

The impact of activity patterns and social network on driving behavior

Yoram Shiftan, Technion, Israel Institute of Technology

Wafa Elias, Technion, Israel Institute of Technology

Transportation Research Institute, Technion, Haifa, Oct 10, 2013

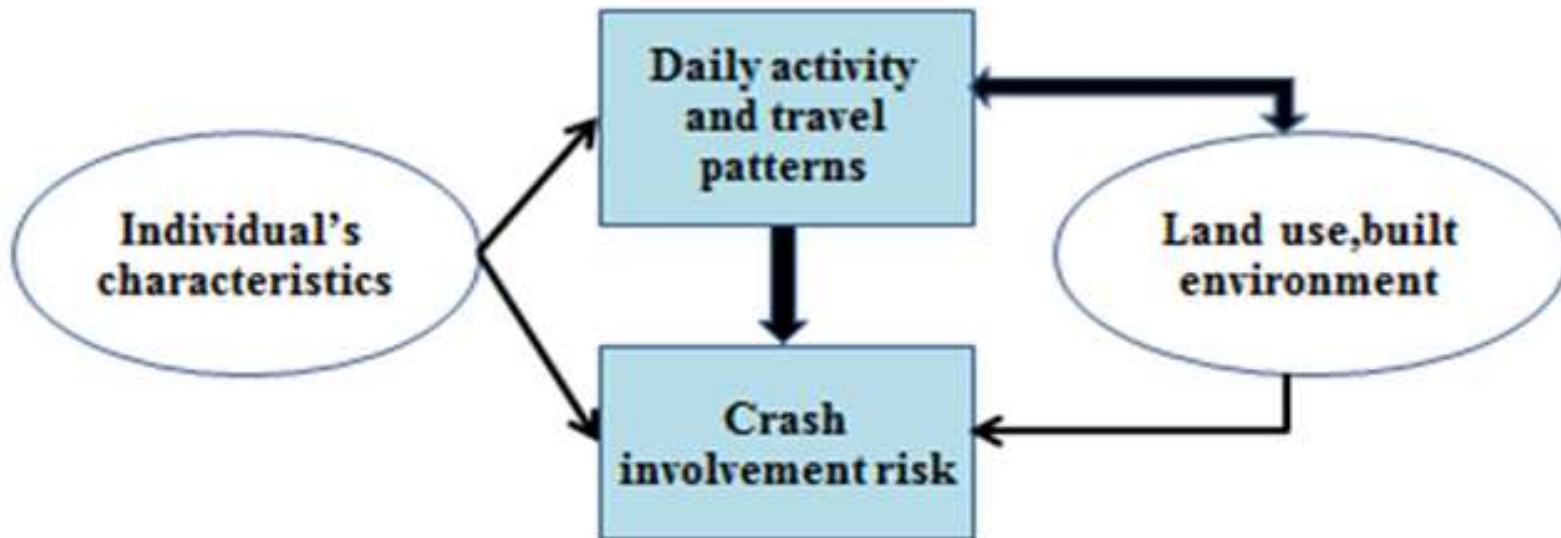
Objectives

Exploring the interrelationships between **social interaction, activity and travel patterns**, and **driving behavior and risk exposure**.

