

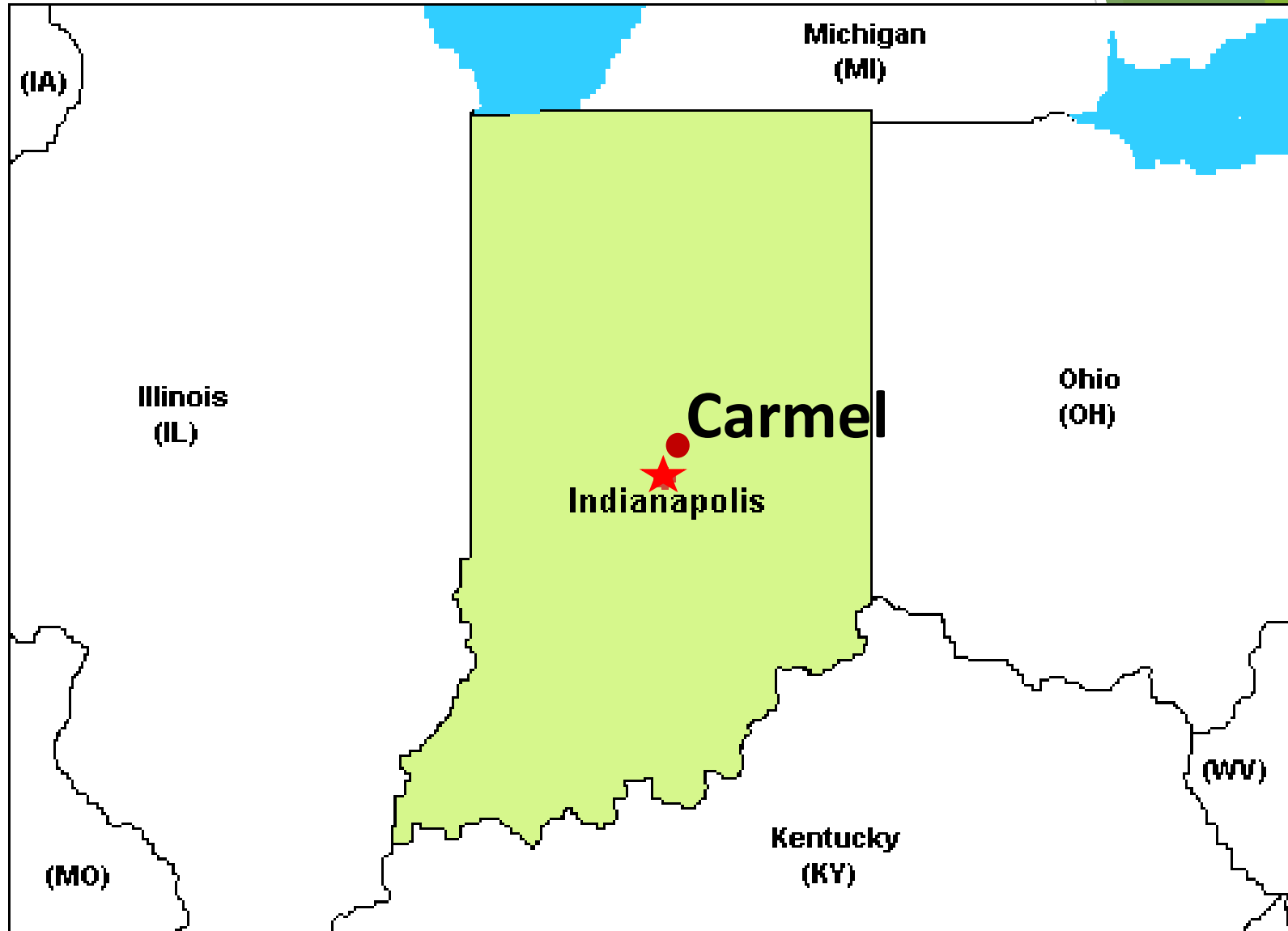
# City of Carmel



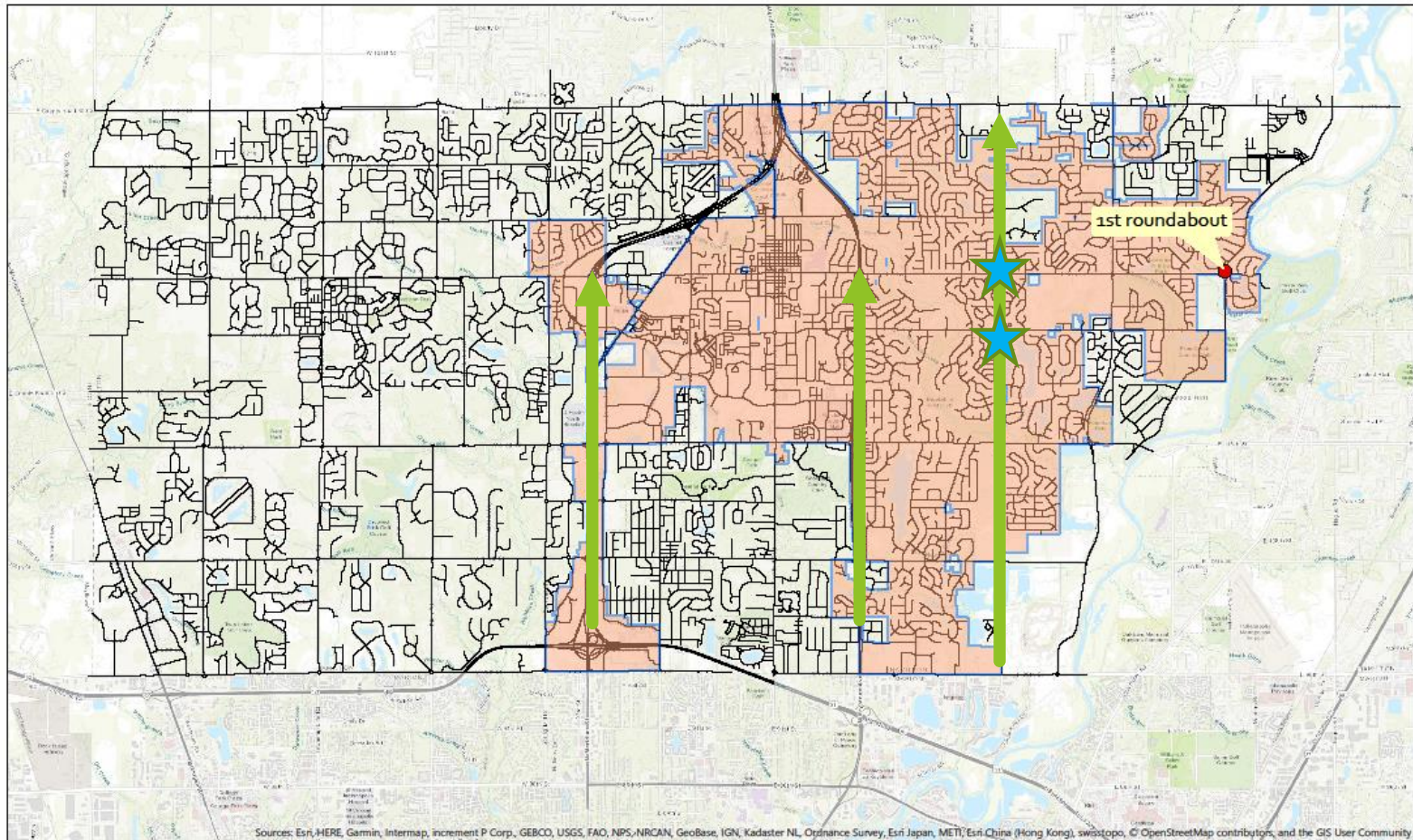
Roundabouts  
Jeremy Kashman, PE

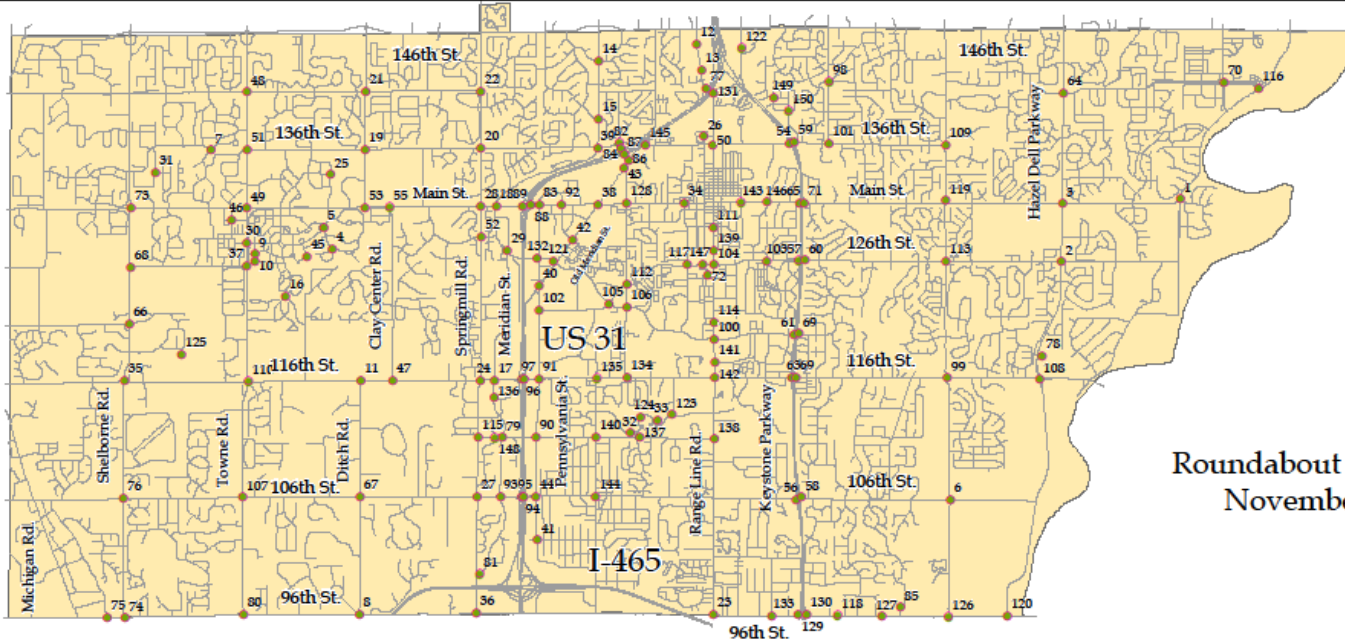


# Carmel, Indiana



# City of Carmel Boundary: 1997





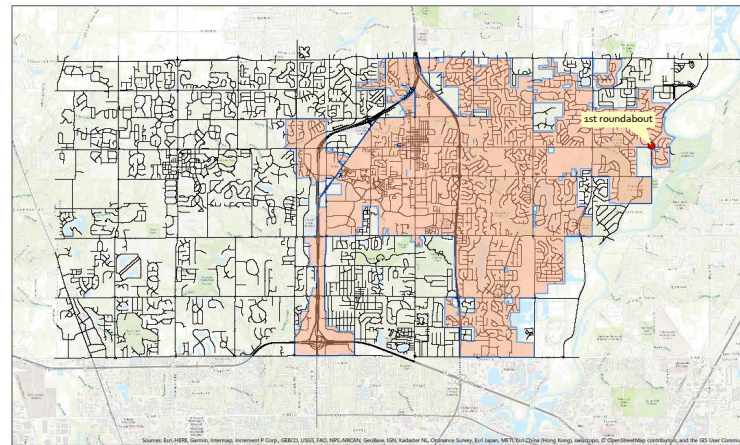
Roundabout Map as of:  
November 2023

Location	Intersection	Year Completed	Location	Intersection	Year Completed	Location	Intersection	Year Completed	Location	Intersection	Year Completed	Location	Intersection	Year Completed						
1	131st Street & River Road	1997	26	10th St. & 1st Avenue	2005	51	136th Street & Towne Road	2008	76	106th Street & Shelburne Road	2011	101	136th Street & Conroy Road	2016	126	96th Street & Gray Road	2019			
2	126th Street & Hazel Dell Parkway	1998	27	106th Street & Spring Mill Road	2006	52	Spring Mill Road & Dorset Boulevard	2008	77	Clay Terrace Blvd & Circle Drive	2011	102	Pennsylvania Street & City Center Drive	2016	127	96th Street & Delgates Way	2019			
3	Main Street & Hazel Dell Parkway	1998	28	131st Street & Spring Mill Road	2006	53	131st Street & Ditch Road	2009	78	Founder's Park Entrance	2011	103	126th Street & Kinser Avenue	2017	128	Main Street & Guilford Road	2019			
