

Hands Off! March in San Diego: Crowd Size Estimates and New Tools for Accuracy

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Summary

There are often significant differences between crowd size estimates provided by police and those given by protest event organizers. Until recently, organizers lacked reliable methods to support their numbers. However, two recent developments have improved the accuracy of these estimates:

1. **Technology:** The use of drones, video footage, photos, and measurements of crowd movement now allows organizers to produce crowd size estimates with visual and quantitative documentation.
2. **Academic Research:** Geospatial analysis techniques developed by researchers offer independent ways to estimate crowd sizes and verify organizer claims.

Using these tools, the estimated attendance at the April 5, 2025 "Hands Off" March in downtown San Diego was between 30,000 and 46,809 people.

These figures are consistent with what organizers for April 5 events reported nationwide, where attendance was generally 5 to 7 times higher than the number of people who RSVP'd online. For example, in San Diego, around 6,000 people had RSVP'd, but actual turnout was between 5.0 to 7.8 times greater, matching the estimated crowd range.

Introduction

On April 5, 2025, millions of people across the United States participated in more than 1,300 "Hands Off!" marches to protest sweeping policy changes enacted by President Donald Trump and Elon Musk, head of the Department of Government Efficiency (DOGE). The demonstrations opposed drastic cuts to federal funding for health services, research, education, and social programs like Medicaid and Social Security. Protesters also condemned the growing influence of billionaires in government and defended civil liberties under threat, including Diversity Equity and Inclusion (DEI) programs, the rights of LGBTQ+ individuals and immigrants.

Organizers and Objectives

The San Diego march was coordinated by a coalition including Activist San Diego, Alliance of Californians for Community Empowerment, CBFD Indivisible, Change Begins With ME, Democratic Club of Carlsbad and Oceanside, Democratic Woman's Club of San Diego County, Encinitas Action, ENCDC Encinitas and North Coast Democratic Club, Escondido Indivisible, Flip CA48, Indivisible 49, Indivisible Fallbrook, Indivisible NCSD, Indivisible Ocean Hills Country Club, Indivisible Ramona, Indivisible Resistance San Diego, Indivisible Temecula, Julian Indivisible, KNSJ, Latinos en Acción, League of Women Voters North County, League of Women Voters of San Diego, Pacific Beach Democratic Club, Public Power San Diego, Racial Justice Coalition of SD, Represent Us San Diego, San Diego and Imperial Counties Labor Council, San Diegans for Gun Violence Prevention, San Diegans for Justice, SanDiego350, Take Action San Diego, The Justice Workshop, The Woman's March of San Diego.

Crowd Size Estimation

Accurate crowd size estimation is essential for gauging the scale and societal impact of public demonstrations. Recent advancements in the use of UAVs have significantly enhanced the precision of such assessments (Choi-Fitzpatrick et al., 2018). However, the practical deployment of drones is prohibited by cost, required training, and strict regulations—particularly in urban areas or directly above protest crowds.

Fortunately, the widespread availability of mobile phone cameras, combined with social media and online geospatial tools such as Google Earth Pro, has empowered organizers to apply traditional crowd estimation techniques with greater accuracy. These traditional methods involve calculating the total area occupied by a crowd and applying density estimates in addition to use of crowd flow measurements.

For example, the San Diego march occupied approximately 180,714 square feet of street space and 29,926 square feet of Civic Center Plaza (see Fig. 1 and Fig. 2). Using an estimated density range of one person per 4.5 to 6.0 square feet, the crowd size is calculated as follows:

Area-based calculation:

- Street Area (180,714sq ft):
 - At 4.5 sq ft/person: 40,159 people
 - At 6.0 sq ft/person: 30,119 people

PLUS

- Plaza Area (29,926sq ft):
 - At 4.5 sq ft/person: 6,650 people

- At 6.0 sq ft/person: 4,987 people

Total estimated attendance therefore ranges from approximately 35,106 to 46,809 people.

Flow rate methodology is another method where video can be used to assess the crowd size as the march is taking place. For example, Ken Stone placed a stationary camera to capture the width of West Broadway in San Diego. The 27 ft road width flow rate was ~550–600 people per minute, accounting for intermittent pauses and group spacing, and a steady pace over 45–60 minutes. The total number of participants using this approach is estimated between 30,000 and 40,000 people. This estimation is corroborated by a hyperlapse video by Ken Stone, 78 minutes of march compressed into slightly over 2 minutes with an estimated march count of 16,000 marches per [compressed hyperlapse] minute (<https://youtu.be/Ltut4LBN9pM?si=t2QR6yRG8ZpnY5R5>).

If anything, these estimates are lower than the actual count because we have erred on the conservative side for our estimate for the Civic Center crowd. For example, participants who occupied second floor walkways and multiple floors of the parking garage observation areas near elevators were not included in our estimate, nor were those on sidewalks surrounding the Civic Center on Third Street. In addition, while the march was taking place, the density of the marchers at the head of the march remained below 4.5 sq ft/person while the Civic Center Plaza was still occupied. Some marchers occupied sidewalks altering the flow rate computations.

Official media estimates placed attendance around 12,000, suggesting a lower density during the event or variable participation throughout the duration. The low estimate was likely made early before the march started and only considered the Civic Center Plaza, not the adjacent streets occupied during the march. These discrepancies highlight the importance of using standardized estimation practices in event analysis.

Conclusion

The rapidly growing momentum around the country against the Trump agenda was represented by unexpectedly high turnout in San Diego and elsewhere. While estimating crowd sizes remains complex, employing consistent methods is essential for accurate assessments. Future research should focus on refining these techniques to better capture the dynamics of public demonstrations. (Choi-Fitzpatrick et. al. 2018). The rule-of-thumb ratio of five to seven fold increases in actual attendance vs. online signups should also be investigated further, as it is a simple tool that can help organizers plan more effectively for safe, peaceful, organized and accurately counted events.