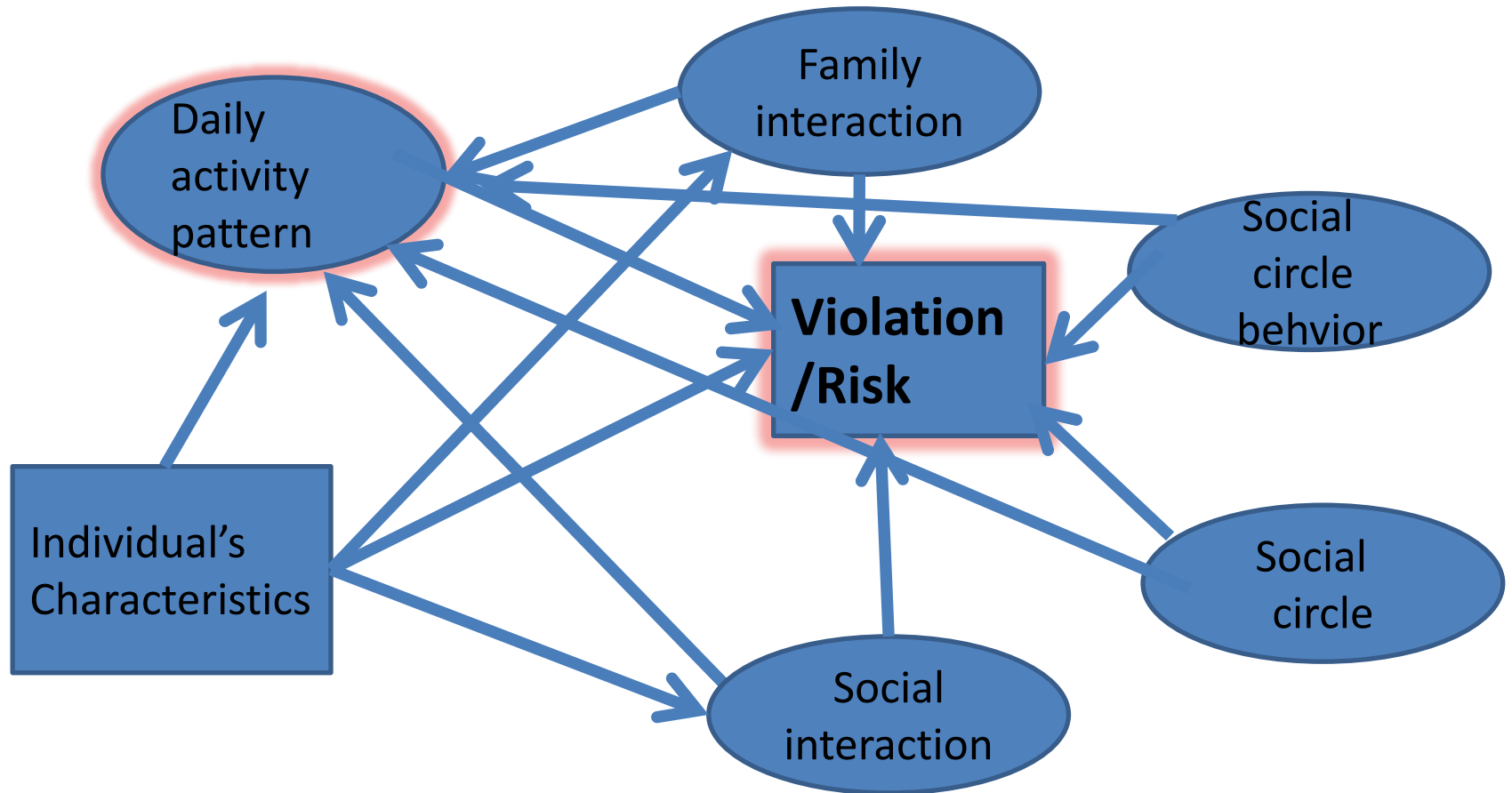
Literature Review

- Various studies explore the effect of social pressure, especially among young drivers driving with friends
 - Engstrom et. al. (2008)
 - Horvath et. al. (2012)
- Much limited research has been carried about the impact of social interaction in general on driving behavior
 - Arnett (2002)
 - Vassallo et al (2007)
 - Allen and Brown (2008)

Risk Exposure (Elias et al, 2011)



Theoretical framework



Methodology

- **First phase (Jews and Arabs)**
- Telephone survey in North Israel
 - conducted in 2013
 - Arab (300 participants)
 - Jewish (217 participants)
- Descriptive Statistics
- Social interaction factor
- Violation model (Ordered Logit)

First Phase Questionnaire

- Activity and travel behavior
 - Number of trips by purpose, driving duration
- Driving behavior
 - Driving violations, road crashes
- Social interactions
 - Meetings, phone calls, trust
 - Friends vs. family
- Demographic and socio-economic characteristics

Second Phase

- Focus on a limited Arab population
- More detailed survey of 130 participants:
 - Face to face interview
 - GPS
 - Funf?
 - Further risk exposure model
 - Structural equation model

Second Phase Questionnaire

- Week (or two) long activity/trip diary
- Recorded violation record
- More social interaction questions
 - Who are your friend
 - Who do you travel with in your car

Funf in a box

- Create your own mobile sensing android app - no programming required.
- Send data to dropbox account
- Open-Source code based
- Free distribute and download
- Will be installed with the cellphone's owner approval
- can use the android built-in sensors for :
 - GPS Location (longtitude,latitude)
 - Accelerometer Sensor
 - Volume & Temperature (magnitude units)
 - Call logs & SMS logs
 - Same-time running apps
 - Entire data escorted with timestamp

- Example 1.0

GPS location received (.csv format)

N	M	L	K	J	I	H	G	F	E	D	C	B	A
mLongitude	mLatitude	mHasSpeed	mHasBearing	mHasAltitude	mHasAccuracy	mExtras_network	mExtras_network	mBearing	mAltitude	mAccuracy	timestamp	device	id
34.8182822	32.0638976	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	5	1373132348.58	ca214ead-dbb7915d-	
34.816159	32.0640857	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	12	1373134709.11	ca214ead-dbb7915d-	
34.8182822	32.0638976	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	22	1373135007.47	ca214ead-dbb7915d-	
34.861423	32.0761487	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	50	1373103550.83	ca214ead-3ab0694f-	
34.8337924	32.0582061	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	63	1373121547.05	ca214ead-cb4488b-	
34.8182822	32.0638976	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	100	1373138816.88	ca214ead-ac0048d3-	
34.8687739	31.8193114	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	54	1373114350.00	ca214ead-d75be4b0-	
34.9656613	31.9471277	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	43	1373107146.97	ca214ead-50a296d7-	
34.813761	32.0688961	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	123	1373117960.08	ca214ead-92588536-	
34.8200974	32.0653203	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	4	1373128747.36	ca214ead-a51e4b71-	
34.8191849	32.0630215	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	4	1373099051.27	ca214ead-08ae65af-	
34.8188848	32.0639454	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	5	1373142415.74	ca214ead-2beac491-	
34.9670060	31.9465520	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	7	1373110746.89	ca214ead-a1d5a48d-	
34.8607967	32.0759963	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	8	1373125147.05	ca214ead-c20d08a6-	
34.8182841	32.063897	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	9	1373095450.40	ca214ead-4b3d64b7-	
34.818446	32.0636843	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	19	1373099947.56	ca214ead-c71d4da3-	
34.8182822	32.0638976	FALSE	FALSE	FALSE	TRUE	cell	cached	0	0	19	1373135216.00	ca214ead-becdd577-	

id – user's mobile ID

timestamp – UNIX coded time (date and exact time)

mLatitude \ mLongitude – geographical coordinates in decimal degrees.

mAccuracy – GPS Sample accuracy.