4	Limehouse Street	2001	29	West Carmel Drive & Illinois Street	2006	54	Keystone Parkway & 136th Street W	2009	79	Illinois Street & 111th Street	2012	104	City Center Drive & Range Line Road	2017	129	96th Street & Keystone Parkway W	2019			
5	Homesbury Road	2001	30	Towne Road & Glabe Street	2006	55	131st Street & Clay Center Road	2009	80	96th Street & Towne Road	2013	105	Carmel Drive & City Center Drive	2017	130	96th Street & Keystone Parkway E	2019			
6	106th Street & Gray Road	2002	31	Golden Gate Drive	2006	56	Keystone Parkway & 106th Street W	2009	81	Illinois Street & Spring Mill Road	2014	106	Carmel Drive & Guilford Road	2017	131	North Range Line Road & U.S. 31	2020			
7	Windy Knoll Lane	2002	32	Central Park S	2006	57	Keystone Parkway & 126th Street W	2009	82	136th Street & Robser Road	2015	107	106th Street & Towne Road	2017	132	Carmel Drive & Pennsylvania Street	2020			
8	96th Street & Ditch Road	2003	33	Monon Center	2006	58	Keystone Parkway & 106th Street E	2009	83	Pennsylvania Street & Main Street	2015	108	116th Street & Hazel Dell Parkway	2017	133	96th Street & Haventick Road	2020			
9	Rhathbury Street	2003	34	4th Avenue SW & Main Street	2007	59	Keystone Parkway & 136th Street E	2009	84	US 31 & 136th Street W	2015	109	136th Street & Gray Road	2017	134	116th Street & Guilford Road	2020			
