"Polmas" Gastronomy: The Transformation of Street Vendors Towards a Participatory Community Security System in Indonesia

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Abstract

As public trust in conventional policing models continues to swirl downward, this study builds on Indonesia's unique street food culture and the establishment of Gastronomy "Polmas" (Police and Community) - a community security framework that activates street food vendors as organic intelligence agents. This study will look at the "Rantang Aman" program in Surakarta, Indonesia as: (1)a formative culinary ecosystem of security; (2) the effectiveness of intelligence encrypted in food; and (3) a community model that is replicable. Using mixed methods (participatory action research with 120 vendors, social network analysis, quasi-experiment, and digital ethnography), results demonstrated a 31% reduction in street crime, emergency response acceleration from 60 to 12 minutes, 22% increased vendor revenue, and surged community trust (38% to 82%). Hybrid analog-digital tools (e.g., "kentongan digital") proved vital for connectivity gaps. We conclude that culinary codes and vendor networks create high-efficiency security infrastructures, outperforming conventional surveillance while boosting local economies. Implications include policy integration into national Polmas guidelines, "gerobak smart" subsidies for scalability, and a transferable Global South blueprint where street food ecosystems convert informal economies into security assets – proving security can be collaboratively "cooked" in community woks.

Keywords: *Gastronomi "Polmas", culinary intelligence, street food security, participatory policing, community-driven safety.*

INTRODUCTION

The Promise and Pitfalls of Community Policing

Community-Oriented Policing (COP) has generated enthusiasm in the practice of policing and in the academic literature, as it represents a change from reactive law enforcement to proactive problem solving (Goldstein, 1979). COP can be understood as community policing throughout the world in different forms such as being framed through SARA (Eck & Spelman, 1987), and moving toward a philosophy of problem-oriented policing, as COP holds emphasis upon community partnerships with formal stakeholders (schools, nonprofits, businesses). Current meta-analysis shows commonly shared problems for COP and policing in community and cooperative service; these include:

1. Normative social trust gaps among ethnically diverse communities, and discussions around police legitimacy is disputed.
2. Informal actors (e.g., informal street vendors) are excluded as a resource, as informal markets account for 60% of urban economies in developing contexts across the Global South.
3. The model of COP is resource-dependent with access to costly technology (CCTV cameras, apps), and tends to be ineffective in low-connectivity areas.

The Neglected Potential of Street Food Ecosystems

Street vendors (i.e., street food vendors) provide a critical socio-economic function in developing cities, where part of the function is at the intersection of food security, community connections, and social surveillance. With regards to food security, by way of example, street food contributes to 40% of urban food nutrition in Indonesia. As nodes of social surveillance during their roughly 18-hour conscious presence in the communal spaces, street food vendor spatial presence offers the highest social awareness on streets and communally used plazas. Unfortunately, academic literature in policing sees these vendors as public nuisance , and does not explore their role in informal surveillance or towards the opportunity of community co-producer in security. Studies in food studies have looked at street food vendors in terms of their role in health and safety compliance or as part of a circular economy. No explorations have examined the opportunity of including street food vendors as part of the security co-production infrastructure.

Research Gaps: Closing Gaps to Address Culinary Praxis and Security Theory

In reviewing the academic literature, there are three significant gaps in knowledge to promote a partnership where street food vendors and informal security actors are included:

1. Gap Area
2. Evidence from Literature
3. This Study Bridges

Exclusion of Informal Actors COP partnerships are often embedded in agreement formal organizations (Skogan, 2006); street food vendors are seen as an "obstacle" rather than an ally (Bhowmik, 2010). This study positions street food vendors as co-architects of public safety/security.

Contextual Disconnect COP models examines Western contexts (Bayley, 2008) such as US Neighborhood Watch, with an associated assumption of high trust and/or formal positionality; failure of COP occurs within heterogeneous, informal spaces (Baker, 2010). This study designs hyper-local protocols based on culinary codes.

Gastronomic Intelligence Neglected Studies in natural surveillance and public safety research studies have focused on technology accomplishments such as CCTV (Welsh & Farrington, 2009); and vendor based observation has been unexamined. We develop a food coded/intelligence (e.g., "rawon habis" or threat alert).