Example 2.0

Call log data

L	K	J	I	H	G	F	E	D	C	B	A		
type	timestamp	number	type	number	lab	number	name	duration	date	_id	timestamp	device	id
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3367	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	98	1.37E+12	3366	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	114	1.37E+12	3365	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	147	1.37E+12	3364	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3363	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	301	1.37E+12	3362	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	70	1.37E+12	3361	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3360	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3359	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3378	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	97	1.37E+12	3377	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3376	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	164	1.37E+12	3375	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	120	1.37E+12	3374	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3373	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	160	1.37E+12	3372	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	130	1.37E+12	3371	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	110	1.37E+12	3370	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	2	1.37E+12	3369	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3368	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	97	1.37E+12	3367	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	27	1.37E+12	3366	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	0	1.37E+12	3365	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	58	1.37E+12	3364	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	114	1.37E+12	3363	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	5	1.37E+12	3362	1.37E+09	5d3f5460-f47e2f82-f			
1	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	621	1.37E+12	3361	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	107	1.37E+12	3360	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	29	1.37E+12	3359	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	24	1.37E+12	3358	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	51	1.37E+12	3357	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	22	1.37E+12	3356	1.37E+09	5d3f5460-f47e2f82-f			
2	1.37E+09	PHONE_WW	PHONE_WW	PHONE_WW	PHONE_WW	26	1.37E+12	3355	1.37E+09	5d3f5460-f47e2f82-f			

- type - 1,2 or 3 for incoming, outgoing, or missed call.
- duration - in seconds.

Example 3.0

Sms data Log

type	timestamp	thread_id	subject	status	service_cc	reply_path	read	protocol	person	locked	date	body	address	timestamp	device
2	1.37E+09	41	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	41	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	166	{}ONE_WW	-1	9.73E+10	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	166	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	41	{}ONE_WW	-1	9.73E+11	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	166	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	17	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	17	{}ONE_WW	-1	9.73E+11	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	17	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	17	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	17	{}ONE_WW	-1	9.73E+11	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	42	{}ONE_WW	-1	9.73E+11	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	45	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
2	1.37E+09	45	{}ONE_WW	-1		FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f
1	1.37E+09	164	{}ONE_WW	-1	9.73E+10	FALSE	TRUE	0	{}ONE_WW	FALSE	1.37E+12	{}ONE_WW	{}ONE_WW	1.37E+09	5d3f5460-f47e2982-f

type - sent/read

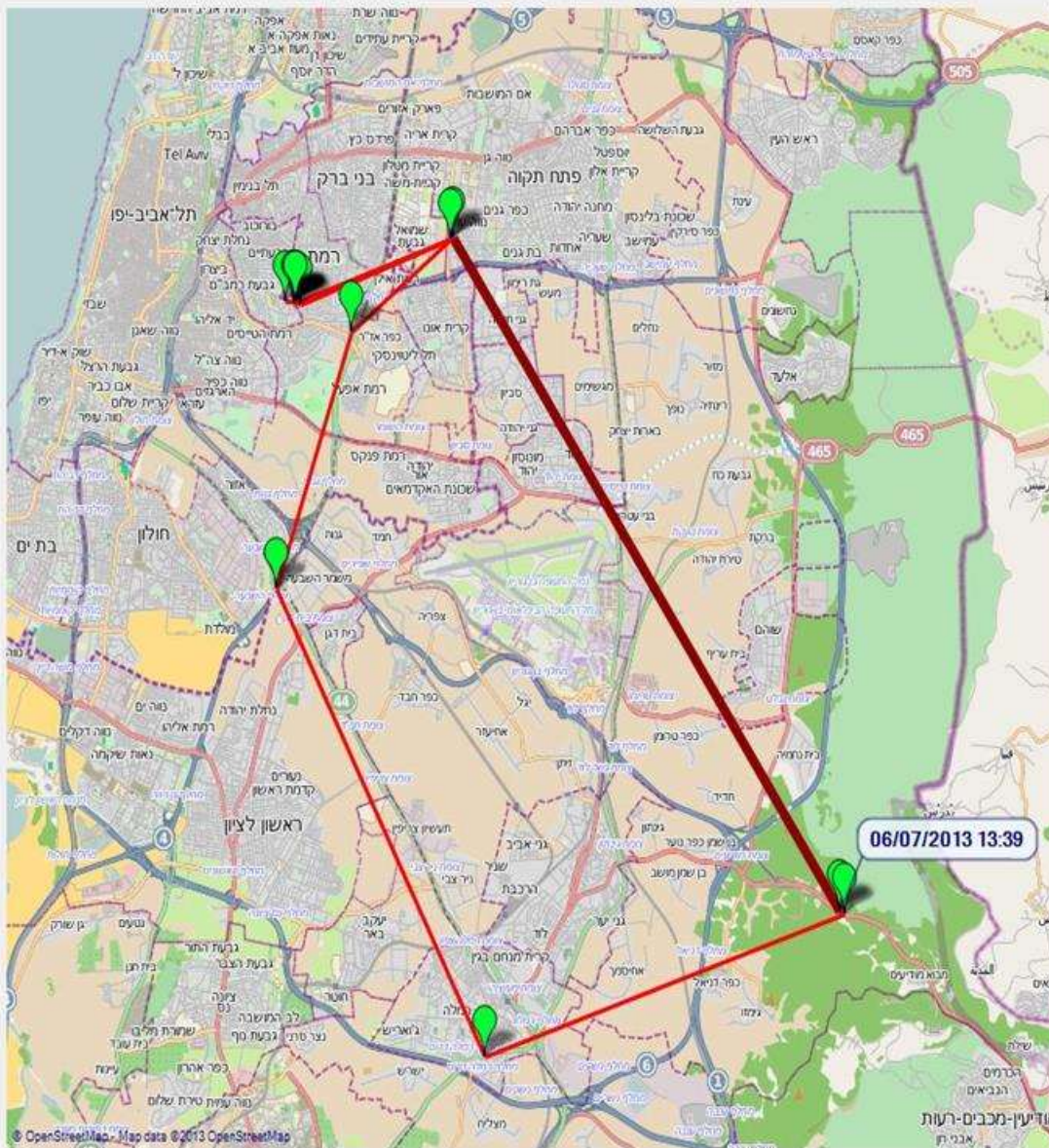
read - true/false (stands for haven't been read yet)

