-taking protocols around behavioral health¹⁴ and intimate partner violence¹⁵ crises are also in use in some ECCs. APCO has developed a set of standards that 911 professionals who respond to behavioral

⁵ Jessica W. Gillooly, "How 911 Callers and Call-takers Impact Police Encounters with the Public: The Case of the Henry Louis Gates Jr. Arrest." *Criminology & Public Policy* 19, no. 3 (2020): 787-804; Roge Karma, "Want to Fix Policing? Start with a Better 911 System," *Vox*, August 10, 2020. <https://www.vox.com/2020/8/10/21340912/police-violence-911-emergency-call-tamir-rice-cahoots>;

Paul L. Taylor, "Dispatch Priming and the Police Decision to Use Deadly Force," *Police Quarterly* 23, no. 3 (2020): 311-332.

⁶ Jessica W. Gillooly, "'Lights and Sirens,' Variation in 911 Call-Taker Risk Appraisal and its Effects on Police Officer Perceptions at the Scene," *Journal of Policy Analysis and Management* (December 2021), <https://doi.org/10.1002/pam.22369>; D.H. Zimmerman, D. "Talk and Its Occasion: The Case of Calling the Police," in *Meaning, Form and Use in Context: Linguistic Applications*, ed. D. Schiffrin (Washington, D.C.: Georgetown University Press, 1984), 210-228; D.H. Zimmerman, "The Interactional Organization of Calls for Emergency Assistance," in *Talk at Work: Social Interaction in Institutional Settings*, ed. P. Drew & J. Heritage (Cambridge: Cambridge University Press, 1992), 418-469; A.C. Garcia & P.A. Parmer, "Misplaced Mistrust: The Collaborative Construction of Doubt in 911 Emergency Calls," *Symbolic Interaction* 22, no. 4 (December 2011): 297-324. doi:10.1525/si.1999.22.4.297; M.R. Whalen & D.H. Zimmerman, "Describing Trouble: Practical Epistemology in Citizen Calls to the Police," *Language in Society* 19, no. 4 (December 2008): 465-492. doi:10.1017/S0047404500014779.

⁷ Arvind Karunakaran, "Status-Authority Asymmetry between Professions: The Case of 911 Dispatchers and Police Officers," *Administrative Science Quarterly* (November 2021) doi:10.1177/00018392211059505.

⁸ Karunakaran, "Status-Authority Asymmetry."

⁹ PSAP Operations Committee, and 9-1-1 Call Processing Working Group, "NENA Standard for 9-1-1 Call Processing," Alexandria: National Emergency Number Association (NENA), April 16, 2020.

¹⁰ APCO International, "Guidecards," accessed December 3, 2021, <https://www.apcointl.org/services/guidecards/>.

¹¹ Jeff. J. Clawson, "The DNA of Dispatch: The Reasons for a Unified Medical Dispatch Protocol," *Journal of Emergency Medical Services* 22, no. 5 (May 1997): 55-57; S. Rebecca Neusteter et al., "Understanding Police Enforcement: A Multicity 911 Analysis," Vera Institute of Justice, September 2020, <https://www.vera.org/publications/understanding-police-enforcement-911-analysis>.

¹² Neusteter et al., "Understanding Police Enforcement."

¹³ Neusteter et al., "Understanding Police Enforcement."

¹⁴ Brian S. Zachariah and Paul E. Pepe, "The Development of Emergency Medical Dispatch in the USA: A Historical Perspective," *Official Journal of the European Society for Emergency Medicine* 2, no. 3 (1995): 109-112.

¹⁵ APCO International, "Crisis Intervention Techniques and Call Handling Procedures for Public Safety Telecommunicators," accessed August 10, 2021, <https://www.apcointl.org/~documents/standard/11201-2021-cit-and-call-handling?layout=default>.

¹⁶ North Carolina Governor's Crime Commission, "911: Dispatcher Protocol: Violence Against Women," accessed August 10, 2021, <https://static1.squarespace.com/static/530103c6e4b0aca487ca285f/t/55f19befe4b063e7526b58af/1441897455862/911+Dispatch+Protocol.pdf>.

health-related calls should meet. These standards recommend that 911 professionals possess awareness of the different ways that behavioral health crises present themselves, knowledge of available behavioral health resources in the community, and the skills needed to adopt a compassionate and empathetic approach to call-taking that includes listening actively and responding calmly.¹⁶

Call-taking scripts or questionnaires are not used universally by ECCs, thus there is a patchwork of protocols guiding 911 professionals, and uneven experiences among community members seeking emergency services. A recent survey of 37 ECCs across 27 states found that many had no tool to aid in the identification of behavioral health-related calls. Similarly, 911 professionals experience insufficient training and a lack of available resources to divert calls related to mental health concerns. Relatively few 911 professionals are trained in how to handle behavioral crisis calls; in fact, about one in five lack specialized resources, such as behavioral health clinicians, crisis-trained 911 professional or field responder staff, or mobile crisis units.¹⁷ Furthermore, the survey found that 11 of 17 responding ECCs serving predominantly white communities indicated they have 911 professionals on staff who had been trained in behavioral health crisis identification, versus just 1 in 9 of ECCs serving majority nonwhite communities, providing yet another example of the inequitable provision of services to communities of color.¹⁸

Research on lawsuits filed against ECCs found that the incidents that are most vulnerable to litigation involve dispatch errors, many of which could be prevented through better call handling and customer service practices.¹⁹ One theme that ran throughout these cases was that most of the ECCs under litigation lacked a standardized protocol to guide dispatching. Even for cases in which a tool was available, oftentimes that tool was either not routinely used, 911 professionals were not trained to use it, or it was not integrated as part of a comprehensive system. The key takeaway is that to prevent adverse events that result in litigation, ECCs should both have a dispatch tool and ensure that 911 professionals are trained and held accountable for using it routinely and with fidelity.

