F. Tavani and Associates, Inc.
Traffic Engineering and Planning

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22 May 2020

Nicholas J. Caniglia, Esquire
Pierce, Caniglia & Taylor
125 Strafford Avenue, Suite 110
Wayne, PA 19087

VIA EMAIL ONLY

RE: Traffic Engineering Investigations of Clark's Manor aka 2978 N. Providence Road, Upper Providence Township, Delaware County

FTA Job #220-010

Dear Mr. Caniglia:

F. Tavani and Associates, Inc. (FTA) has conducted traffic engineering investigations for the above-referenced project in Media. FTA has also reviewed plans and conducted field visits to the site.

BACKGROUND

The site contains a large single family home featuring one driveway to N. Providence Road approximately 650 feet east of the all-way stop-controlled intersection of N. Providence Road and Bishop Hollow Road in Media. The site is identified in **Figures 1** and **2** which are attached to the end of this report. The site is proposed to be adaptively re-used as a group home for up to 8 residents, none of whom are expected to drive, and all of whom will be cared for by a staff of up to 3 people who will conduct daily visits to the site to prepare meals and provide other assistance as required. The existing driveway and associated stone walls will be removed and a new two-way driveway will be constructed opposite Springton Lake Road as shown on a site plan dated 05/12/20 (last revised) by G.D. Houtman.

TRIP GENERATION

Trip generation for many land uses can be examined through consult with the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition. This edition includes Land Use Code (LUC) 210 (single family home), which is appropriate to use to investigate trip generation potential of the existing condition. It also contains and LUC 253 (congregate care facility) which is the land use code most similar to what is proposed for the site for the adaptive re-use[1]. Attached to the end of this letter are sheets related to these investigations, which is also summarized in tabular form below:

ITE TRIP GENERATION

	EXISTING [2]	PROPOSED
Average Daily Traffic	15	16

[1] A full list of available ITE residential LUCs is attached to the end of this report.

[2] Per ITE, a single family home generates either 9 or 15 average daily trips, depending on the methodology employed. 2978 N. Providence is approximately 9,400 SF, which is about four times the average single family home size (see attachments), so the larger of the two values was used in the table above.

EXHIBIT A-7

As shown, the site as proposed is a modest trip generator and is also comparable to the existing land use.

SIGHT DISTANCE

In general, required sight distances depend upon the posted speed limit and roadway grades. There is an existing posted speed limit of 35 mph in in the vicinity of the site. Per PennDOT Pub 282 and Title 67 of the PA code, the following formula is used:

$$SSSD = 1.47VT + V^2/[30(f \pm g)]$$

SSSD = safe stopping sight distance (acceptable sight distance)
V = Vehicle Speed or Posted Speed Limit
T = Perception Reaction Time of Driver (2.5 seconds)
f = Coefficient of Friction for Wet Pavements (0.30)
g = Average Percent of Roadway Grade Divided by 100

Using the posted speed limit to calculate the required sight distance – and referencing the Houtman plan – yields the summary shown below:

	DIRECTION	**SIGHT DISTANCES (FT)**	
		SSSD	**PROPOSED**
EXITING TURNS	Looking to the left	252	**290**
	Looking to the right	265	**275**

As shown, sight distance is not problematic, provided clear sight triangles are provided as shown on the plan (this will require some grading and other site work). Sight distances for others will also not be negatively impacted by the proposed project.

CONCLUSIONS

The site as proposed is a modest traffic generator. The amount of traffic which was previously generated by the site (when it was a single family home) is comparable to the proposed use. Sight distances for exiting traffic will be acceptable.

I hope this has been helpful. Please let me know if I can answer any questions.

Thank you,
F. TAVANI AND ASSOCIATES, INC.

FRANK TAVANI, P.E., PTOE
Principal

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL FRANK TAVANI ENGINEER PE-052846-E

attachments

cc: Dennis McAndrews, Esq.

Land Use: 210
Single-Family Detached Housing

Description

Single-family detached housing includes all single-family detached homes on individual lots. A typical site surveyed is a suburban subdivision.

Additional Data

The number of vehicles and residents had a high correlation with average weekday vehicle trip ends. The use of these variables was limited, however, because the number of vehicles and residents was often difficult to obtain or predict. The number of dwelling units was generally used as the independent variable of choice because it was usually readily available, easy to project, and had a high correlation with average weekday vehicle trip ends.