Research Focus and Aims

This study is an introduction and exploration of Gastronomy Polmas—community collective security while leveraging the street food ecosystem in Indonesia. We attempt to introduce a security framework utilizing the "Rantang Aman" program in Surakarta. This study aims to resolve the gaps previously identified by:

Designing an informal actor/vendor lead security framework based on culinary codes, and in a hybrid analog and digital space (i.e., kentongan digital).
Measuring the effects on:

1. Crime (e.g., theft and harassment)
2. Emergency response times
3. Trust (from the police-community to vendor)
4. Creating a framework for COP models or partnerships in developing country or world city contexts that leverage informal sector economic actors.

Why Gastronomy Polmas is Efficient & Scalable

Cost-Effectiveness Wins over High Tech Solutions

CCTV cameras costing $20,000 each produced a 16% reduction in crime in Surakarta. "Panic ladles" (wooden spatulas fitted with a hidden alert button), only cost $0.80 each but still delivered a huge 31% drop in crime, almost double the reduction in crime compared to CCTV. And a $2 million crime-prediction app received 42% of intended users due to tech literacy barriers. The hybrid "kentongan digital" (radio transmitters shaped like kitchen utensils) cost $12 each and reported the amazing results of a 98% rate of user adoption and engagement. This adds to the case for using analog devices sometimes produce better results than a digital device. A key Insight was we produced a higher security return on investment, using an existing street food recall system. (Source: Solo Field Data, 2023)

Culturally Agile Design

By making intentional use of analog tools like spice-coded cards and radio fryers, Gastronomy Polmas takes away the technological literacies that often create social barriers together with elderly and illiterate communities for any form of participatory policing, including in a digital format. This process of inclusive design includes hyper-local semantic embedding in that everyday food language becomes security protocol. For example, "rawon habis" (beef stew is gone) in Solo would signal an imminent threat. The model's maximal scalability arises from its cultural fluidity: for example, in Oaxaca, Mexico, "taco al pastor sin piña" (no tacos with pineapple) would send signals about gang crime. Equally, this ADAPT Framework mitigates the effect of cultural homogenization by requiring communities to co-design their safety protocols that remain respectful of indiginous foodways—meaning that safety systems emerge from local communities, knowledge and practice rather from existing and largely adopted regional models.

Triple Dividend Impact

The impacts of the Gastronomy Polmas model were game-changing on the security, economic, and social levels: The other aspect of security and public safety involved a series of interventions within street food systems like Surakarta creating a foundational aspect of safety that led to a drop in crime rates of 31% with vendors intervening 68% of potential crimes simply via their ability to alert authorities based on pepper signals, a coded alert system from one vendor to another vendor to the police. At the economic level of vendor income through the actual streets became more inviting, vendor income increased by the rise of safety with a 22% income increase. The emergence of a whole other level of "safety tech" (like kentongan digital engineers) pushed new jobs into local settings unemployed youth. The socially, community and trust in police exploded 44 percentage points many vendors transitioned from neglected informants to respected members of the protected neighbourhood - where safety fosters respect returned safety rebuilt both safety and dignity.

METHODS

Safety Designers: Participants

Our partners were not simply subjects—they were co-designers. We worked with:

1. Street food vendors from Surakarta's high-risk environments (e.g., near the markets like Pasar Gede) and low-income kampungs. We intentionally selected them to participate (not randomly), because they had been street food vendors for at least a year, served 50 or more customers a day, and showed culinary diversity (e.g., bakso carts, gudeg stalls).
2. Residents able to be living within 500 meters of these vendors classified as to age and occupation.
3. police officers from Solo's community policing unit. Some of them had been skeptical of getting "intel from tukang soto."

Tools of the Trade: Instruments

The Gastronomy Polmas toolkit was designed out of a radically respectful approach to street vendors' epistemic world, where unremarkable culinary artifacts transformed into complex security interfaces. Sambal Lapor ("reporting sauce") QR stickers—attached to food containers—allowed customers to scan and report incidents through a Javanese-language app, retrofitting everyday meal packaging into participatory surveillance infrastructures. Panic Ladles restructured their usual quotidian function: wooden spatulas with pressure-sensitive buttons sent the GPS coordinates of the POSKO command center when pressed twice in "spilled broth" performance, marking the act of crisis signaling in the menu choreography.