10	Starhope Street	2003	35	116th Street & Shelburne Road	2007	60	Keystone Parkway & 126th Street E	2009	85	Randall Drive	2015	110	116th Street & Towne Road	2017	135	116th Street & College Avenue	2020			
11	116th Street & Ditch Road	2004	36	96th Street & Spring Mill Road	2007	61	Keystone Parkway & Carmel Drive W	2010	86	136th Street & Old Meridian Street	2015	111	4th Street & Range Line Road	2017	136	Zotac Drive & Illinois Street	2020			
12	Clay Terrace Boulevard N	2004	37	126th Street & Towne Road	2007	62	Keystone Parkway & 116th Street W	2010	87	US 31 & 136th Street E	2015	112	Guilford Drive & City Center Drive	2017	137	East 111th Street & Livingston Drive	2020			
13	Clay Terrace Boulevard S	2004	38	Main Street & Old Meridian Street	2007	63	Hazel Dell Parkway & Cherry Creek Boulevard	2010	88	US 31 & Main Street E	2015	113	126th Street & Gray Road	2017	138	East 111th Street & Westfield Boulevard	2021			
14	Oak Ridge Road & Bennett Road	2004	39	136th Street & Oak Ridge Road	2007	64	Keystone Parkway & 131st Street W	2010	89	US 31 & Main Street W	2015	114	Executive Drive & Range Line Road	2017	139	Range Line Road & College Avenue	2021			