This land use included data from a wide variety of units with different sizes, price ranges, locations, and ages. Consequently, there was a wide variation in trips generated within this category. Other factors, such as geographic location and type of adjacent and nearby development, may also have had an effect on the site trip generation.

Single-family detached units had the highest trip generation rate per dwelling unit of all residential uses because they were the largest units in size and had more residents and more vehicles per unit than other residential land uses; they were generally located farther away from shopping centers, employment areas, and other trip attractors than other residential land uses; and they generally had fewer alternative modes of transportation available because they were typically not as concentrated as other residential land uses.

Time-of-day distribution data for this land use are presented in Appendix A. For the six general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:00 and 5:00 p.m., respectively. For the two sites with Saturday data, the overall highest vehicle volume was counted between 3:00 and 4:00 p.m. For the one site with Sunday data, the overall highest vehicle volume was counted between 10:15 and 11:15 a.m.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in California, Connecticut, Delaware, Illinois, Indiana, Maryland, Minnesota, Montana, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, and Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 903, 925, 936

Single-Family Detached Housing
(210)

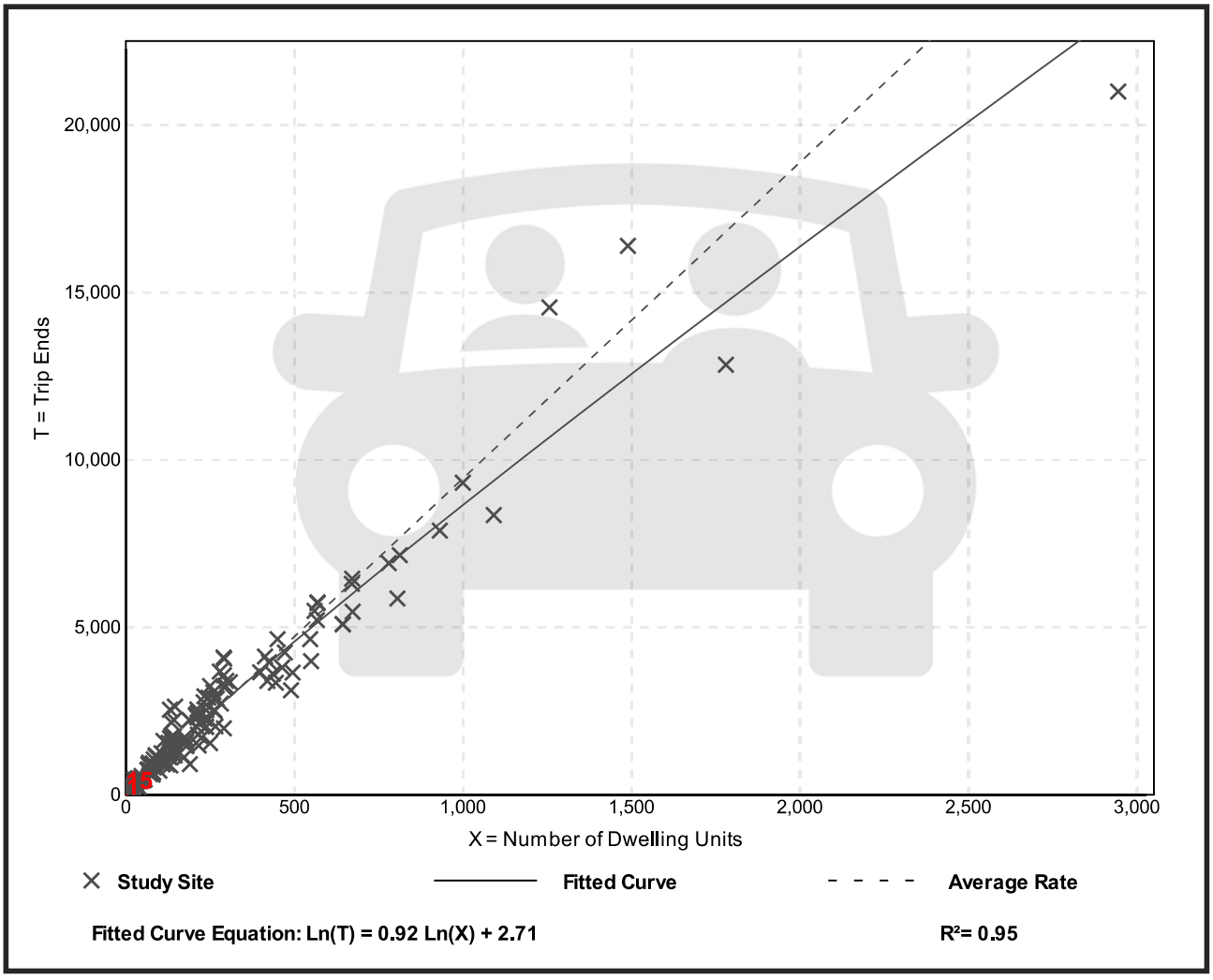
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



