

## Activity and Trip Durations

Can Bayview Village support mobility that meets travel needs usually met by cars? Mobility is not in practice defined by the modes available or even how long a trip takes. People, for example, claim to want to get to work quickly, but in practice will buy a unit further away for more housing values if the time to work is acceptable.

People have personal travel time budgets, consisting of how long they are willing to travel to reach a given purpose. We have statistics establishing regional and national norms of duration for the purpose of travel. The purpose of this analysis is to use statistics on activities and on trip duration to create criteria for the performance of ped housing in Bayview, which will shift modes away from drive-alone.

The perception of the amount of drive-alone travel is exaggerated. In Bay Area urban core areas (over 31 persons per acre or about 14 units per acre), only about a quarter of trips are drive-alone, and drive-alone plus two or more per car are only 36% of trips. Transit gets 18% and walking 22%.

### MTC 2000 household survey: Mode Split

		Weekday Trips per person	
Urban core: > 31 persons per acre			
Mode	total	percent	
driver, mostly DA	1.121	36.2%	
<i>estimate for drive alone</i>			25%
other riders	0.583	18.8%	
transit	0.544	17.6%	
school bus	0.021	0.7%	
bike	0.084	2.7%	
walk	0.69	22.3%	
other	0.054	1.7%	
total	3.097	100.0%	

[http://www.mtc.ca.gov/maps\\_and\\_data/datamart/survey/](http://www.mtc.ca.gov/maps_and_data/datamart/survey/)  
Regional Travel Characteristics Report: Bay Area Travel Survey 2000: Volume I  
PDF p. 67 doc p. 123; also end of Appendix C.

A trip duration budget is how a person allocates time spent traveling in relation to the purpose of travel. People spend more time traveling to a high income job than one with low pay. People allocate time for shopping and banking, and statistically taken as a whole establish norms for duration to purpose.

Most people need their cars to get around, and are unlikely to move into car-free housing if their travel takes more time, especially for the work trip. How much duration are we talking about? The average person 15 years old or older, if employed, spends 65.1 minutes per day

driving a car. If not employed, the average person spends 34.5 minutes driving.<sup>1</sup> These averages include non-drivers and drivers who do not drive on the census day; dropping them out would increase the time on the road for actual drivers. To work, car-free housing has to get people where they need to go in a similar duration using other modes.

Data on activities is interesting. The newest research is the American Time Use Survey (ATUS) of the Bureau of Labor Statistics, which came out September 2004.<sup>2</sup> The problem is that travel time, except for child care, is included with the related activity, and some activities require a lot of travel time and others, none. Nevertheless, ATUS Table 1 below helps us understand the activities of a 24 hour day within which travel must fit. The average hours per day can be confusing, as it combines, for work hours, those who do work and those who don't, to get an average of 3.69 hours. It is more helpful to know that 46 percent worked and spent 8 hours at it, including their travel time. I've bolded the categories that seem likely to require travel after waking up. The bolded items most likely to require travel time add up to 6.67 hours, which includes the travel time.

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<sup>1</sup>Table A-16 Minutes Spent Driving Daily by Persons 15 and Older by Sex, Age and Worker Status, US Bureau of Transportation Statistics, Highlights of the 2001 NHTS, Daily Passenger Travel.

<sup>2</sup>US Dept. of Labor News, Sept. 14, 2004, <http://www.bls.gov/news.release/pdf/atus.pdf>

Table 1. Average hours per day spent in primary activities (1) for the total population and for persons reporting the activity on the diary day by activity category, 2003 annual averages