References

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Figure 1. Measurement of street area occupied by the Hands Off march on April 5, 2025 in San Diego. Yellow polygon outlines the staging area at the Civic Center Plaza. Surrounding sidewalks were also occupied during staging prior to the march.

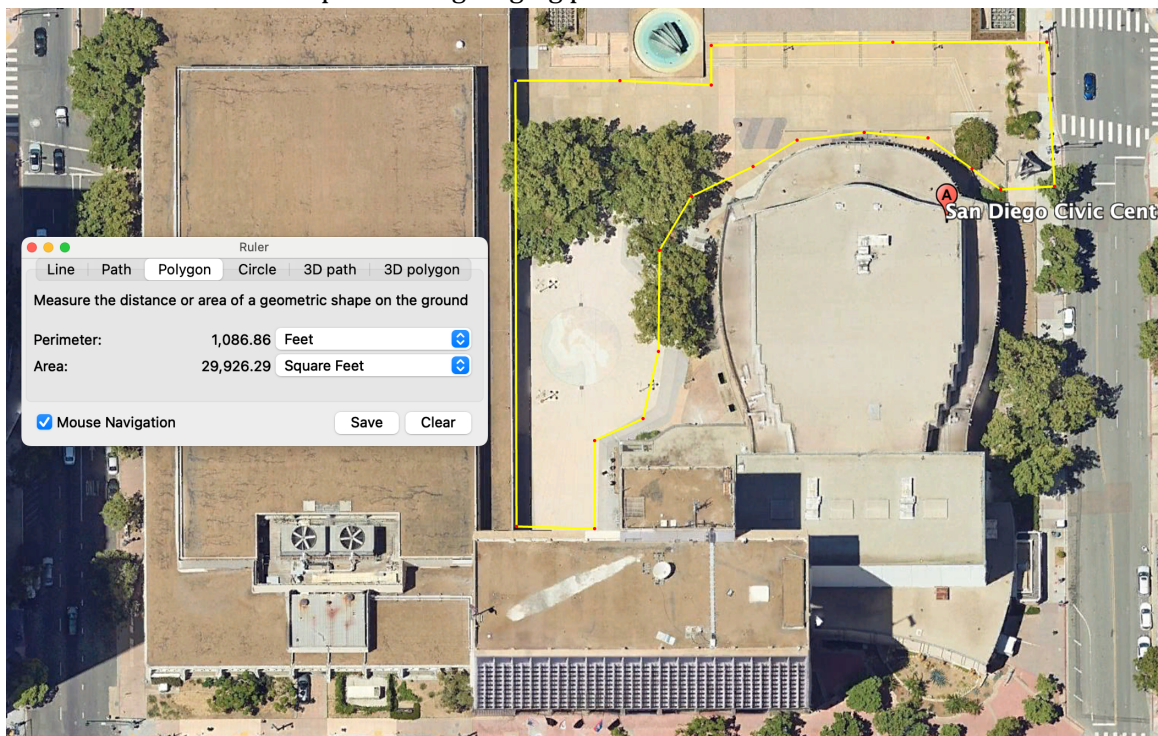


Figure 2 Measurement of street area occupied by the Hands Off march on April 5, 2025 in San Diego. Google Earth Pro (7.3.6.10201 (64-bit)). Yellow line is the polygon representing the area occupied by the marchers.

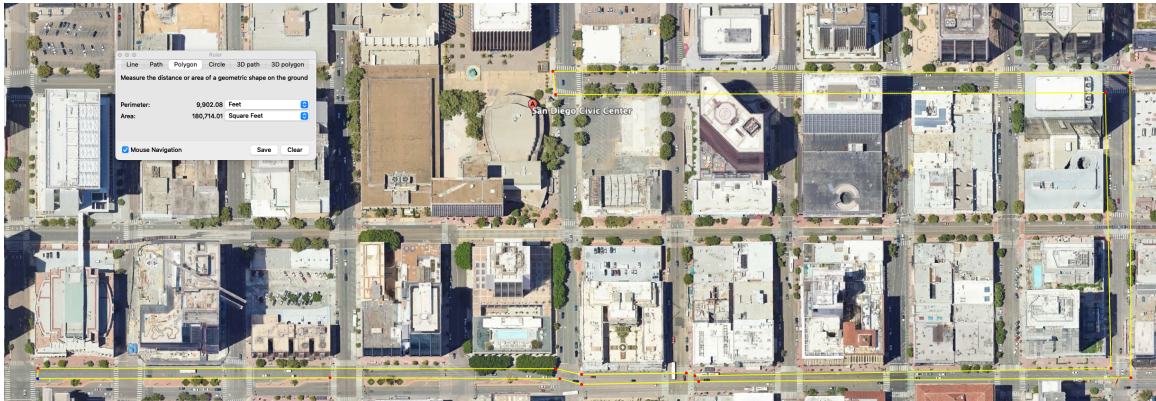


Figure 3. Example of crowd density moving west on Broadway in San Diego during the April 5, 2025 Hands Off march. Screen grab from this video taken from an elevated position. Screen grab from this video posted on Facebook by Newsradio 600 KOGO: <https://fb.watch/yR1FgyuhJi/?mibextid=wwXlfr>.



Figure 4. Crowd density still high as people filled in from nearby sidewalks into the Civic Center Plaza even as the march was reaching its end at State St. and West Broadway in San Diego during the April 5, 2025 Hands Off march. Screen grab from this video posted on Facebook by Newsradio 600 KOGO: <https://fb.watch/yR1Fgyuhji/?mibextid=wwXlfr>