As discussed in detail in the *911 Professionals* chapter in this volume, 911 professionals must be trained²⁰ and should be accredited and classified as emergency responders rather than administrative staff. APCO has put forth minimum training standards for 911 professionals, along with training and technical assistance.²¹ However, compliance with these standards is entirely optional, and it is unclear what share of ECCs adopt them. Importantly, a recent survey found that just one third of ECCs had staff who had received specialized training in mental health and substance use disorders.²² Moreover, training may over-emphasize a customer service orientation that leads to the unnecessary dispatch of police,²³ particularly in cases where the caller requests a police response.²⁴

¹⁶ APCO International, “Crisis Intervention Techniques.”

¹⁷ Pew Charitable Trusts. “911 Call Centers Lack Resources to Respond to Behavioral Health Crises,” October 2021, <https://www.pewtrusts.org/-/media/assets/2021/11/911-call-centers-lack-resources-to-handle-behavioral-health-crises.pdf>.

¹⁸ Pew Charitable Trusts, “911 Call Centers Lack Resources.”

¹⁹ Jeff Clawson et al., “Litigation and Adverse Incidents in Emergency Dispatching,” *Annals of Emergency Dispatch & Response* 6 (2018): 1-12.

²⁰ 911.gov, “Telecommunicators & Training,” accessed August 10, 2021, https://www.911.gov/issue_telecommunicatorsandtraining.html.

²¹ APCO International, “About APCO,” July 9, 2019, <https://perma.cc/V9JW-ZFQB>; APCO International, “Minimum Training Standards for Public Safety Telecommunicators,” 2015, <https://perma.cc/752L-2HFJ>.

²² Pew Charitable Trusts, “911 Call Centers Lack Resources.”

²³ Gillooly, “Police Encounters with the Public.”

²⁴ Lum et al., “Constrained Gatekeepers.”

Call Classification

An important component of call-taking protocols and ECC processes is the degree to which they ensure that calls are classified accurately and reliably. Many ECCs have a large number of codes to use to classify calls by type and priority level.²⁵ This can be problematic when 911 professionals are tasked with coding calls very quickly, particularly when callers are in distress.²⁶ Despite this array of options (or perhaps because of it), different 911 professionals will code the same type of call at a higher or lower priority level,²⁷ and many calls of an uncertain nature end up being classified in nebulous or “other” categories.²⁸ This is particularly true for codes such as “suspicious circumstance” and “unknown trouble” which typically result in a police response.²⁹ Relatedly, while recent research has indicated that the share of calls pertaining to mental health issues is less than four percent, categories such as “disorder” and “welfare check” likely mask the true extent of behavioral health related calls.³⁰ Furthermore, a 2021 statewide survey of Michigan 911 dispatchers found that only about half have specific call categories for mental health needs; just 30 percent reported referring mental health calls to behavioral health crisis lines, with the remainder sharing concerns about liability from doing so.³¹

Both call takers and dispatchers also have a crucial role in interpreting and manufacturing CAD and CFS data. They are tasked with generating a record of each incident and potentially updating details associated with the incident to ensure accurate classification and document resolution.³² Their decisions and actions can influence both the accuracy of the data produced³³ and an ECC’s ability to analyze it to identify trends that can guide staffing and service delivery decisions.³⁴ A 2021 survey of 37 ECCs nationwide found that just 15 had a policy for updating 911 classification codes to reflect the outcome of the call or to reclassify the nature of the incident.³⁵ Those who lacked such a policy cited system inadequacies, staffing shortages, and a lack of updated information from field responders as the primary reasons.³⁶ A recent analysis of over 500,000 calls classified by 911 professionals and responding officers found that while most calls were classified correctly, the call type with the highest degree of misclassification was “unknown trouble.”³⁷ In addition, the authors observed that the most ambiguous call categories, such as “suspicious circumstance,” were not typically recategorized with more precise labels after closure.³⁸

²⁵ Neusteter et al., “911 Call Processing System.”

²⁶ Rylan Simpson, “Calling the Police: Dispatchers as Important Interpreters and Manufacturers of Calls for Service Data,” *Policing: A Journal of Policy and Practice* 15, no. 2 (June 2021): 1537–1545, <https://doi.org/10.1093/police/paaa040>.

²⁷ Gillooly, “Lights and Sirens.”

²⁸ Neusteter et al., “911 Call Processing System.”

²⁹ Neusteter et al., “911 Call Processing System.”

³⁰ Cynthia Lum et al., “Can We Really Defund the Police? A Nine-Agency Study of Police Response to Calls for Service,” *Police Quarterly*, July 2021, <https://doi.org/10.1177/10986111211035002>.

³¹ Wayne State University School of Social Work Center for Behavioral Health and Justice, “Michigan Statewide Emergency Dispatch Survey,” December 2021, https://behaviorhealthjustice.wayne.edu/crisis-response/cbj_michigan-dispatch-survey_dec2021.pdf.

³² Simpson, “Calling the Police.”

³³ Simpson and Orosco, “Re-Assessing Measurement Error.”

³⁴ Simpson and Orosco, “Re-Assessing Measurement Error.”

³⁵ Pew Charitable Trusts, “Call Centers Lack Resources.”

³⁶ Pew Charitable Trusts, “Call Centers Lack Resources.”

³⁷ Simpson and Orosco, “Re-Assessing Measurement Error.”

³⁸ Simpson and Orosco, “Re-Assessing Measurement Error.”