Activity, age 15 years and over	Average hours per day	Percent reporting the activity	Hours per day of those reporting
Total all activities (2)	24.00	-	-
Personal care activities	9.34	99.90	9.34
Sleeping	8.57	99.90	8.58
Eating and drinking	1.21	91.50	1.32
Household activities	1.83	73.50	2.50
Housework	0.62	37.70	1.64
Food preparation and cleanup	0.53	50.70	1.05
Lawn and garden care	0.20	10.20	1.95
Household management	0.13	15.60	0.85
<b>Purchasing goods and services</b>	0.81	46.10	1.77
<b>Consumer goods purchases</b>	0.40	41.40	0.97
<b>Professional and personal care services</b>	0.09	9.50	0.99
Caring for and helping household members	0.55	26.60	2.07
Caring for and helping household children	0.42	21.60	1.93
<b>Caring for and helping non-household members</b>	0.29	15.70	1.82
<b>Caring for and helping non-household adults</b>	0.11	10.50	1.02
<b>Working and work-related activities</b>	3.69	46.00	8.02
<b>Working</b>	3.32	43.90	7.57
<b>Educational activities</b>	0.47	8.30	5.68
<b>Attending class</b>	0.29	5.60	5.11
<b>Homework and research</b>	0.14	5.40	2.50
<b>Organizational civic and religious activities</b>	0.32	13.20	2.43
<b>Religious and spiritual activities</b>	0.14	8.10	1.75
<b>Volunteering (organizational and civic activities)</b>	0.14	6.40	2.17
Leisure and sports	5.11	95.90	5.33
<b>Socializing and communicating</b>	0.78	40.10	1.94
Watching television	2.57	78.70	3.27
<b>Participating in sports exercise and recreation</b>	0.30	17.40	1.69
Telephone calls mail and e-mail	0.19	25.70	0.74
Other activities not elsewhere classified	0.19	12.80	1.47
Usually or often requiring travel	6.66		

1. Primary activities are those respondents identify as their main activity. Other activities done simultaneously are not included.

2 All major activity categories include related travel time. See Technical Note for activity category definitions.

Source: BLS, ATUS, 2004, <http://www.bls.gov/news.release/pdf/atus.pdf>. Bayview: Activity and trip durations ATUS Table 1.xlsx

MTC also has a list of activities and the time they take for the Bay Area:

**Table A-11: Primary Activities and Average Duration**

<b>Activity</b>	<b>Frequency</b>	<b>Percent</b>	<b>Avg. Length (hours)</b>
Trip	61,784	28.8%	0.47
Meals / meal-prep	29,300	13.6%	1.25
Sleep	25,366	11.8%	5.68
Amusements at home	15,241	7.1%	2.00
Work / work-related	14,155	6.6%	4.25
Hygiene	8,705	4.1%	1.28
HH chores	7,532	3.5%	2.53
School / school-related	6,036	2.8%	3.25
Morning routine	5,727	2.7%	1.20
Shopping	5,360	2.5%	1.05
Multiple activities	5,152	2.4%	2.61
Rest and Relaxation	4,467	2.1%	2.26
Recreation / play	3,585	1.7%	2.01
HH / Personal business	3,717	1.7%	1.11
Visiting	3,251	1.5%	1.90
Exercise / athletics	3,087	1.4%	1.56
HH Obligations (family care)	2,764	1.3%	1.26
Evening routine	1,184	0.6%	0.98
Hobbies	900	0.4%	2.45
Getting ready (not am or p.m.)	866	0.4%	1.09
Waiting	793	0.4%	0.61
Out of area	626	0.3%	17.52
Entertainment	724	0.3%	2.32
Amusements out-of-home	615	0.3%	2.16
Religion / civil services	690	0.3%	2.13
Medical services	673	0.3%	1.38
Computer work	485	0.2%	2.60
Civic / volunteer services	396	0.2%	2.14
Sick / ill	152	0.1%	7.07
Day care / after school care	174	0.1%	4.65
Other (not categorized below)	162	0.1%	1.50
Waiting for transportation	169	0.1%	0.88
Personal services	12	0.0%	1.92
Professional services	32	0.0%	1.50
Doing diary	76	0.0%	1.02
Refused	841	0.4%	22.74
<b>Total</b>	<b>214,819</b>	<b>100.0%</b>	<b>2.44</b>

Base: All reported activities.

Source: MTC Transportation Survey of 3,678 households, 2001.

I've looked at these tables in terms of the ability of Bayview Village to support the activity and I don't see any problems. I'm not sure what to do next with these data.

Tables on travel times are more relevant for Bayview Village, to see if walk and bus modes can match auto travel times for various purposes. The NHTS has a lengthy list of purposes, mode of travel used, and how much travel time people on average spend by mode and purpose. One