15	Oak Ridge Road & Adcox Pass	2004	40	Old Meridian Street & Pennsylvania Street	2007	65	121st Street & Shelburne Road	2010	90	111th Street & Pennsylvania Street	2015	115	111th Street & Spring Mill Road	2017	140	Range Line Road & Medical Drive	2022			
16	Meeting House Road & Monksalm Street	2004	41	103rd Street & Pennsylvania Street	2007	66	106th Street & Ditch Road	2010	91	126th Street & Pennsylvania Street	2015	116	Cherry Creek Boulevard & River Road	2018	141	Range Line Road & 156th Street	2022			
17	116th Street & Illinois Street	2005	42	Old Meridian Street & Grand Boulevard	2007	67	126th Street & Shelburne Road	2010	92	Main Street & Grand Boulevard	2015	117	City Center Drive & 3rd Avenue SW	2018	142	Priority Way & 96th Street	2018	143	Main Street & Richland Avenue	2022
18	131st Street & Illinois Street	2005	43	Old Meridian Street & Guilford Road	2007	68	Keystone Parkway & Carmel Drive E	2010	93	Illinois Street & 106th Street	2015	118	Main Street & Gray Road	2018	144	East 106th Street & College Avenue	2022			
19	136th Street & Ditch Road	2005	44	106th Street & Pennsylvania Street	2007	69	Keystone Parkway & 116th Street E	2010	94	US 31 & 106th Street W	2016	119	Hazel Dell Parkway & 96th Street	2018	145	Smoky Row Road & North End Drive	2023			