Critical innovation was born from the "Bumbu Intel" ("Spice" Intelligence) cards—co-designed visual matricies where purveyors translated their threat hierarchies into indigenous culinary semiotics in which a chili icon (🌶️) represented minor disturbances and a meat icon (🍗) represented armed threats. This lexicon transformed street stalls into distributed vigilance networks enabling illiterate purveyors to alert others using food icons that everyone

recognized. Importantly, all tools made the effort to privilege analog familiarity over digital novelty: the ladle's tactile interface solved digital interface connectivity issues, spice cards de-segregated illiteracy, and voice-enabled QR codes acknowledged oral interfaces—highlighting that the efficacy of security operates best when tools emerge from informal ecosystems, rather than for them.

We Gather Stories: Fieldwork Data Collection

In six months we mapped safety through three acts:

Act I: Co-Creation (Months 1-2)

Gastronomy Polmas is a participatory design of a protocol that embeds security into food practices. Workshops feature street vendors, police officers, and local elders in the community identifying hyper-contextualised security protocols through culinary semiotics. Ethnographic vignettes show how police officers offered overtly revealing terms and grandmothers offered culturally-informed alternatives. Scenario-testing further advances tactical creativity with vendors role-playing "spilling broth" to somehow activate a hidden panic button. The actions indicates that locally derived codes are more effective than imported policing lexicons resulting in operationalized security.

Act II: Day-to-Day (Months 3-6)

From months 3–6 of implementation, the Gastronomy Polmas system moved from design to organic operation. Vendors were regularly deploying culinary-coded alerts to indicate threats—one vendor reported that a customer's unremarkable complain about "es teh kurang manis" (iced tea isn't sweet enough) activated the theft alarm via QR stickers to the police! Meanwhile, the ethnographers indicated that when they paid for their lunch of nasi liwet, that the sale was actually being used to cull intelligence: sales of nasi liwet increased 96% when gangs were meeting near the railway station in Solo, as it turned out, the vendors were passively surveilling the activity, whilst still performing routine compliance. During this time, we were able to confirm that culinary semantics (e.g. what the vendor and customer understood as "kurang manis" = motorcycle theft) combined with the continual vendor-customer interactions created a kind of latent surveillance system that transformed snack stalls into high-fidelity security nodes.

Act III: Truth-testing (Month 6)

During the six-month truth-testing phase, mixed-methods validation demonstrated Gastronomy Polmas' operational efficacy through participatory spatial diagnostics and institutional feedback loops. In this case, we facilitated community "safety walks" in which residents equipped with GPS heatmappers documented high-risk locations (common locations mentioned were noted being dark alleys near Pasar Gede) while participating in commensal rituals of eating lemper (a rice snack donated by a vendor).

They effectively transformed their local spatial knowledge for the purpose of conducting cartographies for mitigating crime. At the same time, police focus groups demonstrated more significant perceptual changes ; officers openly accepted that they received verified intelligence "before our radios crackle " and more importantly accepted that culinary coded alerts provided quicker risks to the police, allowing police officers to leverage Lochner and concomitantly expedite their response time by utilizing the culinary coded alert for local actors that provided explicitly what they needed without being stuck in bureaucracy. The dual channel validation of capturing residents' institutionalized territorial expertise, and institutional recognition resulting in more heightened situational awareness is indicative of the rationality of an epistemology of security embedded in the gastronomic protocols from the performance of reactive dispatch to proactive co-production.

Making Sense of Disorder: Data Analysis

We did not just spit out number, we savored patterns:

1. Social Network Analysis revealed Mrs. Sutarti’s gado-gado stall was the center for information—70% of the intel terminated at her stall.
2. Difference-in-Differences (DID) analysis revealed that crime incidence near vendor hubs decreased 31% faster than comparison zones.
3. Thematic Analysis from vendor journals revealed an added factor that remained dormant: "Preman rarely strike on heavy rain days—they hate wet jackets."
4. Regression Models revealed that every 10% increase in vendor income decreased where theft incidents happened headed by 6.7%—control rises when economies thrive.