Example 4.0

Same time running apps data

taskInfo_baseIntent_mComponent_m	taskInfo_baseIntent_mCom	taskInfo_baseIntent_i	taskInfo_baseIntent_i	duration	timestamp	device	id
com.android.phone	com.android.phone.InCallScreen	android.intent.ac		13.776	1.37E+09	ca214ead-dbb7915d	
com.android.phone	com.android.phone.InCallScreen	android.intent.ac		1.703	1.37E+09	ca214ead-dbb7915d	
com.android.phone	com.android.phone.InCallScreen	android.intent.ac		2.752	1.37E+09	ca214ead-dbb7915d	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		10.62	1.37E+09	ca214ead-dbb7915d	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		3.011	1.37E+09	ca214ead-dbb7915d	
com.whatsapp	com.whatsapp.Conversation			7.104	1.37E+09	ca214ead-dbb7915d	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		1.599	1.37E+09	ca214ead-dbb7915d	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		3.011	1.37E+09	ca214ead-dbb7915d	
com.google.android.youtube	com.google.android.youtube.android.intent.catego	android.intent.ac		28.719	1.37E+09	ca214ead-dbb7915d	
com.google.android.youtube	com.google.android.youtube.android.intent.catego	android.intent.ac		278.18	1.37E+09	ca214ead-dbb7915d	
com.google.android.youtube	com.google.android.youtube.android.intent.catego	android.intent.ac		5.042	1.37E+09	ca214ead-dbb7915d	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		1.25	1.37E+09	ca214ead-dbb7915d	
com.android.chrome	com.google.android.apps.chrome.Main	android.intent.ac		11.071	1.37E+09	ca214ead-3ab6694f	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		12.073	1.37E+09	ca214ead-3ab6694f	
com.google.android.googlequicksearch	com.google.android.googlequicksearchbox.Search	android.intent.ac		15.021	1.37E+09	ca214ead-3ab6694f	
com.google.android.googlequicksearch	com.google.android.googlequicksearchbox.Search	android.intent.ac		13.18	1.37E+09	ca214ead-3ab6694f	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		3.011	1.37E+09	ca214ead-3ab6694f	
com.waze	com.waze.FreeMapAppActi	android.intent.catego	android.intent.ac	1684.473	1.37E+09	ca214ead-3ab6694f	
com.sec.android.app.twlauncher	com.sec.android.app.twlau.android.intent.catego	android.intent.ac		3.077	1.37E+09	ca214ead-3ab6694f	
com.google.android.googlequicksearch	com.google.android.googlequicksearchbox.Search	android.intent.ac		16.794	1.37E+09	ca214ead-3ab6694f	
com.android.chrome	com.google.android.apps.chrome.Main	android.intent.ac		28.528	1.37E+09	ca214ead-3ab6694f	

- duration and timestamp mentioned



Set Drivers Data

Load GPS track

load app data

load call data

load SMS data

ROADS

06/07/2013 10:24	06/07/2013 11:24
06/07/2013 11:24	06/07/2013 11:39
06/07/2013 11:39	06/07/2013 12:39
06/07/2013 12:39	06/07/2013 13:39
06/07/2013 13:39	06/07/2013 14:39
06/07/2013 14:39	06/07/2013 15:39
06/07/2013 15:39	06/07/2013 16:39
06/07/2013 16:39	06/07/2013 17:39
06/07/2013 17:39	06/07/2013 18:39
06/07/2013 18:39	06/07/2013 19:39
06/07/2013 19:39	06/07/2013 20:39
06/07/2013 20:39	06/07/2013 21:18
06/07/2013 21:18	06/07/2013 21:23
06/07/2013 21:23	06/07/2013 21:26
06/07/2013 21:26	06/07/2013 22:26
06/07/2013 22:26	06/07/2013 23:26

Waze total time: 60.02

Whatsapp total time: 0.1

Youtube total time: 0

Music total time: 0

Average Speed: 17.4

Calls Duration: 0 for incoming calls and 0 for outgoing calls.

Social Activity: 0 different people, which max calls with same one is 0

SMS Texting: 0 recieved and 0 sent.