Land Use: 253
Congregate Care Facility

Description

A congregate care facility is an independent living development that provides centralized amenities such as dining, housekeeping, transportation, and organized social/recreational activities. Limited medical services (such as nursing and dental) may or may not be provided. The resident may contract additional medical services or personal assistance. Senior adult housing—detached (Land Use 251), senior adult housing—attached (Land Use 252), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Vehicle ownership levels were very low at congregate care facilities; the facilities' employees or services provided to the residents generated the majority of the trips to the sites.

The peak hour of the generator typically did not coincide with the peak hour of the adjacent street traffic.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), Ontario (CAN), and Oregon.

Source Numbers

155, 584, 910, 970

Congregate Care Facility
(253)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

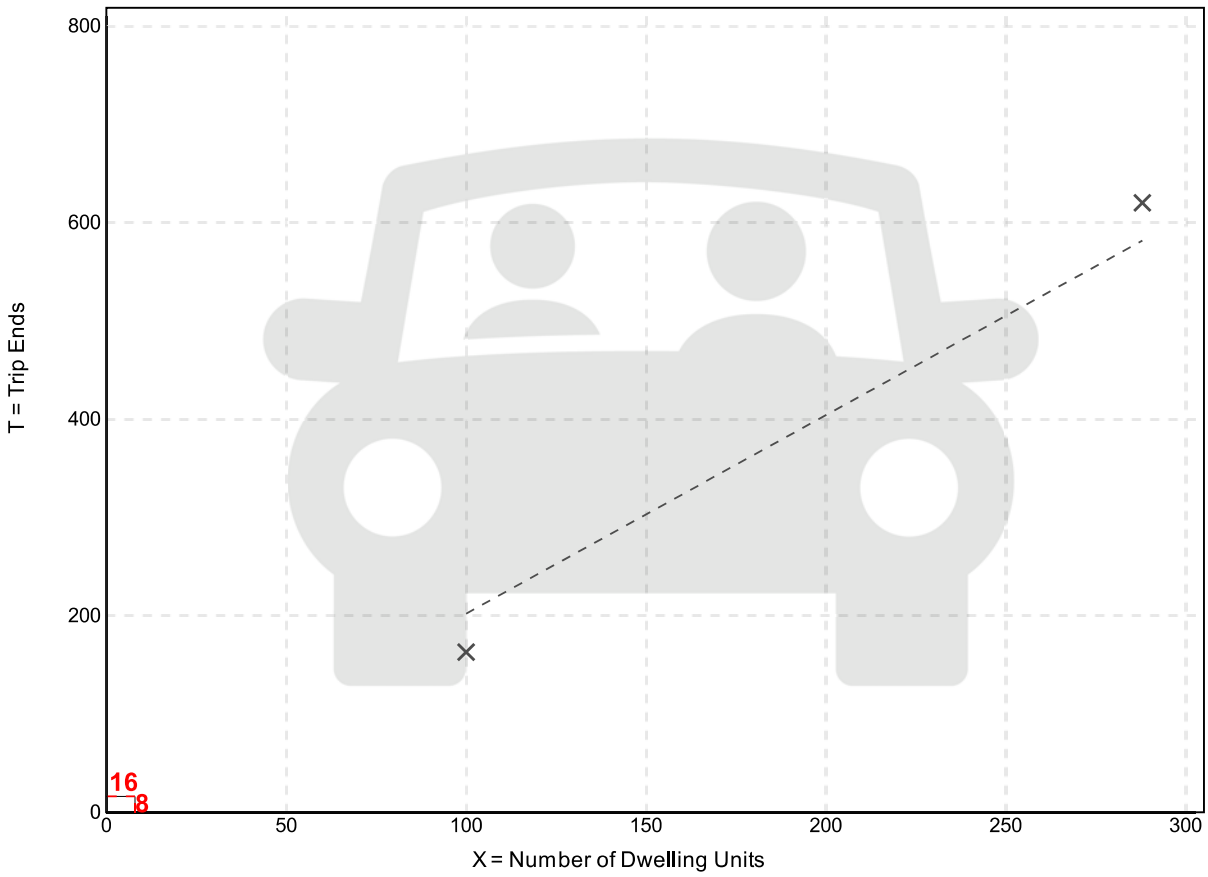
Setting/Location: **General Urban/Suburban**
Number of Studies: 2
Avg. Num. of Dwelling Units: 194
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
2.02	1.63 - 2.15	*