20	136th Street & Spring Mill Road	2005	45	Pancon Gate & Chelmsford Street	2007	70	Cherry Creek Boulevard & Community Drive	2010	95	US 31 & 106th Street E	2016	120	Old Meridian Street & Carmel Drive	2018	146	Main Street & Lexington Boulevard	2023			
21	141st Street & Ditch Road	2005	46	Harleton Street & Pettigru Drive	2007	71	Keystone Parkway & 131st Street W	2010	96	US 31 & 116th Street W	2016	121	Low's Way	2018	147	Venezia Way & City Center Drive	2023			
22	141st Street & Spring Mill Road	2005	47	116th Street & Clay Center Road	2008	72	Venezia Way (City Center)	2010	97	Caney Road & Hawthorne Drive	2016	122	111th Street & Spring Mill Lane	2018	148	Millgate Drive & Matt Street	2023			
23	96th Street & Westfield Boulevard	2005	48	141st Street & Towne Road	2008	73	131st Street & Shelburne Road	2011	98	116th Street & Gray Road	2016	123	Central Park W	2006	149	Twain Drive & Grisham Drive	2023			
24	Spring Mill Road & 116th Street	2005	49	131st Street & Towne Road	2008	74	96th Street & Shelburne Road	2011	99	Carmel Drive & Range Line Road	2016	124	West Park W	2019	150					
25	Fairmount Street & Dunbar Street	2005	50	136th Street & Range Line Road	2008	75	96th Street & Commerce Drive	2011	100											