APCO³⁹ has put forth common standards for incident codes, but it is unclear which ECCs have adopted them and with what degree of uniformity. The lack of a national standard for 911 call classification has implications not just for individual ECCs but also for their ability to communicate clearly and efficiently with other ECCs. This issue has prompted the development of a “plain language guide” for emergency communications that involve multiple jurisdictions, encouraging agencies to use common terminology rather than codes that are often unique to their ECC.⁴⁰ In addition, a partnership between APCO and NENA produced a National Information Exchange Model conformant standard to enable the sharing of emergency incident information among entities.⁴¹

Quality Assurance and Performance Measures

Compliance with call-taking and classification protocols can be reinforced by using quality assurance and performance measures, which provide operational checks and balances and aid in the ability to assess and improve upon desired outcomes, such as call efficiency and accurate triaging. As with other ECC standards of operation, quality assurance protocols vary by ECC. The most commonly employed metrics pertain to average speed of answer (the time it takes to answer an incoming call), call duration (the time it takes to resolve the call), dispatch time (the time it takes for responders to arrive on the scene), the share of abandoned calls (hang-ups), speed of resolution, and community complaints.⁴² However, these metrics may not represent effective response; both APCO, in partnership with NENA,⁴³ and other experts⁴⁴ recommend the use of more robust performance indicators to inform quality assurance processes, including;

- the number and share of calls that are transferred;
- the number and type of wired, wireless, text, and telecommunications device for the deaf calls by type; and
- ECC operational performance metrics such as forecasted versus actual call load, scheduled versus actual staff, staff adherence to schedule, average cost per call, and frequency of call review.⁴⁵

For further quality assurance, APCO and NENA recommend that at least two percent of all CFSs be randomly selected and assessed for accurate classification, dispatching, and record-keeping on event resolution.⁴⁶ Assessment of calls should be guided by a scoring template that covers protocols such as adherence to standardized call-taking questions (location, nature, and urgency of event or incident); accuracy in use of and data entry into the CAD system, and telephone and communications protocols and communications skills.⁴⁷ Dispatching processes should be assessed in a similar manner, attending to

³⁹ APCO International, “Public Safety Common Incident Types for Data Exchange (2012),” accessed August 10, 2021, https://cdn.ymaws.com/www.ijis.org/resource/collection/FA7CC2D0-8ABE-4946-BD92-5B81E09DEE85/Common_Incident_Type_Codes_Standard_FINAL_2012.pdf.

⁴⁰ SAFECOM, “Plain Language Guide: Making the Transition from Ten Codes to Plain Language,” US Cybersecurity & Infrastructure Security Agency, accessed January 24, 2022, <https://www.cisa.gov/sites/default/files/publications/PlainLanguageGuide.pdf>.

⁴¹ NENA/APCO, “NENA/APCO Emergency Incident Data Document (EIDD) Information Document (2013),” https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/EIDD_INF-005_FINAL_20140221.pdf.

⁴² Brad Cleveland and Debbie Harne, “Call Center Metrics: Key Performance Indicators (KPIs),” ICMI Tutorials, Incoming Calls Management Institute, 2003, <https://www.icmi.com/files/StudentResourcePage/CCF/CCMetricsKPIs.pdf>.

⁴³ APCO/NENA, “Standard for the Establishment of a Quality Assurance and Quality Improvement Program for Public Safety Answering Points,” 2015, https://cdn.ymaws.com/www.nena.org/resource/resmgr/Standards/APCO-NENA_ANS_1.107.1.2015_Q.pdf.

⁴⁴ Cleveland and Harne, “Call Center Metrics.”

⁴⁵ Cleveland and Harne, “Call Center Metrics.”

⁴⁶ APCO/NENA, “Quality Assurance.”

⁴⁷ APCO/NENA, “Quality Assurance.”

issues such as accurate adherence to dispatch protocol by call type and severity, and whether the appropriate number of units were dispatched based on the nature of incident.⁴⁸

In addition, the call should be assessed based on the data in the CAD system with regard to accuracy, location of incident, and adherence to protocols requiring the sharing of crucial contextual information to field responders (presence of weapons, number of people involved, etc.).⁴⁹ ECCs should also examine CAD data entry error rates, the time it takes to locate a specific CFS event in the CAD system, and uniformity in call type coding among 911 professionals.⁵⁰ This review of data could include an assessment of what share of calls are reclassified following event resolution and what share of call types are coded as “other” and why.⁵¹ Improving the quality of call classification and documentation is particularly important in light of the fact that several states have introduced or passed anti-bias legislation creating or enhancing punitive measures the placing of false calls to 911, specifically including calls made to harass or intimidate a person or group based on race, ethnicity, or identity.⁵²

The performance of ECCs can also be assessed by soliciting community feedback; doing so is essential in building trust between community members and public institutions.⁵³ This can be accomplished through surveys of the entire community or surveys of people who have called 911 seeking emergency services. These may be conducted in person, by phone, via internet, or via text message. No industry standard exists for measuring customer satisfaction with ECC services.⁵⁴ Moreover, these surveys have the same limitations as those conducted to assess community satisfaction with the police, which tend to yield inflated measures of positive feedback owing to biased samples that over-represent people in affluent, low-crime communities.⁵⁵ Intentionally over-sampling people from high call-volume communities,⁵⁶ conducting focus groups with people who reside there,⁵⁷ or soliciting feedback through text-based surveys⁵⁸ may produce more accurate and representative views of ECC service delivery. It is also important to repeat the administration of surveys and focus groups over time to assess changes and identify areas that have improved or are in need of improvement.⁵⁹

Operations and Structure

ECC operations have historically been unique to each center and driven by the needs of the jurisdictions and agencies they serve and where they are housed (e.g., police or sheriff’s department, fire department,

⁴⁸ APCO/NENA, “Quality Assurance.”

