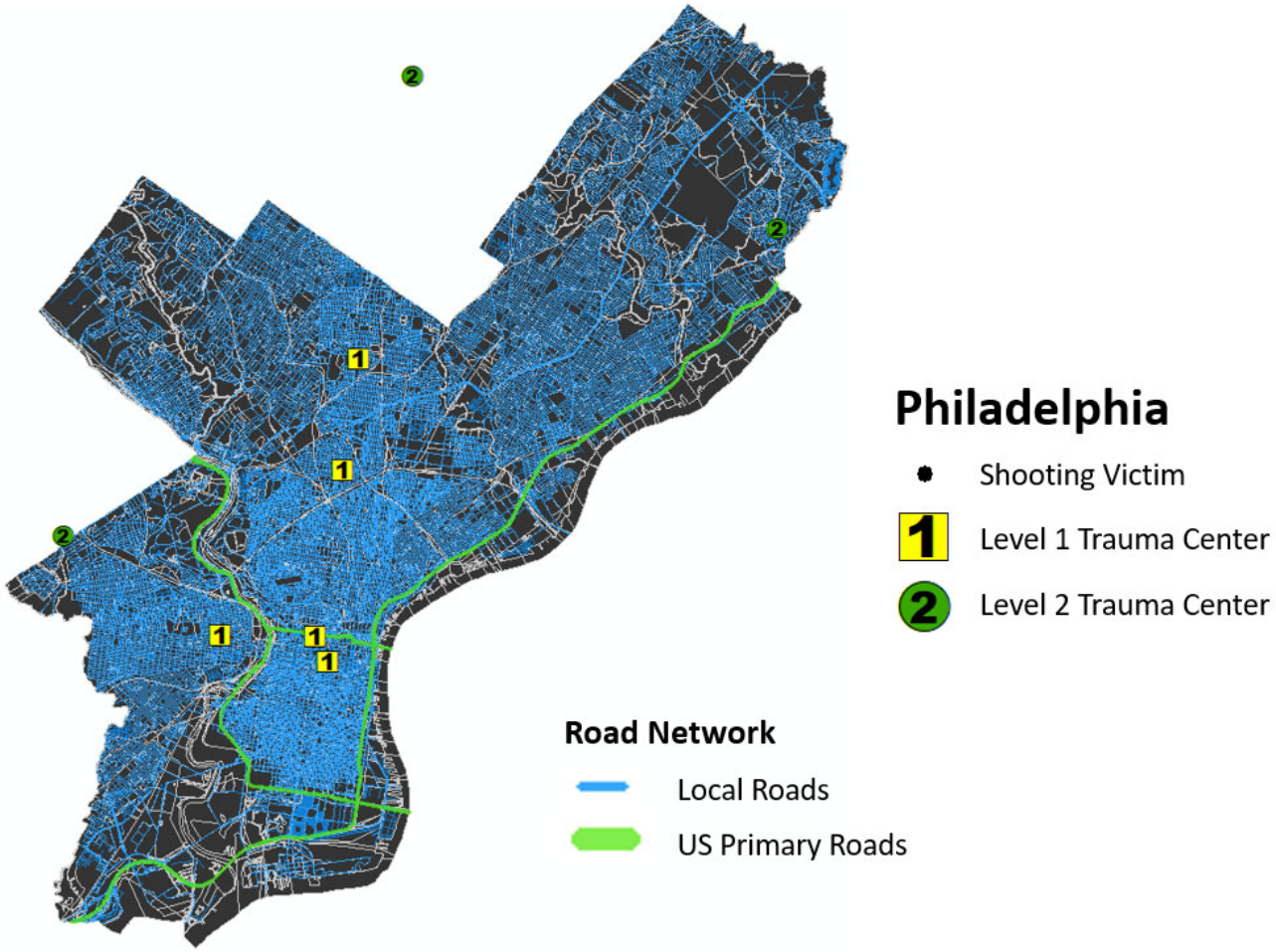
Supplemental Online Content

Byrne JP, Kaufman E, Scantling D, et al. Association between geospatial access to care and firearm injury mortality in Philadelphia. *JAMA Surg*. Published online August 24, 2022. doi:10.1001/jamasurg.2022.3677

This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure. Philadelphia roads map derived from network dataset of US streets



eTable 1. Trauma Centers in Philadelphia and Surrounding Counties		
Level 1 Trauma Centers	Opened	Closed
Hahnemann University Hospital	1986	June 29, 2019
Hospital of the University of Pennsylvania	1987	February 4, 2015
Einstein Medical Center	1987	-
Pennsylvania Presbyterian Medical Center	February 4, 2015	-
Temple University Hospital	1987	-
Thomas Jefferson University Hospital	1987	-
Level 2 Trauma centers	Opened	Closed
Abington Hospital	1987	-
Jefferson Torresdale	1986	-
Crozier Chester Medical Center	1986	-
Lankenau Medical Center	September 1, 2016	-

eTable 2. Derivation of Wound Locations from Wound Descriptors in Shooting Victims Dataset