DRIVERS

Ron Weiner
Eldad Seter

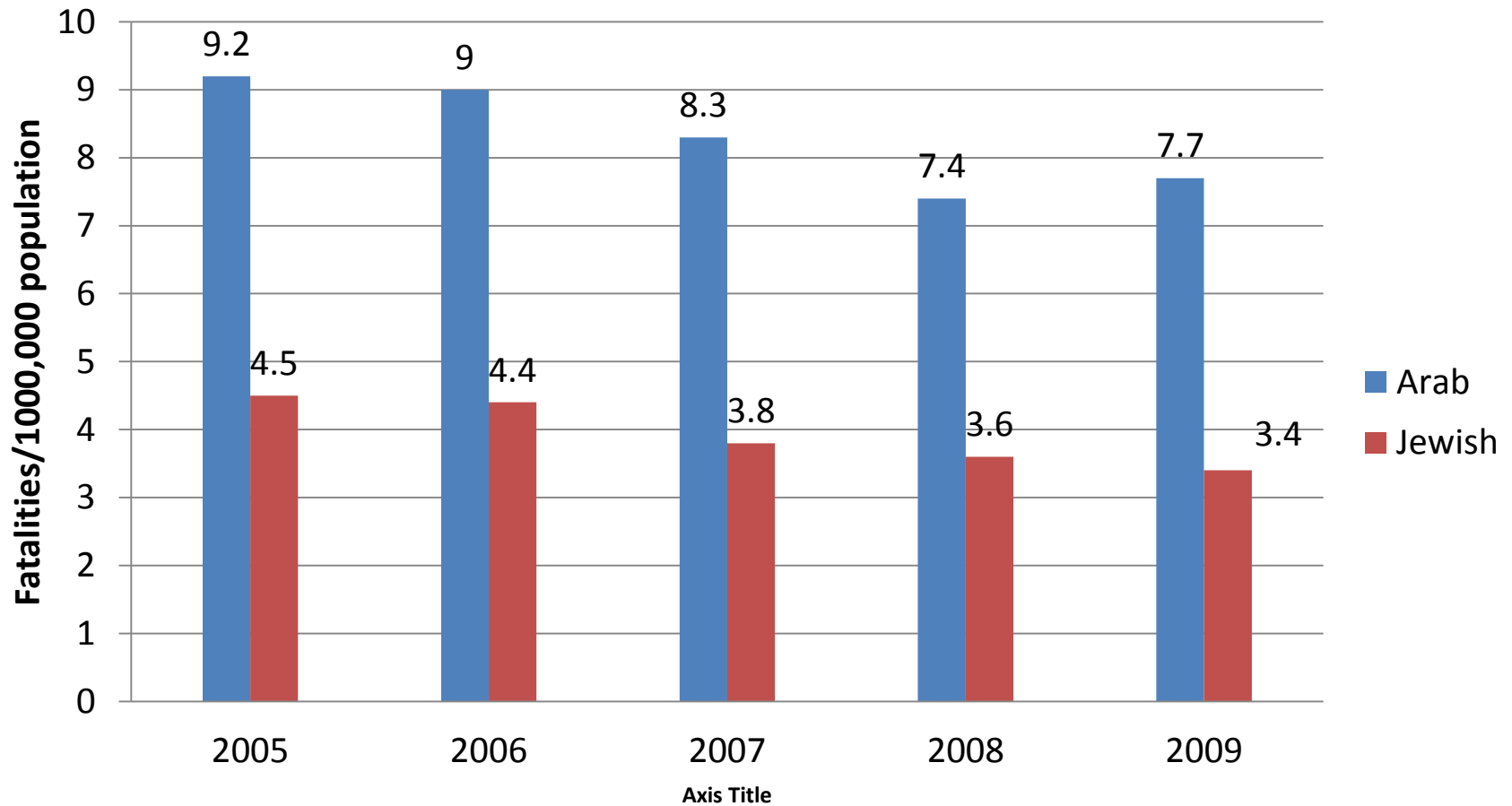
DRIVER DATES

06.07

Theoretical framework



Fatalities per population



Demographic and socio-demographics (survey)

	Arab	Jewish
N	300	217
Gender (Female)	48.2%	56.0%
Age (Mean)	40.8	48.4
S.D	13.5	13.0
Marital status (Married)	77%	85%
Divorce	.3%	7.5%
Single	23%	8%
Education		
Less than 12 years	20.9%	3.3%
12 years	28.6%	27.8%
Professional certificate	11.6%	24.1%
Bachelor	28.9%	24.1%
Master	7.0%	19.8%
P.h.D	3.0%	.9%

Demographic and socio-demographics (survey)

	Arab	Jewish
Income		
Under the average	52.0%	32.6%
About the Average	25.9%	26.9%
Above the average	22.1%	40.4%
Work status		
Salaried	58.9%	65.4%
Self-employed	15.1%	10.4%
Unemployed	12.3%	2.4%
Pensioner	4.9%	10.0%
Housewife	6.0%	5.7%
Student	2.5%	1.4%
Soldier	.0%	1.4%
Other	.4%	3.3%