⁴⁹ APCO/NENA, “Quality Assurance.”

⁵⁰ APCO/NENA, “Quality Assurance.”

⁵¹ Simpson and Orosco, “Re-Assessing Measurement Error.”

⁵² Mia Geoly, “Some States Crack Down on False 911 Reports,” State Legislative News. National Conference of State Legislatures, September 3, 2021. <https://www.ncsl.org/research/telecommunications-and-information-technology/some-states-crack-down-on-discriminatory-false-911-reports-magazine2021.aspx>.

⁵³ Thomas C. O'Brien and Tom R. Tyler, “Rebuilding Trust Between Police & Communities Through Procedural Justice & Reconciliation,” Behavioral Science & Policy 5, no. 1 (2019): 34-50.

⁵⁴ Cleveland and Harne, “Call Center Metrics.”

⁵⁵ Nancy La Vigne et al., “How do People in High Crime, Low Income Communities View the Police?,” Urban Institute, February 2017, https://www.urban.org/sites/default/files/publication/88476/how_do_people_in_high-crime_view_the_police.pdf.

⁵⁶ Jocelyn Fontaine et al., “Views of the Police and Neighborhood Conditions: Evidence of Change in Six Cities Participating in the National Initiative for Building Community Trust and Justice,” Urban Institute, November 11, 2019.

⁵⁷ Carla Barrett and Megan Welsh, “Petty Crimes and Harassment: How Community Residents Understand Low-Level Enforcement in Three High-Crime Neighborhoods in New York City.” *Qualitative Sociology* 41, no. 2 (2018): 173-197.

⁵⁸ Tammy Chang et al., “Text messaging as a community-based survey tool: a pilot study.” *BMC Public Health* 14, no. 1 (2014): 1-8.

⁵⁹ Fontaine et al., “Views of Police.”

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or other public or private entity). Indeed, ECC operations are primarily a local function⁶⁰ based on their geographic purview; according to the FCC’s registry, of primary and secondary PSAPs, there were over 8,900 PSAPs as of October 15, 2021.⁶¹ Perhaps not surprisingly, the current state of ECC operational practice reveals a patchwork of structures and approaches, with scant clarity and little uniformity in call coding, answering, dispatching, and quality assurance processes. In recent decades, ECC operations have been challenged with increased demand for 911 services,⁶² which has compromised their ability to respond to emergency calls, particularly owing to rising intra- and inter-agency communications delays⁶³ and perennial funding issues, given that 911 service fees routinely fall short of covering the costs of operations.⁶⁴ Technology is a particular challenge for ECCs, given the wide array of vendors and proprietary CAD systems, many of which are antiquated or inhibit interoperability, thus restricting the ability of centers to take a data-driven approach to provision of services as well as to engage in quality assurance measures.

The advance of NG911 will promote greater coordination, collaboration, and interoperability among ECCs. This will require more complex operational procedures, greater cooperation and partnership across multiple agencies, and the modification of existing policies and practices to support the NG911 environment.⁶⁵ Indeed, improving ECC operations demands attending both to global issues, such as enhancing uniformity in service delivery across ECCs, as well as to local issues, such as ensuring representative input on operational priorities that embodies all perspectives, including those of residents from high call-volume communities.

NG911 may also lead to the consolidation of ECCs, a trend that is already under way, as the number of PSAPs nationwide has declined considerably over time.⁶⁶ While consolidation has its advantages in terms of increased efficiencies and economies of scale, it requires significant infrastructural investments to launch. Merging ECCs must agree upon standardization of call-taking and dispatching protocols, classification systems, certification, and training standards; and must ensure technologies are compatible (or migrate to a shared CAD system), among other considerations. Importantly, given the documented staffing shortages within ECCs,⁶⁷ consolidation should not be pursued as a means of laying off existing staff. Instead, the primary goal of such a move would be improving service delivery.

Even among neighboring ECCs that have not consolidated, the differences in call-taking and dispatching protocols create an uneven experience for people seeking emergency services across geographic locations based on differences in how localities prioritize and triage calls. Different communities may desire different types of emergency services, with some communities expecting police response for

⁶⁰ Industry Council for Emergency Response Technologies (iCERT), *History of 911 and What It Means for the Future of Emergency Communications*, 2015, 3, <https://perma.cc/YL97-9J9C>.

⁶¹ iCERT, “History of 911.”

⁶² More than half of all ECCs have experienced an increase in the number of dispatched calls. APCO International, “Project RETAINS: Staffing and Retention in Public Safety Answering Points (PSAPs): A Supplemental Study, 2017, <https://www.apcointl.org/services/staffing-retention/>.

⁶³ APCO International, “Project RETAINS.”

⁶⁴ APCO International, “Project RETAINS.”

⁶⁵ Task Force on Optimal PSAP Architecture (TFOPA), “Task Force on Optimal PSAP Architecture Final Report,” Federal Communications Commission, January 29, 2016, https://transition.fcc.gov/pshs/911/TFOPA/TFOPA_FINALReport_012916.pdf.

⁶⁶ TFOPA, “Final Report.”

⁶⁷ C. Scott, “911 Has Its Own Emergency: Not Enough Call Takers and Dispatchers,” KDVR, May 24, 2021, <https://kdvr.com/news/local/not-enough-911-call-takers-and-dispatchers/>.

events that appear “suspicious” and others preferring a non-law enforcement response to certain types of incidents.⁶⁸

To be clear, considerable operational challenges present themselves in the context of transitioning to NG911. Standard operating procedures will be needed to address broadband data and to account for a likely increase in call times, to validate the legitimacy of the data, to enable real-time texting and video chatting with the public and with first-responders, and to employ new technological options, such as captioning, for communications with non-English speakers and hearing and visually impaired callers.⁶⁹ These capabilities, which should be guided by functional and interface standards,⁷⁰ are essential in ensuring equitable access to emergency service delivery, facilitating communications with all communities and populations, and preventing miscommunications that could have dire consequences for people in need. Importantly, the migration to NG911 will enable people experiencing intimate partner violence to surreptitiously text their location and details of their event. However, the improved location identification functions increase the risks of violating the confidentiality of the caller, who may wish to remain anonymous.