Head Wound			
HEAD	head	head/neck	multi/head
Head	head-m	temple	mutli/head
eye	head-md	NOSE	multi/face
ear	head/back	Multiple/Hea	multi/ hea
cheek	head/chest	Multiple/Head	
head/mullt	back/head	face/multi	
mult/headi	head/multi	face	
Torso Wound			
ABDOMEN	Stomach	buttock	leg/buttock
Abdomen	aabdomen	buttocks	multi tors
BACK	abdom	cheat	pelvis
Back	abdome	chect	ribs
Buttocks	abdomen	chest	side
CHEST	armpit	chest/back	stom
Chest	back	flank	stomach
Groin	back/head	groin	testicle
Pelvis	body	head/back	torso
STOMACH	butt	head/chest	waist
Neck Wound			
NECK	Neck	head/neck	neck
throat			
Extremity Wound			
ANKLE	feet	wrist	finger
Ankle	foot	elbow	fingers
FOOT	hip	ARM	forearm
Foot	knee	Arm	hand
Hip	knees	HAND	multi/arm
KNNES	leg	Hand	shou
LEG	leg/buttoc	SHOULDER	shoul
Leg	leg/multi	Shoulder	should
THIGH	legs	Wrist	shouldeer
ankle	multi leg	arm	shoulder
ankles	shin	arms	shoulders
calf	thigh	thumb	
toe	thighs	shouldr	
Multiple Wounds			
MULTI	face/multi	mult/headi	multi/face
Multi	leg/multi	multi	multi/head
Multiple	head/multi	multi leg	multii
Multiple/Hea	mukti	multi tors	multli
Multiple/Head	mullti	multi/ hea	mutli
head/multi	mult	multi/arm	mutli/head

eTable 3. Sensitivity Analysis: Multivariable model of cohort with penetrating truncal or multiple injuries

Parameter	Odds of Fatality	95% CI
Access to Closest Trauma Center		
Predicted transport time (per minute increase)	1.03	1.01 – 1.05
Baseline Characteristics		
Age (per year increase)	1.01	1.01 – 1.02
Female sex (vs. male)	0.76	0.56 – 1.01
White race (vs. black)	0.76	0.63 – 0.92
Injury Characteristics		
Penetrating tuncal	1.38	0.91 – 2.09
Multiple wounds	1.51	0.99 – 2.28
Event Characteristics		
Indoor shooting	1.90	1.43 – 2.53
Time of day		
midnight – 6am	1.17	0.99 – 1.40
6am – 12 noon	1.03	0.83 – 1.28
12 noon – 6pm	1.01	0.85 – 1.20
6pm – midnight	Reference	NA
Season		
Summer (June – Aug)	Reference	NA
Fall (Sept – Nov)	1.17	0.97 – 1.36
Winter (Dec – Feb)	1.32	1.09 – 1.59
Spring (Mar – May)	1.13	0.94 – 1.36

CI, confidence interval
c-statistic = 0.81

eTable 4. Calculation of the Population Attributable Fraction of Shooting Fatalities due to Variable Access to Trauma Care

Predicted Transport Time (minutes)	Shooting Victims (N = 10,105)	Fatalities (N = 1,999)	Pc	Adjusted MRR	AP	PAF	Deaths Attributable to Delayed Access
≤1	232	29	0.015	1.00	0.000	0.000	0
1-2	475	92	0.046	1.31	0.239	0.011	22.0
2-3	923	167	0.084	1.17	0.147	0.012	24.5
3-4	1150	225	0.113	1.31	0.237	0.027	53.4
4-5	1432	297	0.149	1.28	0.219	0.033	65.1
5-6	1499	278	0.139	1.28	0.218	0.030	60.6
6-7	1606	313	0.157	1.31	0.234	0.037	73.3
7-8	1074	210	0.105	1.19	0.158	0.017	33.2
8-9	522	119	0.060	1.38	0.276	0.016	32.9
9-10	253	62	0.031	1.42	0.297	0.009	18.4
10-11	289	66	0.033	1.78	0.438	0.014	28.9
11-12	312	60	0.030	1.32	0.241	0.007	14.5
12-13	140	34	0.017	1.47	0.319	0.005	10.9
13-14	115	29	0.015	1.57	0.363	0.005	10.5
14-15	59	11	0.006	1.72	0.418	0.002	4.6
>15	24	7	0.004	1.51	0.337	0.001	2.4
					Sum=	0.2277	455

Estimated 22% of shooting fatalities (455 deaths) attributable to increasing delay to trauma center care

Pc, proportion of cases (shooting fatalities) exposed to specific TT; MRR, mortality rate ratio; AP, attributable proportion; PAF, population attributable fraction