Activities' location

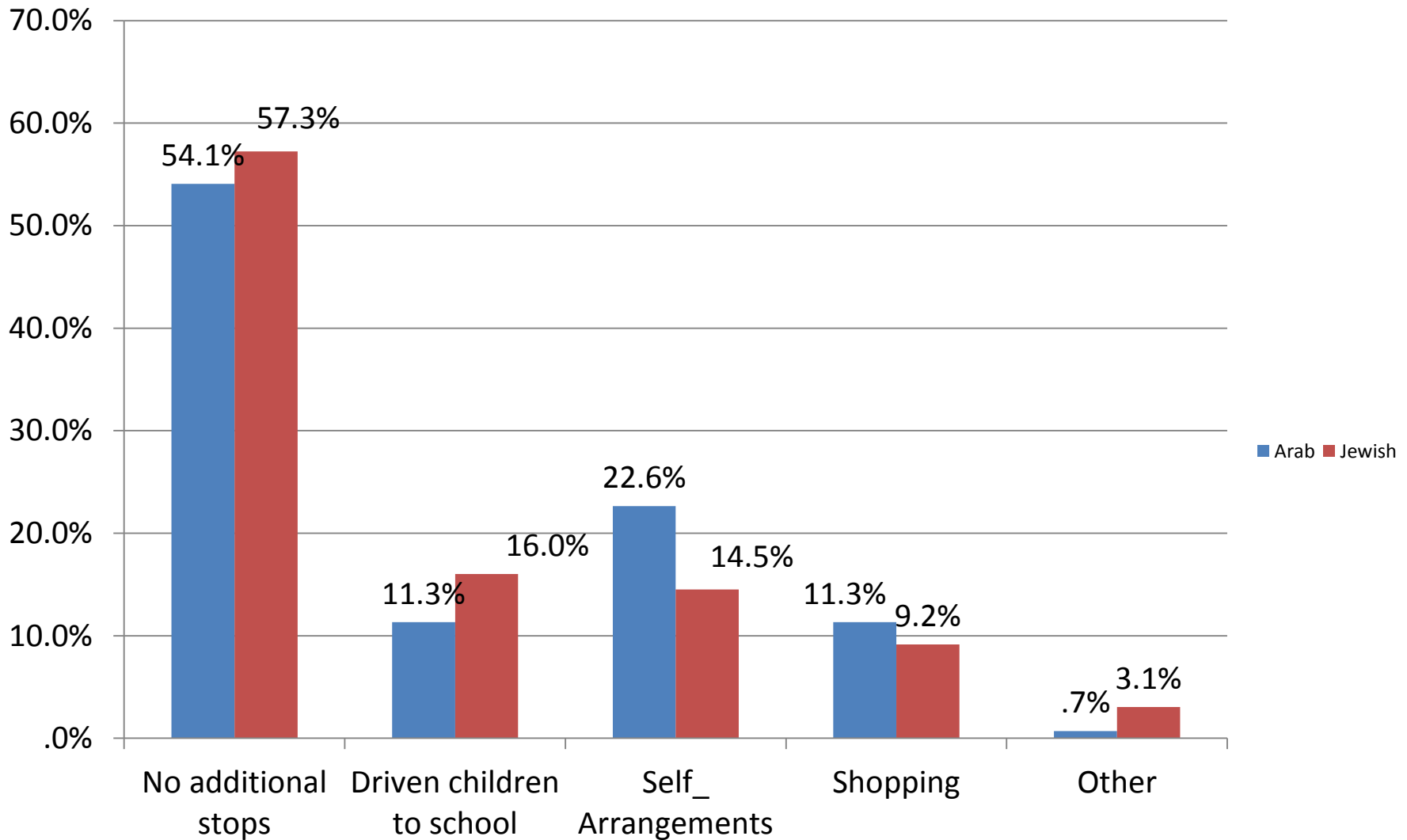
Location of the various activities		Arab	Jewish
Do you work in the town where you live?	Yes	45.9%	41.0%
	No	54.1%	59.0%
Are you doing the majority of your social activities in the town where you live?*	Yes	85.3%	70.2%
	No	14.7%	29.8%
Are you doing the majority of your shopping in the town where you live?	Yes	76.5%	76.2%
	No	23.5%	23.8%