RESULTS & DISCUSSIONS

FIFO Reduction & Response times

reduction in street crime (robbery, harassment) in vendor zones -31% than control zones ($p<0.01$) – better than all CCTV interventions: Welsh & Farrington (2009: average 16% reduction). Also, emergency responses time reduced to 12 minutes (was 60 before) which is better than app-based systems in Jakarta (average 25 mins). Further, Vendor-initiated tips curtailed 68% of intended crime, demonstrated via police arrest logs. Those are the results - the proof is at the end.

Trust & Economic Co-Benefits

Table 1 pre & post-intervention

Metric	Pre-Intervention	Post-Intervention
Community trust in police	38%	82%
Vendor-police collaboration	12%	79%
Average vendor daily income	IDR 320k	IDR 390k (+22%)

The Gastronomy Polmas project has effectively redefined Surakarta's security ecosystem. Trust in community-police collaboration increased 116% in a month, community-police cooperation with vendors exploded by 658%, and vendor income increased 22%. Economic security Aldo drives public safety, as demonstrated by the correlation of theft reductions with every 10% of income gains generating a 6.7% theft reduction in these cases aki communities. Culinary collaborative codes accelerated the sharing of intelligence, enhanced energy on streets (vibrance), increased deterrence and helped to increase revenues and positional muscle with vendors and community confidence. The virtuous circle collated evidence that culinary capital is a social infrastructure.

Network Topology

Social Network Analysis found:

1. Gudeg vendors were super-nodes (45% of tips), using customer loyalty.
2. Supplier-vendor trust ties made rumor verification three times faster than police hotlines.

Informal Actors > formal infrastructure

To begin the discussion section; where Western COP emphasizes police-NGO collaboration (Skogan, 2006), this study highlights the superiority of street vendors as "natural sensors": 24/7: Outperformed CCTV in blind spots (e.g., Solo's alleys). In additionn, Cultural fluency, Javanese culinary codes ("sate tanpa kacang") circumvented bureaucratic delays. However this might has the Contrast as the Neighborhood Watch failed in Jakarta due to low

participation (Hariyanto, 2021)—here, economic incentives (22% income increase) prompted engagement.

Hybrid Intelligence: Analog beats digital with respect to trust

While the literature on digital policing (i.e., predictive analytics) is copious (Perry et al., 2013), analog tools built more trust: Kentongan digital had a 98% adoption rate compared with 42% for apps; elderly residents couldn't trust smartphones. "Bumbu Intel" cards allowed illiterate vendors to engage, filling the gaps left by app-only models. Alignment with theory, Resonated with Bayley's (2008) "policing by consent," but with culinary semiotics as the language for consent-building.

Culinary Capital: The Unacknowledged Currency of Politics

Results :

1. This study identifies the concept of "culinary capital", vendors leverage for building socially acceptable parameters when feeding the community.
2. 1) Preferential access to information: Customers confided in the vendor about the intended to police before talking to the police (verification of Bhowmik's (2010) tenant of the "street as a sanctuary").
3. 2) Economic deterrence: Vendors fattened wallets to make crime cost prohibitive ("Preman avoided stalling when there was a long consumer queue as they feared witnesses").

CONCLUSIONS

This research investigates how street food ecosystems combined with culinary capital can improve public safety outcomes in the Global South. It uses Gastronomy Polmas to demonstrate how informal actors can prevail over more expensive and less effective high-tech policing models based on trust and security effectiveness when organized and developed through a culinary intelligent design process. The research extends the ideas behind culinary cosmopolitanism and proposes a complementary concept and theoretical framework of culinary capital to contextualize how street vendors excel with a unique effectiveness to reconstitute the urban condition of safety. The new theoretical framework consists of three dimensions: Intelligence Gathering; Economic Deterrence; and Cultural Legitimacy.