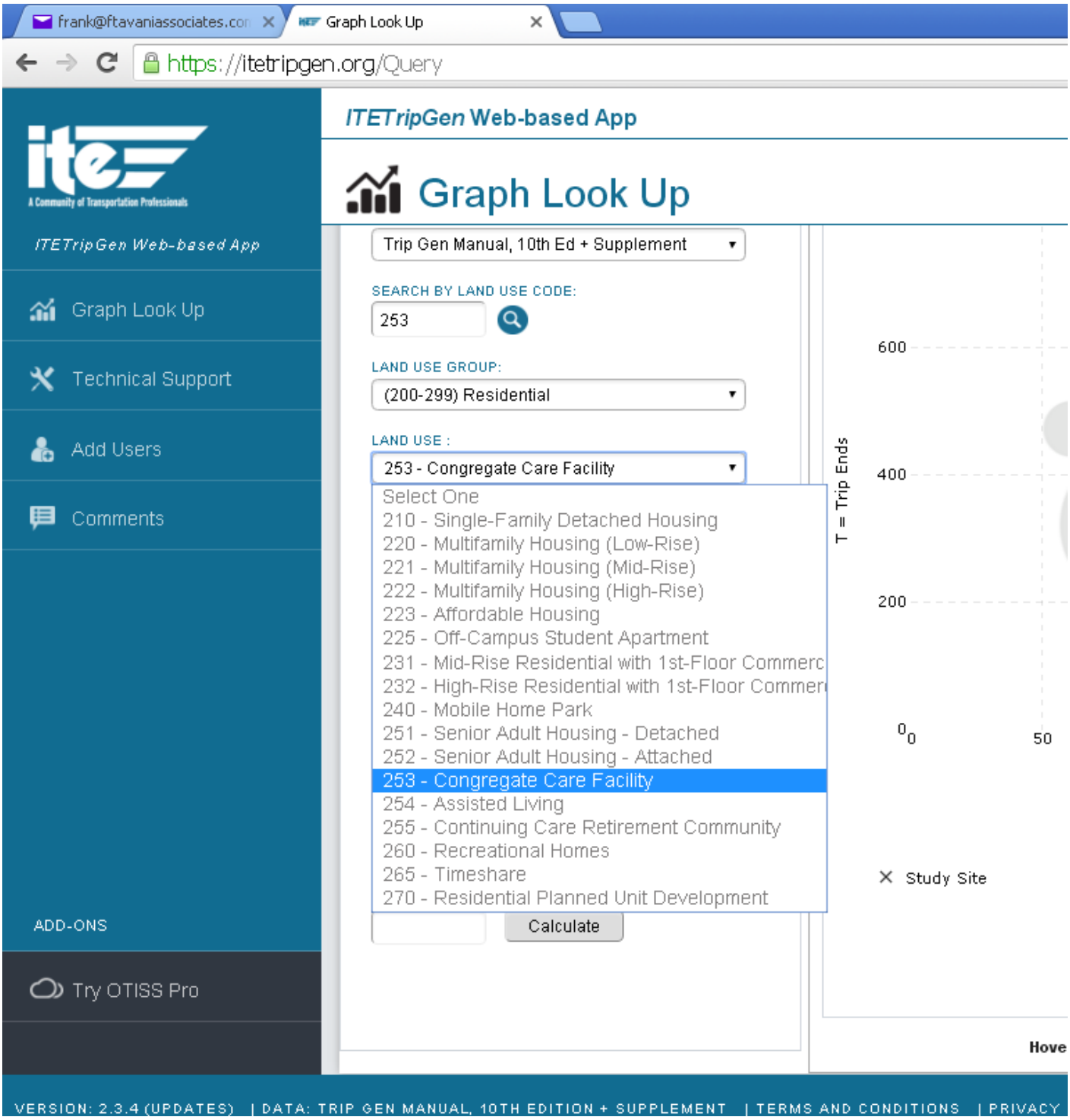
Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: Not Given