Daily driving duration

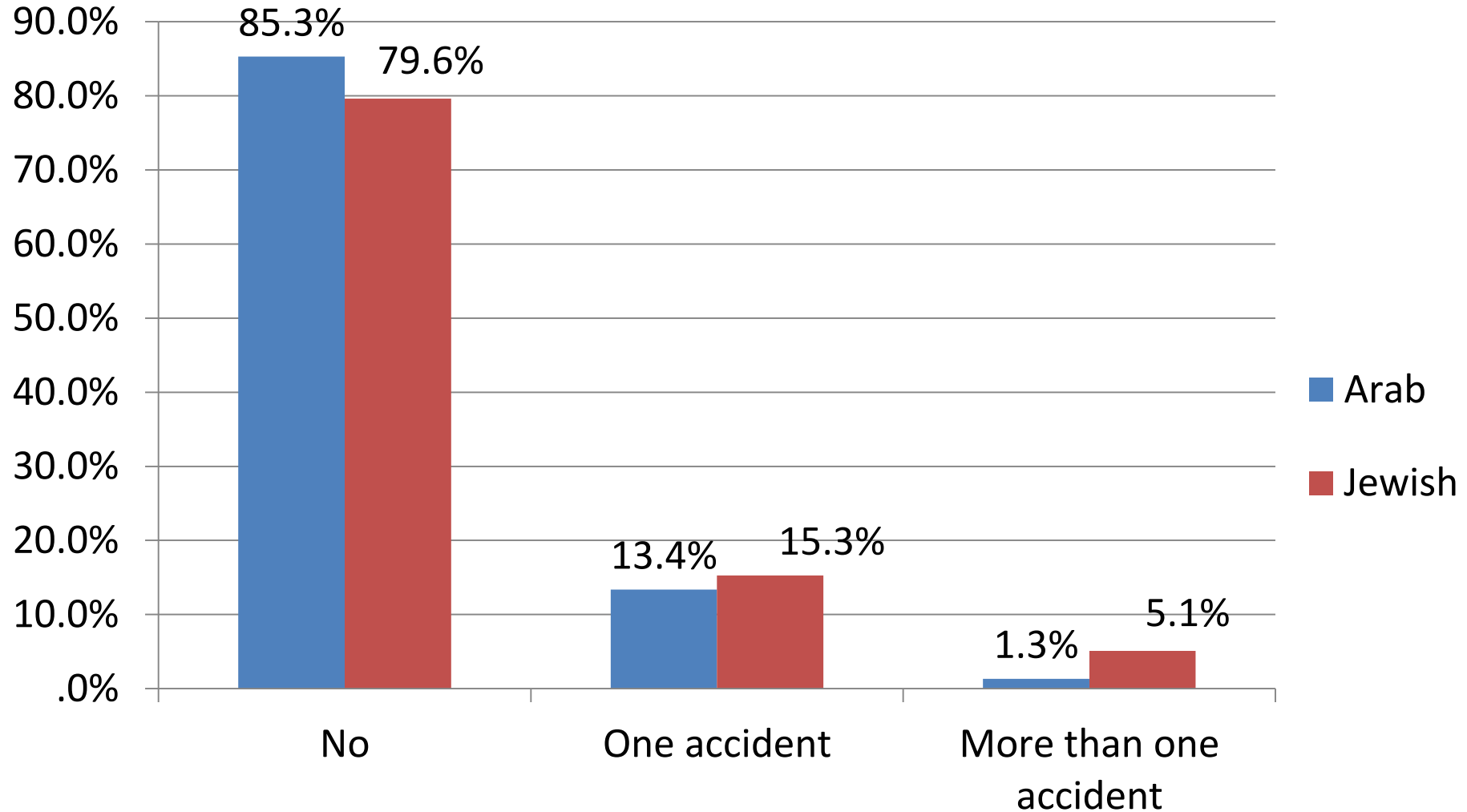
	Population group	N	Mean (hrs.)	Std. Deviation
Weekday*	Arabs	289	2.3664	2.58056
	Jewish	212	1.8672	2.56709
Weekend*	Arabs	281	2.2269	2.39094
	Jewish	195	1.5400	2.25029

*** The difference is statistically significant**

Additional stops on the way to the work



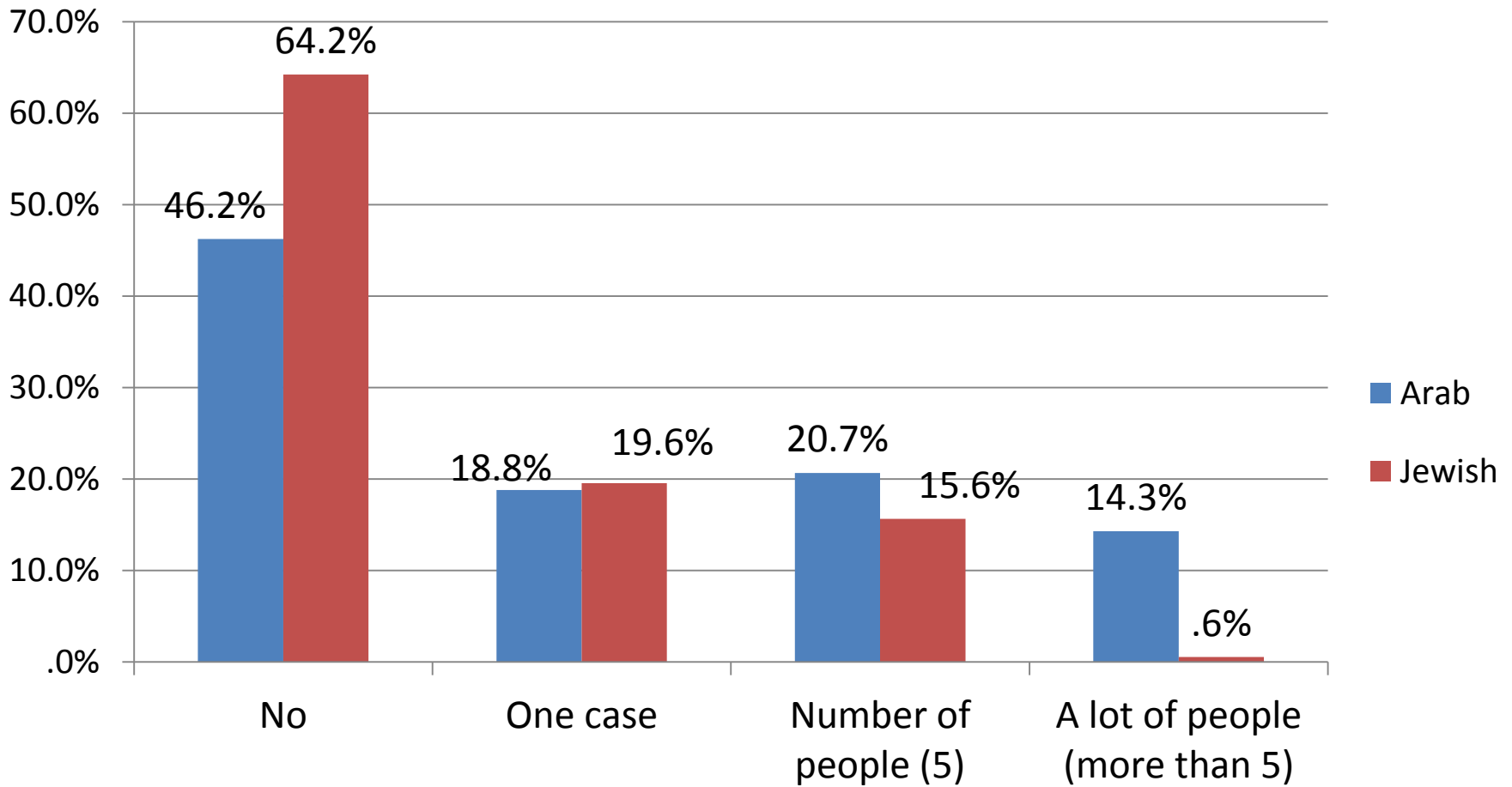
Have you been involved in a car accident in the last five years? (self reported)