# Personal Injury Accidents per Year

City of Carmel, IN			
Accident Statistics			
By Population			
			% Pop. Vs.
Year	Population	PI Accidents	PI Accidents
1996	31,808	216	0.68%
1997	33,289	221	0.66%
1998	34,770	238	0.68%
1999	36,251	213	0.59%
2000	37,733	214	0.57%
2001	41,251	232	0.56%
2002	44,769	201	0.45%
2003	48,287	200	0.41%
2004	50,948	227	0.45%
2005	66,000	222	0.34%
2006	67,339	249	0.37%
2007	68,677	185	0.27%
2008	72,182	150	0.21%
2009	75,687	177	0.23%
2010	79,191	154	0.19%
2011	81,668	212	0.26%
2012	83,651	208	0.25%
2013	86,005	197	0.23%
2014	86,866	220	0.25%
2015	88,713	241	0.27%
2016	91,065	215	0.24%
2017	92,198	207	0.22%
2018	98,128	198	0.20%
2019	101,068	224	0.22%
2020	102,302	154	0.15%
2021	100,777	166	0.165%
2022	102,496	161	0.157%

City of Carmel Boundary: 1997



# Accident Comparison

## 2022 Personal Injury [PI] Accident Statistics for Carmel and Other Indiana Cities

2/27/2023

City	Population <sup>1</sup>	PI Accidents <sup>2</sup>	% Pop. Vs. PI Accidents	Total # of Injuries <sup>2</sup>	% Pop. Vs. Total Injuries	# of Fewer Injuries at Carmel's rate of .20% of Pop.	# of Roundabouts <sup>3</sup>
Carmel	102,496	161	0.16%	200	0.20%		144
Westfield	50,630	117	0.23%	153	0.30%	52	35
Fishers	101,171	275	0.27%	360	0.36%	158	23
Noblesville	70,926	293	0.41%	402	0.57%	260	35
Greenwood	64,918	283	0.44%	379	0.58%	249	7
Kokomo	59,691	290	0.49%	393	0.66%	274	2
Indianapolis <sup>4</sup>	882,039	5,079	0.58%	6,813	0.77%	5,049	15 <sup>4</sup>
Anderson <sup>5</sup>	54,817	351	0.64%	471	0.86%	361	2 <sup>5</sup>
Mishawaka	51,074	356	0.70%	458	0.90%	356	1
Columbus	50,569	381	0.75%	525	1.04%	424	3
Ft. Wayne	265,974	2,040	0.77%	2,775	1.04%	2,243	15
Bloomington	79,968	649	0.81%	846	1.06%	686	8
South Bend	103,353	894	0.86%	1,203	1.16%	996	8
Valparaiso	34,428	355	1.03%	473	1.37%	404	8
Evansville	116,486	1,191	1.02%	1,643	1.41%	1,410	1
						12,922	

### Footnotes:

<sup>1</sup> 2021 U.S. Census Bureau (as of 7/1/2021); 2022 population est. available May 2023; Carmel's 2022 population est. calculated by DOCS

<sup>2</sup> PI Accident and Injury data supplied by each city's police department

<sup>3</sup> Roundabout numbers provided by a representative of each city

<sup>4</sup> Includes Monument Circle, which is a traffic circle

<sup>5</sup> Includes 1 traffic circle near Hoosier Park

# Fatalities per 100k Population (IN Cities)

Five Year Average Trend of Vehicle Fatalities for Indiana Cities (based on 100K population)

1/31/2023

Year	Carmel	Fishers	Westfield	Greenwood	Noblesville	Anderson	Kokomo	Indianapolis	Bloomington	Ft. Wayne	South Bend	Mishawaka	Evansville	Columbus	Valparaiso
2004	3.135	2.751	10.207	7.649	9.895	13.322	14.633	8.348	6.549	5.640	14.247	10.410	9.611	9.193	16.010
2005	3.211	4.850	13.404	10.420	10.775	16.512	16.377	9.456	8.547	6.933	14.901	11.628	10.511	8.684	22.130
2006	2.835	5.676	13.179	9.642	11.874	15.253	18.594	10.074	12.224	7.100	10.448	11.605	12.468	14.224	19.877
2007	4.291	7.500	13.179	12.651	13.198	14.623	21.238	10.326	13.065	7.018	10.272	11.957	13.363	23.256	24.489
2008	3.603	6.905	12.723	10.801	12.664	13.623	19.561	10.489	13.582	7.477	9.732	11.461	13.403	27.730	28.231
2009	3.739	7.208	9.657	10.991	10.705	11.201	17.016	9.488	11.553	7.360	8.030	10.114	13.927	24.590	32.591
2010	3.638	5.623	7.783	9.239	11.428	10.572	15.792	9.267	12.499	6.224	6.558	9.705	13.036	30.031	34.571
2011	3.534	4.824	9.356	9.052	10.647	8.847	14.188	9.226	11.277	5.966	6.596	10.974	11.568	25.147	34.951
2012	2.556	3.001	10.627	6.422	9.800	9.618	11.546	9.112	12.828	7.191	7.803	10.620	11.986	19.129	32.071
2013	2.234	3.366	9.386	6.988	8.479	9.310	11.234	8.715	10.960	7.236	8.279	9.045	12.729	16.765	26.039
2014	2.166	2.649	6.395	5.332	8.002	13.316	11.685	9.235	10.772	7.591	10.664	7.894	13.142	19.477	22.495
2015	1.886	2.586	5.073	5.216	8.798	12.657	13.415	9.733	9.222	8.710	10.657	7.477	14.653	22.158	17.996
2016	1.836	2.758	3.536	4.772	8.576	13.764	15.168	9.984	10.560	9.898	11.824	7.435	14.344	24.125	19.096
2017	1.792	2.976	3.278	6.834	8.465	15.246	16.906	10.458	10.004	10.440	13.964	7.403	14.731	26.106	21.958
2018	2.201	2.457	5.552	6.642	8.358	18.905	19.682	11.139	11.140	10.763	14.138	11.806	14.116	32.752	26.619
2019	2.136	2.815	6.346	7.315	7.281	16.756	20.379	11.585	10.637	11.358	13.338	14.533	12.313	30.058	22.262
2020	2.302	4.043	6.346	6.540	7.309	17.135	19.687	12.486	10.828	11.889	15.293	16.468	12.682	26.098	22.675
2021	2.259	4.561	8.044	6.755	6.729	18.236	17.532	13.447	9.787	10.892	20.680	21.823	12.904	22.626	24.792
2022	2.411	4.935	7.030	6.779	6.888	16.783	16.085	14.260	10.667	10.733	19.856	22.539	11.928	19.885	22.872