## Persons, Trip Purposes and Duration

2001 NHTS, Data Version 1/04

Average Person Trip Duration , Travel Day

Travel day trip purpose	Sample Size	Mean Minutes
Appropriate Skip	241	30.82
Refused	59	13.93
Don't Know	199	30.25
Not Ascertained	106	21.22
Home	216,195	19.65
Go to work	47,493	24.56
Return to work	10,934	14.46
Attend business meeting/trip	1,336	42.21
Other work related	11,473	33.32
School/religious activity	3,973	18.16
Go to school as student	18,225	18.03
Go to religious activity	9,845	14.85
Go to library: school related	845	16.56
OS - Day care	2,421	14.79
Medical/dental services	9,132	22.80
Shopping/errands	18,198	17.77
Buy goods: groceries/clothing/hardware store	72,040	14.85
Buy services: video rentals/dry cleaner/post office/car service/bank	20,971	11.87
Buy gas	9,439	15.86
Social/recreational	6,939	29.71
Go to gym/exercise/play sports	19,577	24.16
Rest or relaxation/vacation	2,792	67.62
Visit friends/relatives	29,712	26.52
Go out/hang out: entertainment/theater/sports event/go to bar	10,754	25.11
Visit public place: historical site/museum/park/library	2,719	26.35
Family personal business/obligations	9,873	23.28
Use professional services: attorney/accountant	1,345	19.62
Attend funeral/wedding	1,109	29.95
Use personal services: grooming/haircut/nails	2,362	15.84
Pet care: walk the dog/vet visits	2,614	19.76
Attend meeting: PTA/home owners association/local government	3,104	19.82
Transport someone	791	21.81
Pick up someone	17,285	15.84
Take and wait	3,872	18.58
Drop someone off	18,933	16.30
Meals	3,983	15.07
Social event	3,129	23.39
Get/eat meal	29,883	15.67
Coffee/ice cream/snacks	3,776	10.85
Other reason	4,785	33.72
All	632,462	19.78

March 31, 2005, from <http://nhts.ornl.gov/2001/>

Bayview docs: Big table on trip durations by mode and purpose.xlsx

table has length of trip by seven categories of duration and by mode of travel. We learn, for example, that walk trips in the 40 to 49 minute time category go 1.89 miles. The most relevant data seem to be in the above table.

As one can see from inspection, a number of these are vehicle trips with no as yet recognized non-vehicle counter-part. We will omit them for the final analysis.

Similar to the NHTS, MTC shows trip distribution by trip purpose. See attached table with chart, “Trip Duration Frequency Distribution by Trip Purpose.” [Bayview doc: Activity and trip durations MTC 2000 Survey.xlsx] While it only has four purposes, it is backed by a large sample. The critical facts:

- 88 percent of home-based work trips are less than 60 minutes long.
- 84 percent of home-based shop trips are less than 50 minutes.
- 87 percent of home-based social/recreation trips are less than 50 minutes long.
- 86 percent of home-based school trips are less than 40 minutes long.

Bayview Village can meet these criteria.

MTC also has data on trip purpose, “Trips by Detailed Purpose at Destination,” I have omitted purpose at origin as it mirrors the destination data. I have also omitted several destinations that were not relevant for comparing quarry travel to suburbia. I combined weekday, Saturday, and Sunday data and rank ordered the purposes from biggest to smallest. [Bayview doc: Activity and trip durations MTC 2000 Survey.xlsx]

### **Trips by Detailed Purpose at Destination**

#### **Activity and trip durations MTC 2000 Survey**

ranked by week total	Average day	
	Total	Percent
(6) Work or Work Related	19,570,132	24.2%
(9) Shop away from home	16,357,636	20.3%
(3) Meals	11,219,919	13.9%
(7) School or School Related	8,777,076	10.9%
(4) Recreation/Entertainment	8,226,991	10.2%
(10) Pers. Serv./Bank/Gov't	5,950,862	7.4%
(11) Social Activities	4,732,833	5.9%
(13) Vol./Civic/Religious	2,780,658	3.4%
(14) Sick/III/Medical Appt.	1,519,242	1.9%
(2) Hhld Chores/Personal Care	943,432	1.2%
(12) Relaxing/Resting	504,253	0.6%
(8) Shopping at home	135,332	0.2%
(15) Non-work,-shop internet	31,893	0.0%
	80,750,259	100%

These 12 purposes are similar to the longer NHTS list. They use different but often overlapping concepts. The NHTS data has been reduced to the relevant purposes.

Other MTC data gives the best detail on duration for purposes of trips. Bayview docs: 2222 summary tab in Activity and trip durations MTC 2000 Survey.xlsx

Other NHTS data has duration detail by mode and distance for seven durations, from 1-4 minutes to 50+ minutes, for 27 modes. Not surprisingly, it shows that the more time one spends, the farther one gets, and some modes get you farther than others. Bayview docs: NHTS mode duration distance.xlsx

Can Bayview Village also match these average trip durations despite being ped? For many households, yes.