R^2= ****


frank@ftavaniassociates.com
Graph Look Up
https://itetripgen.org/Query
ITETripGen Web-based App
Graph Look Up
Technical Support
Add Users
Comments
ADD-ONS
Try OTISS Pro
ITETripGen Web-based App
Graph Look Up
Trip Gen Manual, 10th Ed + Supplement
SEARCH BY LAND USE CODE:
253
LAND USE GROUP:
(200-299) Residential
LAND USE :
253 - Congregate Care Facility
Select One
210 - Single-Family Detached Housing
220 - Multifamily Housing (Low-Rise)
221 - Multifamily Housing (Mid-Rise)
222 - Multifamily Housing (High-Rise)
223 - Affordable Housing
225 - Off-Campus Student Apartment
231 - Mid-Rise Residential with 1st-Floor Commerc
232 - High-Rise Residential with 1st-Floor Commer
240 - Mobile Home Park
251 - Senior Adult Housing - Detached
252 - Senior Adult Housing - Attached
253 - Congregate Care Facility
254 - Assisted Living
255 - Continuing Care Retirement Community
260 - Recreational Homes
265 - Timeshare
270 - Residential Planned Unit Development
Calculate
600
400
200
0
0
50
T = Trip Ends
Study Site
Hove
VERSION: 2.3.4 (UPDATES) | DATA: TRIP GEN MANUAL, 10TH EDITION + SUPPLEMENT | TERMS AND CONDITIONS | PRIVACY

Median and Average Square Feet of Floor Area in New Single-Family Houses Completed by Location[1]

(Medians and averages computed from unrounded figures)

	Median square feet							Average square feet						
				Region							Region			
Year	United States	Inside MSAs	Outside MSAs	North-east	Midwest	South	West	United States	Inside MSAs	Outside MSAs	North-east	Midwest	South	West
1973	1,525	1,625	1,380	1,450	1,445	1,555	1,575	1,660	1,760	1,490	1,595	1,615	1,670	1,715
1974	1,560	1,665	1,405	1,465	1,490	1,640	1,540	1,695	1,785	1,545	1,600	1,660	1,760	1,660
1975	1,535	1,630	1,365	1,405	1,460	1,605	1,510	1,645	1,735	1,490	1,575	1,580	1,705	1,635
1976	1,590	1,675	1,425	1,505	1,495	1,660	1,565	1,700	1,775	1,560	1,630	1,655	1,755	1,685
1977	1,610	1,705	1,440	1,540	1,540	1,660	1,615	1,720	1,795	1,565	1,650	1,650	1,770	1,730
1978	1,655	1,735	1,490	1,640	1,615	1,685	1,630	1,755	1,830	1,610	1,730	1,730	1,785	1,740
1979	1,645	1,735	1,485	1,690	1,605	1,675	1,625	1,760	1,845	1,605	1,795	1,720	1,795	1,730
1980	1,595	1,670	1,450	1,660	1,520	1,615	1,570	1,740	1,825	1,575	1,770	1,685	1,750	1,735
1981	1,550	1,650	1,415	1,655	1,480	1,540	1,580	1,720	1,820	1,535	1,805	1,670	1,715	1,735
1982	1,520	1,600	1,355	1,605	1,405	1,500	1,595	1,710	1,795	1,545	1,755	1,655	1,700	1,740
1983	1,565	1,610	1,445	1,650	1,515	1,565	1,545	1,725	1,785	1,570	1,795	1,735	1,720	1,695
1984	1,605	1,645	1,495	1,665	1,600	1,590	1,610	1,780	1,840	1,600	1,860	1,800	1,750	1,785
1985	1,605	1,655	1,445	1,655	1,625	1,590	1,595	1,785	1,830	1,610	1,830	1,820	1,765	1,770
1986	1,660	1,700	1,470	1,695	1,685	1,655	1,635	1,825	1,865	1,640	1,850	1,855	1,825	1,800
1987	1,755	1,800	1,565	1,840	1,740	1,755	1,730	1,905	1,950	1,700	1,955	1,890	1,915	1,870
1988	1,810	1,880	1,570	1,810	1,840	1,790	1,845	1,995	2,055	1,750	2,005	2,015	1,985	1,995
1989	1,850	1,920	1,570	1,870	1,800	1,815	1,910	2,035	2,105	1,750	2,075	1,970	2,030	2,065
1990	1,905	1,985	1,630	1,955	1,850	1,855	1,985	2,080	2,155	1,800	2,105	2,005	2,055	2,160
1991	1,890	1,970	1,635	1,950	1,800	1,870	1,980	2,075	2,155	1,815	2,105	1,990	2,065	2,155
1992	1,920	1,990	1,700	2,000	1,870	1,945	1,890	2,095	2,160	1,870	2,115	2,020	2,130	2,090
1993	1,945	2,000	1,700	2,050	1,855	2,000	1,845	2,095	2,160	1,860	2,160	2,025	2,150	2,050
1994	1,940	1,995	1,700	2,035	1,850	2,000	1,835	2,100	2,160	1,865	2,195	2,025	2,165	2,025
1995	1,920	1,975	1,720	2,095	1,850	1,945	1,835	2,095	2,150	1,870	2,240	2,020	2,125	2,045
1996	1,950	2,000	1,735	2,100	1,900	1,995	1,890	2,120	2,170	1,915	2,280	2,025	2,160	2,070
1997	1,975	2,015	1,765	2,130	1,900	2,000	1,930	2,150	2,200	1,955	2,265	2,065	2,175	2,135
1998	2,000	2,050	1,750	2,100	1,945	2,000	1,985	2,190	2,250	1,930	2,270	2,125	2,200	2,200
1999	2,028	2,089	1,811	2,175	1,937	2,044	2,001	2,223	2,274	1,991	2,298	2,135	2,244	2,234
2000	2,057	2,121	1,824	2,266	1,971	2,075	2,014	2,266	2,321	2,024	2,435	2,170	2,287	2,244
2001	2,103	2,152	1,905	2,305	1,965	2,128	2,080	2,324	2,361	2,162	2,466	2,209	2,351	2,317
2002	2,114	2,171	1,884	2,330	1,979	2,120	2,127	2,320	2,379	2,068	2,516	2,209	2,317	2,350
2003	2,137	2,177	1,941	2,288	1,998	2,142	2,166	2,330	2,382	2,113	2,443	2,198	2,335	2,387
2004	2,140	2,207	1,933	2,361	1,993	2,164	2,149	2,349	2,402	2,122	2,543	2,222	2,368	2,352
2005	2,227	2,273	1,952	2,339	2,054	2,259	2,236	2,434	2,479	2,137	2,556	2,310	2,463	2,434
2006	2,248	2,305	1,909	2,395	2,035	2,286	2,275	2,469	2,519	2,120	2,612	2,290	2,499	2,488
2007	2,277	2,319	1,956	2,281	2,064	2,325	2,286	2,521	2,581	2,133	2,550	2,328	2,573	2,524
2008	2,215	2,270	1,963	2,312	2,019	2,266	2,216	2,519	2,582	2,203	2,651	2,331	2,564	2,508
2009	2,135	2,185	1,909	2,211	1,931	2,198	2,140	2,438	2,490	2,156	2,594	2,216	2,488	2,434
2010	2,169	2,203	1,877	2,336	2,001	2,184	2,143	2,392	2,443	2,091	2,613	2,265	2,393	2,386
RSE	2	2	4	6	3	4	3	2	2	4	6	2	3	4