ECC operations are determined by policies and procedures developed by leaders in each agency.⁷¹ Resources for standardizing or optimizing these operations exist, but are not always used or followed. For example, 911.gov provides wide-ranging resources, including assistance with NG911 implementation, telecommunicator job classifications, and resources for COVID-19.⁷² Two additional policy resources include NENA and APCO, which are membership associations supporting 911 professionals. Policies establish criteria for the tasks described above, as well as mechanisms for maintaining quality of the information captured. Protocols enable valid and reliable information collection about emergencies, support inter-rater reliability, and support the efficient and effective dissemination of that information to first responders and, where necessary, to others.

Research Evidence

As referenced above, the research evidence on ECC operations is relatively sparse regarding the best structures and operational models for ECCs but is increasingly robust regarding the call-taking and dispatching processes. ECCs operations can be informed by recent qualitative research that describes the call-taking, triaging, and dispatching processes; by quantitative studies that examine the degree to which calls are coded as high priority and classified accurately; and by reasons for variations in decision-making among 911 professionals. Research outside of the emergency services domain, such as implicit biases and behavioral economics studies, may also help inform ECC efforts to improve equitable and safe service delivery.

What is the best or most optimal ECC structure?

⁶⁸ Chris Magnus, “Tucson Police Department Meeting the Challenges of a Growing Call Load,” *Tucson.com*, June 11, 2018, <https://perma.cc/LV7W-NA4D>.

⁶⁹ APCO International, *Broadband Implications for the PSAP: Analyzing the Future of Emergency Communications*, 2017, <https://www.apcointl.org/~documents/report/p43-report-broadband-implications-for-the-psap?layout=default>.

⁷⁰ National Emergency Number Association (NENA), “i3 Standard for Next Generation 9-1-1 Version 1.0 (i3),” NENA Core Services Committee, i3 Architecture Working Group, October 7, 2021, https://cdn.ymaws.com/www.nena.org/resource/resmgr/standards/nena-sta-010.3a-2021_i3_stan.pdf.

⁷¹ The vast and complex governance structures are described more fully in Chapter 5: Governance.

⁷² 911.gov, <https://www.911.gov/>.

TRANSFORM 911

Each ECC is a part of a complex, multi-level governmental ecosystem and its place within it in large part dictates its structure, as does the ECC's geography and population.⁷³ As such, the conventional wisdom on "best" ECC structure is that one size does not fit all. However, guidance on optimal ECC structures and operations, developed specifically to facilitate migration towards NG911, underscores the necessity of increased coordination and potential consolidation.⁷⁴ Best practice ECC operations, especially in the NG911 context, may involve local and regional partnerships, shared standard operating procedures and quality assurance mechanisms, shared staff among neighboring ECCs and/or across police, fire, and emergency medical services, and strategies to share technology and promote interoperability.⁷⁵ Such coordination holds promise for greater flexibility during high call-volume periods, improved communications in the case of widespread disasters, and potential costs savings in shared resources.⁷⁶ Examples of shared 911 communications center models span the continuum from facility sharing with separate staff, to sharing of staff housed in separate facilities, to sharing of staff in a shared facility, such as centralized call-taking centers, which bridge multiple agencies.⁷⁷ Again, no research exists on which model is best, likely because "best" means something different to each ECC based on its authority, reporting agency, and local context.

What is the best operational model to support the routing of non-emergency calls to other hotlines, telecommunications specialists, and alternative responders?

One descriptive research study hypothesizes that the use of such tailored protocols has made dispatchers more comfortable in routing calls to alternative responders.⁷⁸ The same study recommends that 911 professionals be involved in the planning and development of new call-taking and dispatch protocols designed to make better use of alternative responders. These should be data-driven, easy to read, and accompanied by training. This engagement in protocol design holds promise in encouraging 911 professionals to dispatch to alternative first responders.⁷⁹

One potential model in the context of shifting certain types of 911 calls from law enforcement to other actors is to retain the local ECC structure but divert certain types of calls to a secondary ECC that has dedicated personnel to respond to them. However, this model requires a higher degree of specialization for call center staff.⁸⁰

Another operational consideration is whether 911 and alternative hotlines such as 311, 211, and 988 employ the same call center professionals in a central hub or are handled separately. The literature is silent on the best operational structure. On the one hand, it is less expensive and more feasible to deliver training on behavioral health issues and available alternative resources to a subset of specialized call takers, such as those answering 311 or dedicated crisis lines. On the other hand, research indicates that the public uses 911 for non-emergency calls regardless of the existence of alternative hotlines,⁸¹

⁷³ TFOPA, "Final Report."

⁷⁴ TFOPA, "Final Report."

⁷⁵ TFOPA, "Final Report."

⁷⁶ TFOPA, "Final Report."

⁷⁷ TFOPA, "Final Report."

⁷⁸ Ethan Aaronson, "Preparing 911 Dispatch Personnel for New First Responder Teams," Council of State Governments Justice Center, Field Notes: Behavioral Health, December 2021, https://csgjusticecenter.org/wp-content/uploads/2021/12/Field-Notes_Preparing-911-Dispatch-Personnel_508.pdf.

⁷⁹ Aaronson, "Preparing 911 Dispatch Personnel."