**Notes:**

Population estimates from U.S. Census Bureau

Vehicle fatality data was supplied by each city's police department



# Pedestrians

## Traffic Calming



# Environment

- ▶ Less vehicle emissions as cars continue to move through intersections and not idle or restart from a complete stop
- ▶ By yielding at the entry rather than stopping and waiting for a green light, delay is significantly reduced
- ▶ Residents annually burn an estimated 500,000 fewer gallons of gas per roundabout in Carmel.



# Roundabout Examples

## Downtown Setting



# Roundabout Examples

## Neighborhood Entrance



# Roundabout Examples



# Roundabout Examples



# Roundabout Examples

## Neighborhood Setting



# Roundabout Examples

## Neighborhood Setting





# Roundabout Examples

## Parkway Arterial



# Roundabout Examples

## Corridor Improvements



# Roundabout Examples

## Grade Separated Interchanges



# Roundabout Examples

## Complementing Our Urban Core



# Roundabout Examples

## Complementing Our Urban Core



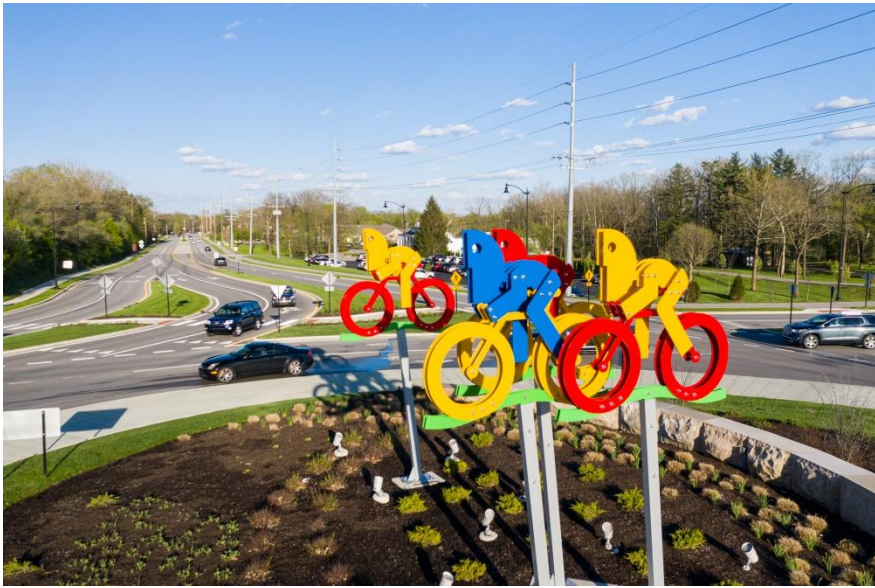
# Roundabout Center Treatments

## Public Art



# Roundabout Center Treatments

## Public Art



# Roundabout Center Treatments

## Public Art







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