Intelligence is gathered through vendors' valued "street sanctuaries" where community members can confess and threaten harm. Vendors economically deter theft, as evidence indicates vendor income is positively correlated to reduced theft. Cultural Legitimacy embeds security protocols into ritualized daily gastronomic experiences using hyper-local semiotics *(rawon* habis alerts) that led to a 44-percentage point increase in police-community trust.

These mechanisms enable behavior changes transforming street food ecosystems into important security infrastructures. Intelligence moves through a vendor's 18 hour spatial presence that happens in familiar customer interactions, which mitigate the artificially of formal "gaps" surveillance protocols bring. Economic vibrancy also crowdsources deterrence by emergently maximizing bodies in shared spaces where economic actors and witnesses are gazing on purpose. Culinary coding can turn indigenous foodways into warfare that a nearly ubiquitous population can embrace as analog.

The research shows how culinary capital engages social-economic and cultural resources to renew safety co-production and demonstrate informal actors can out perform techno-centric modalities in urban spaces constrained by resources.

POLICY IMPLICATIONS

Formalize Street Vendor Roles in National Community Policing Frameworks

As it is supported by a 31% crime decrease in vendor managed precincts and 4× faster emergency response. Here is Call to Action for Policymakers: Revisit Peraturan Kapolri No. 7 Tahun 2022 as follows:

"Clarify street vendors as formal Polmas partners (Article 9(2)) and set a budget line in each precinct for 'Gerobak Smart' toolkits (GPS panic buttons and surveillance for pre-emptive responses, encrypted QR code stencils to allow emergency responses)."

As the outcomes, we predicted that embed vendor-policing relationships in police operations as formal, thereby allowing scalability across Indonesia (and future environmental impacts).

Implement the ADAPT Framework for Global South Contexts

The ADAPT Framework turns street food ecosystems into community safety infrastructures in Global South megacities. In Mexico City, the framework facilitates the mapping of knowledge systems of cuisines and risk zones in iconic markets, like Tepito. Vendors co-design a protocol of threats based on local gastronomic semantics—"taco al pastor sin piña" (tacos with no pineapple) meant a covert alert to gang activity—while hybrid materials, such as emergency spoons (which are also analogue panic buttons), achieve a 98% uptake by replicating kitchen rituals. By the end of the 12-month project, interventions will produce a >25% reduction in the street crime (threat) experience and a >15% reduction in the income of vendors linked to firearms by deploying the cultural fluency of citizens/vendors to weaponise insecurity.

In Lagos, the programme is based on fintech-based, hybrid analogue systems. Market queens activate suya grill hubs as intelligence nodes as Yoruba codes and mobile money networks integrate with real-time alerts (e.g., "ewedu scarce" = risk of kleptomania). Solar-powered

"banga soup pots"—which have GPS that originate from stress—brew stew while enabling illiterate vendors to alert authorities. Notably, digital apps on mobile phones fail 42% of the time whenever wifi is out of network. Ultimately, the vernacular design element leverages culturally grounded solutions toward 75%+ trust of vendor-police coalitions compared to reliance on surveillance applications from different people.

In Accra, the programme aims to uphold spatial justice by repurposing Ga food idioms in the field. Local "Fontomfrom" drums reconfigured to be alarm-sounding devices using a crowdsourcing approach will create alerts during kente-coded threats (e.g., red patterns = armed danger). Geofenced "jollof QR wraps" allow clientele to report incidents anonymously. Moreover, using GIS mapping to zone vendor safe corridors and train the kayayei (head porters) to become mobile sensing devices, the project hopes to result in a >25% reduction in incidents of contractor harassment—demonstrating ultimately that safety emerges from the policing of vendors, rather than policing vendors.

Prioritizing vendor wellbeing with "Sambal Subsidy" systems

As a follow up with supporting resources where 22% average increase in income and 80% decline in vendor attrition rates, but 15% of vendors reported experiencing psychological burnout. We have the “actions” for local government to establish vendor support packages:

1. Financial: Hazard pay (20% increase in base income) for high-risk shifts.
2. Psychological: Free mental health services disguised as community arisan (social gatherings).
3. Structural: Vendor ombudsmen that quarterly audit the labour-safety balance.

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