⁸⁰ Aaronson, "Preparing 911 Dispatch Personnel."

⁸¹ Gillooly, "Lights and Sirens;" Lum et al., "Constrained Gatekeepers."

suggesting that training all 911 professionals on alternative responses would increase the likelihood that most calls that are appropriate for alternative response are diverted.

How can call-taking processes be improved to ensure that incidents are not subjected to over- or under-prioritization and response?

One of the greatest tensions in emergency dispatch is the need to ensure that calls are neither over- nor under-triaged. No empirical research exists on the relative merits of different triaging models in the context of police dispatch, but some literature explores the impact of Criteria Based Dispatch (CBD) and Medical Priority Dispatch (MPD) in the context of emergency services. CBD is a framework developed by grouping similar call types together and guiding telecommunicators to ask corresponding questions for each grouping, the answers of which are associated with recommended guidelines for priority level and type of response while affording the call taker with some level of discretion.⁸² MPD also standardizes call-taking but employs a more rigid question-and-answer protocol which automatically generates a dispatch priority level.⁸³

King County, WA, Washington, DC, and Tucson, AZ are among the few jurisdictions that have implemented CBD in the context of police dispatch,⁸⁴ and no system has been rigorously evaluated. However, an analysis of 911 call and response decision-making processes in Boston, MA, concluded that the use of a digitized call-taking checklist (derived from the Emergency Medical Dispatch Guidecards) holds promise for improving response times by enabling the 911 professional to collect critical information from the caller more efficiently.⁸⁵

In addition, research comparing CBD, MPD, and non-standardized triaging processes in the emergency medical response context finds that standardized protocols perform better than non-standardized processes in correctly diagnosing the nature of EMS calls,⁸⁶ and that while research comparing MPD and CBD yielded mixed findings, CBD's more flexible protocol may yield better results.⁸⁷

Related research examines how 911 professionals assess the risk level in police dispatch. A recent study examined the variation in 911 professionals' classifications of calls as high priority and meriting police dispatch, finding that some professionals are consistently more likely than their peers to classify incidents as high priority.⁸⁸ These "alarmist" staff pass along their perceptions to officers, who in turn perceive the incident as more severe and code it as such. Mental health calls classified by those alarmist staff were six times more likely to be coded as high priority by police, and public assault calls classified by alarmist staff were two times more likely to be coded as high priority by police. Interestingly, the study did not detect variations in staff alarmism pertaining to intimate partner violence calls.⁸⁹

⁸² Frankie Wunschel and Daniel Bodah, "A New Way of 911 Call Taking: Criteria Based Dispatching," Vera Institute of Justice, December 2020, <https://www.vera.org/publications/a-new-way-of-911-call-taking#:~:text=Instead%20of%20the%20call%2Dtaker,the%20urgency%20of%20the%20need.>

⁸³ Wunschel and Bodah, "A New Way of 911."

⁸⁴ Wunschel and Bodah, "A New Way of 911."

⁸⁵ Molloy et al., "Factors Leading to Delays."

⁸⁶ Michal Plodr, et al., "Effect of Introduction of a Standardized Protocol in Dispatcher-Assisted Cardiopulmonary Resuscitation," *Resuscitation* 106 (2016): 18-23.

⁸⁷ Wunschel and Bodah, "A New Way of 911."

⁸⁸ Gillooly, "Lights and Sirens."

⁸⁹ Gillooly, "Lights and Sirens."

The author recommends that alarmist staff could be informed of their tendency to code calls as higher priority than their peers to encourage them to conform with the norm, which could be enhanced by inviting call takers, dispatchers, police, and other responders to debrief and share expertise with each other in the interests of organizational learning. In addition, ECCs could create more specific definitions and associated scripts for call types that are particularly vulnerable to misclassification, such as suicidal subjects and people experiencing mental health crisis. For example, the Philadelphia Police Department has developed a questionnaire to aid in classifying behavioral health calls more objectively, a measure that will be reinforced through the presence of mental health clinicians at the call center.⁹⁰

What strategies can minimize subjective perceptions and implicit biases associated with call-taking, dispatching, and field responses?

Implicit biases are the unconscious stereotypes that are embedded in humans' coding, storing, and retrieving of data.⁹¹ Simply put, all people have implicit biases, primarily pertaining to race and gender, that can influence how they perceive people and their motivations, as illustrated through the well-known Implicit Bias Association Test (IAT).⁹² It stands to reason that 911 professionals are not immune to such biases – even call takers and dispatchers who are engaging with callers solely by phone may be able to discern (or presume) the racial or ethnic background of a caller by the caller's manner of speaking. Indeed, research on sociolinguistics has established that a person's way of speaking can also lead to stereotyping and biases associated with both Black people⁹³ and speakers with American South dialects.⁹⁴ Such biases are directly correlated with explicit measures of bias⁹⁵ and discriminatory behaviors.⁹⁶

Training to reduce implicit biases, while increasingly common within police departments,⁹⁷ has not been subject to much rigorous evaluation.⁹⁸ Those studies that do exist suggest that such training is impactful in changing officers' knowledge, perceptions, and attitudes.⁹⁹ However, no studies to date have

⁹⁰ Nina Feldman, "Philly Police to Start Flagging 911 Calls That Involve a Behavioral Health Crisis," *WHYY NPR*, October 9, 2020, <https://whyy.org/articles/philly-police-to-start-flagging-911-calls-that-involve-a-behavioral-health-crisis/>.