A Represents an RSE that is greater than or equal to 100 or could not be computed.
NA Not available. RSE Relative Standard Error.
S Withheld because estimate did not meet publication standards on the basis of response rate, associated standard error, or a consistency review.

[1]Includes houses built for rent (not shown separately).

Is Your House the "Typical American Home"?

Peter Andrew
Jan 26, 2020
| Read Time : 4 min | Print page

Do you live in a typical American home? Do you want to? Or do you aspire to something better? Or perhaps you'd prefer something more modest: one that's more sustainable for both the environment and your pocket.

See mortgage rates for typical and unique homes

Typically unique

Of course, every home is unique, including yours. Even if you just bought one in a developer's tract, yours will have characteristics none of the others share. To start with, its plot shape and size will likely be different. And, if you bought off-plan or during construction, maybe you chose some or all of the finishes.

And you'll slowly stamp this home with your own décor and furnishings. Even if it didn't start out that way, your place is going to end up a unique reflection of you.

But that doesn't mean it can't be typical, too. How does your property compare with the average American home? Read on to find out.

Related: Is it Better to Buy a New or Used Home?

Average home size in the US

In 1973, the median new single-family house was just 1,525 square feet, according to the US Census Bureau. By 2010, it had grown to 2,169 square feet. And, by 2018, it had bloated to 2,435 square feet. Who in 1973 would have believed that a newly built typical American home would be 60% bigger than theirs in 45 years?

There's another even more startling factor to take into account. Statista.com claims the average household in 1973 comprised 3.01 people, meaning the home offered 507 square feet per person. But by 2018, that household had shrunk to 2.53 people. And each had 962 square feet to stretch out.