⁹¹ James H. Neely, "Semantic Priming and Retrieval from Lexical Memory: Roles of Inhibitionless Spreading Activation and Limited-capacity Attention," *Journal of Experimental Psychology* 106, no. 3 (1977): 226-254; Anthony G. Greenwald and Mahzarin R. Banaji, "Implicit Social Cognition: Attitudes, Self-esteem, and Stereotypes," *Psychological Review* 102, no. 1 (1995): 4-27.

⁹² Greenwald and Banaji, "Implicit Social Cognition"; Anthony G. Greenwald et al., "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test," *Journal of Personality and Social Psychology* 74, no. 6 (1998): 1464-1480.

⁹³ Courtney A. Kurinec and Charles A. Weaver, "'Sounding Black': Speech Stereotypicality Activates Racial Stereotypes and Expectations About Appearance," *Frontiers in Psychology* 24, no. 12 (2021).

⁹⁴ Brandon C. Loudermilk, "Implicit attitudes and the perception of sociolinguistic variation." *Responses to language varieties: Variability, processes and outcomes* (2015): 137-156.

⁹⁵ Brian A. Nosek, "Moderators of the Relationship Between Implicit and Explicit Evaluation," *Journal of Experimental Psychology* 134, no. 4 (2005): 565-584.

⁹⁶ John T. Jost et al., "The Existence of Implicit Bias is Beyond Reasonable Doubt: A Refutation of Ideological and Methodological Objections and Executive Summary of Ten Studies That No Manager Should Ignore," *Research in Organizational Behavior* 29 (2009): 39-69, <https://www.sciencedirect.com/science/article/abs/pii/S0191308509000239>; Benedek Kurdi et al., "Relationship Between the Implicit Association Test and Intergroup Behavior: A Meta-analysis," *American Psychologist* 74, no. 5 (2019): 569-586; Frederick L. Oswald et al., "Predicting Ethnic and Racial Discrimination: A Meta-analysis of IAT Criterion Studies," *Journal of Personality and Social Psychology* 105, no. 2 (2013): 171-192.

⁹⁷ According to a 2019 survey of 150 large police departments, 69% offered some form of implicit bias training. CBS News, "We Asked 155 Police Departments About Their Racial Bias Training. Here's What They Told Us," August 7, 2019, <https://www.cbsnews.com/news/racial-bias-training-de-escalation-training-policing-in-america/>.

⁹⁸ Robert J. Smith, "Reducing Racially Disparate Policing Outcomes: Is Implicit Bias Training the Answer?," *University of Hawaii Law Review* 37 (2015): 295.

⁹⁹ Robert E. Worden et al., "The Impacts of Implicit Bias Awareness Training in the NYPD," The John F. Finn Institute for Public Safety, Inc., July 2020, <https://finninstitute.com/the-impacts-of-implicit-bias-awareness-training-in-the-nypd/>; Jesse Jannetta et al., "Learning to

documented changes in behavioral outcomes in the field specific to police¹⁰⁰ although one study found that gender bias awareness training promoted more gender equity-promoting practices in candidate review practices among trained faculty.¹⁰¹ This positive finding, however, is derived from a study of gender bias in an academic institution, a very different context from that of the stressful, rapid-paced, and high-stakes emergency call-taking and dispatch setting. In fact, some scholars have posited that it would be more effective to change behavioral norms than to reduce implicit biases.¹⁰²

Lessons from behavioral economics, the application of psychology to guide economic decision-making, may have implications for reducing biases in emergency communications practices. In this case “economic decision-making” pertains to the weighing of costs and benefits of certain actions, such as the risk of over- versus under-triaging a call for which the call taker has insufficient information on level of risk. However, applying behavioral economics principles to call-taking and dispatching protocols may backfire, as scholars examining the interplay between behavioral economics and implicit racial stereotypes concluded that racial stereotypes are so powerful that they alter economic irrationalities and could end up exacerbating racial biases.¹⁰³

Alternatively, a meta-analysis of 515 studies of “intergroup contact theory”—the notion that exposure of one racial, ethnic, or socio-demographic group to another—found that such contact reduces prejudice.¹⁰⁴ For example, an experimental study in which transgender activists canvassed voters on issues pertaining to transgender rights found a 10 percentage point increase in voters’ positive attitudes towards transgender people compared with voters who were canvassed on recycling issues.¹⁰⁵ Thus, efforts to bring together 911 professionals with members of high call-volume communities could reduce prejudices that lead call takers and dispatchers to misinterpret and over-triage calls and convey to field responders a level of risk that may be disproportionate owing to biases. This may also aid 911 professionals in identifying when biases may be at play for 911 callers.

What strategies can increase community trust in ECCs, particularly among people who are often stigmatized?

The manner in which 911 call takers interact with members of the public can influence whether callers seek 911 services in the future,¹⁰⁶ suggesting that training call takers to interact with callers respectfully and helpfully could increase community trust. However, this strategy would only work with people who call 911 in the first place. Research has documented many cases in which people who are subject to biases and stigma choose not to call 911. In-depth interviews with women in Baltimore, MD, who had experienced sexual or intimate partner violence revealed a general reluctance to call 911 because of lack

Build Police Community Trust,” The Urban Institute, August 2019, https://www.urban.org/research/publication/learning-build-police-community-trust/view/full_report.

¹⁰⁰ Worden et al., “Implicit Bias Awareness Training in the NYPD;” Jannetta et al., “Learning to Build Police Community Trust.”

¹⁰¹ Worden et al., “Implicit Bias Awareness Training in the NYPD;” Jannetta et al., “Learning to Build Police Community Trust.”

¹⁰² Jillian Swencionis et al., “Why Behavioral Reforms are More Likely Than Implicit Bias Training to Reduce Racial Conflicts in U.S. Policing,” Scholars Strategy Network, March 8, 2018, <https://scholars.org/brief/why-behavioral-reforms-are-more-likely-implicit-bias-training-reduce-racial-conflicts-us>.

¹⁰³ Justin D. Levinson, “SuperBias: The Collision of Behavioral Economics and Implicit Social Cognition,” *Akron Law Review* 45, no. 591 (2011-12).

¹⁰⁴ Thomas F. Pettigrew, and Linda R. Tropp, “A Meta-Analytic Test of Intergroup Contact Theory.” *Journal of Personality and Social Psychology* 90, no. 5 (2006): 751.

¹⁰⁵ David Broockman and Joshua Kalla, “Durably reducing transphobia: A Field Experiment on Door-To-Door Canvassing,” *Science* 352, no. 6282 (2016): 220-224.

¹⁰⁶ Michaela Flippin, et al., “The Effect of Procedural Injustice During Emergency 911 Calls: A Factorial Vignette-Based Study.” *Journal of Experimental Criminology* 15, no. 4 (2019): 651-660.

of trust in police and the criminal justice system. Black women were even less inclined to call 911 based on fear of an overzealous, racially biased police response.¹⁰⁷

Given the well-documented differential response of police to LBGTQ victims of intimate partner violence, who are often stigmatized and may experience additional abuse by police responders,¹⁰⁸ it is likely that this subpopulation is also reticent to call 911, but more research is needed on this topic. In addition, a recent study concluded that residents of Latinx and immigrant communities became less likely to call 911 for domestic violence issues as awareness of police immigration enforcement increased.¹⁰⁹ Similarly, a study consisting of focus groups with people who use drugs revealed that they were reluctant to call 911 because they perceived that doing so was essentially calling the police. This disinclination to call 911 inhibits them from seeking medical assistance for overdoses and victimizations. Focus group participants desired a means of requesting emergency medical services that would not trigger a police response. The authors recommended that the people who use drugs be solicited for their input in the development and implementation new interventions that rely on the 911 system.¹¹⁰ This inclusive strategy could be used with other people who are subject to bias and stigma, and would be an important subject for rigorous evaluation.

Questions for Inquiry and Action

The existing literature on ECC processes provides important insights into the social and operational mechanisms that can promote or hinder accessible, efficient, equitable, and safe emergency services outcomes. However, no evaluative literature exists that enables ECCs and their partners to learn from and adopt best practices. The following research questions, if answered, would build a wealth of knowledge to inform efforts to transform 911.

- How can existing national standards and protocols be catalogued and assessed to highlight best practices, as well as existing opportunities, gaps, overlap, difference, and conformance?
- What changes to the structure of ECCs would promote more accessible, equitable, and effective delivery of emergency services (e.g., increase access to people with disabilities, reduce over- and under-triaging, support the offloading of appropriate calls to alternative resources/responders)?
- To what degree do efforts to create more behavioral health resources (e.g., the inclusion of mental health professionals in ECCs, the increase in availability of behavior health services in the community) improve service delivery and reduce the use of police responders?
- Do variations in behavioral health resources by community demographics lead to disparate outcomes for community members? To what degree does increasing access to behavioral health

¹⁰⁷ Decker et al., “‘You Do Not Think of Me as a Human Being’: Race and Gender Inequities Intersect to Discourage Police Reporting of Violence Against Women.” *Journal of Urban Health* 96, no. 5 (2019): 772-783.

¹⁰⁸ For a comprehensive review of the literature on this topic see Rollè et al., “When Intimate Partner Violence Meets Same Sex Couples: A Review of Same Sex Intimate Partner Violence,” *Frontiers in Psychology* 9 (2018): 1506.

¹⁰⁹ Ashley N. Muchow and Catalina Amuedo-Dorantes, “Immigration Enforcement Awareness and Community Engagement with Police: Evidence from Domestic Violence Calls in Los Angeles.” *Journal of Urban Economics* 117 (2020): 103253.

¹¹⁰ Karla D. Wagner et al., “Post-Overdose Interventions Triggered by Calling 911: Centering the Perspectives of People Who Use Drugs (PWUDs),” *Plos One*, October 17, 2019, <https://doi.org/10.1371/journal.pone.0223823>.

resources in communities of color reduce police dispatch, arrests, and use of force in response to such calls?

- What are the relative benefits of various call-taking and triaging protocols and standards? To what degree do they improve accurate classification and coding? To what degree do they result in over- or under-triaging?
- What methods can improve the accurate classification of calls and thus the quality of data needed to improve the quality and efficiency of ECC service delivery?
- How does the introduction of texting, video calls, and inclusion of photos by 911 callers affect 911 communications operations in terms of facilitating better communications with the hearing and visually impaired and people with language barriers?
- To what degree does the introduction of texting, video calls, and inclusion of photos by 911 callers affect 911 communications operations in terms call takers' abilities to manage information efficiently? How do these new communication mechanisms and data sources affect the stress level of 911 professionals and their degree of compassion fatigue and burnout? How can those outcomes be anticipated and prevented or mitigated?
- To what degree does call taker alarmism vary by call taker demographics and tenure? How does the level of call taker alarmism impact decisions to route to a first responder versus an alternative responder? How does it affect first responder decisions to arrest or use force? What measures are effective in reducing call taker alarmism?
- How might principles of behavioral economics be employed to incentivize 911 professionals from over-triaging? How might they be applied in the design of CAD user interfaces to streamline call-taking and encourage the use of alternative responders? What is the degree of their effectiveness?
- What measures are effective in breaking down silos and encouraging greater understanding and cooperation among 911 professionals and field responders?
- What measures are effective in reducing the stigma that 911 professionals and field responders may have towards people who use drugs?
- What are the effects of anti-bias 911 laws on the number and types of calls of service and the ability of 911 professionals and ECC operations to document those calls accurately?

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