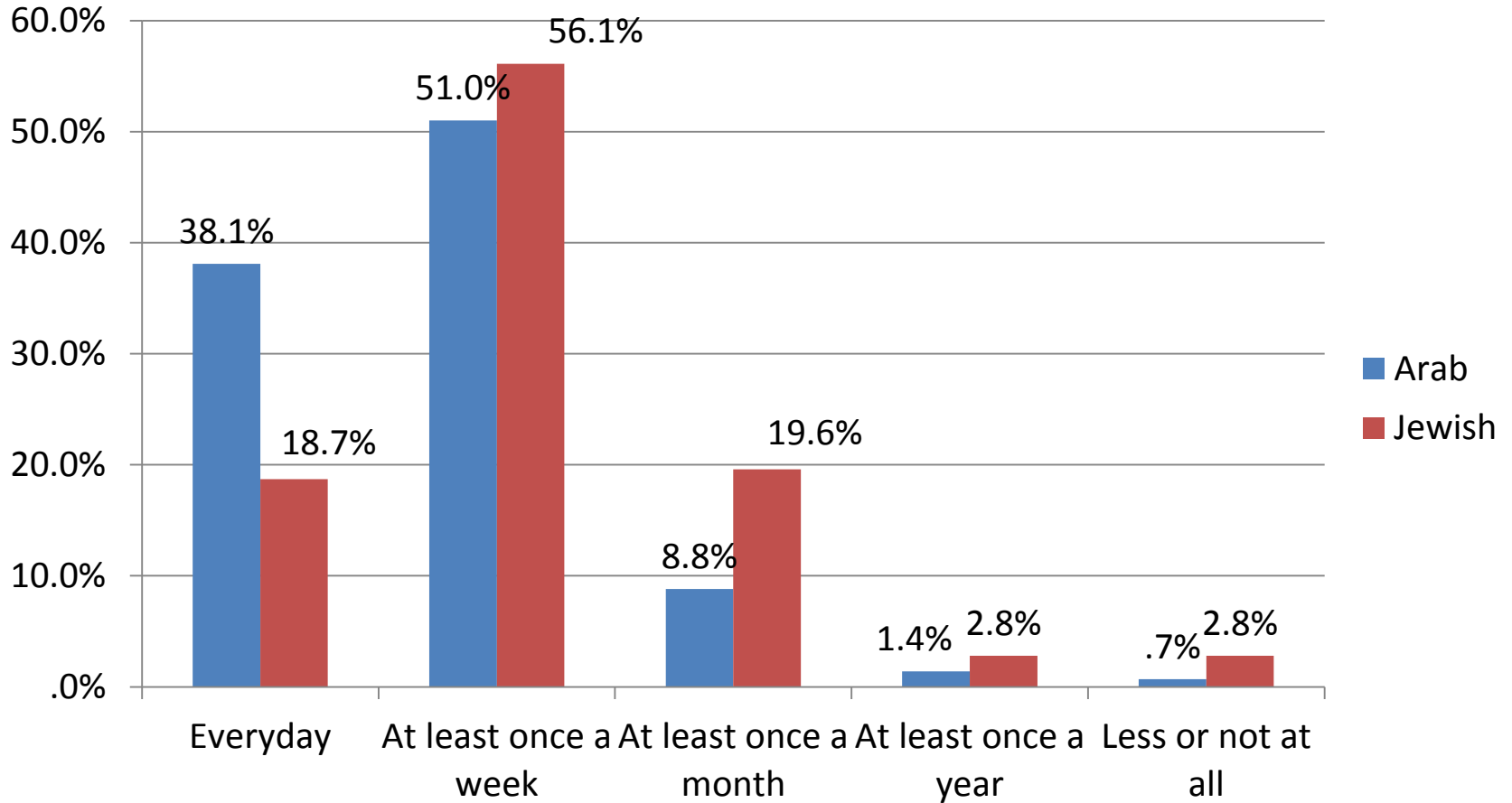
Traffic violations (%)

		Never	Rarely	Sometimes	Often
* giving right	Arab	83	12	5	0
	Jewish	87	12	1	0
Stop sign	Arab	91	8	0	1
	Jewish	91	7	2	0
Red light	Arab	94	5	0	1
	Jewish	97	2	1	0
Talking on cell	Arab	63	21	10	6
	Jewish	73	18	5	4
Passing at no passing zone	Arab	92	8	2	0
	Jewish	95	5	0	0
Passing from right	Arab	92	6	2	0
	Jewish	81	13	5	1
Driving on shoulder	Arab	92	6	1	1
	Jewish	93	5	2	0
10 kmh over speeding	Arab	58	20	15	7
	Jewish	70	14	10	6
20 kmh over speeding	Arab	71	15	11	3
	Jewish	54	26	15	5

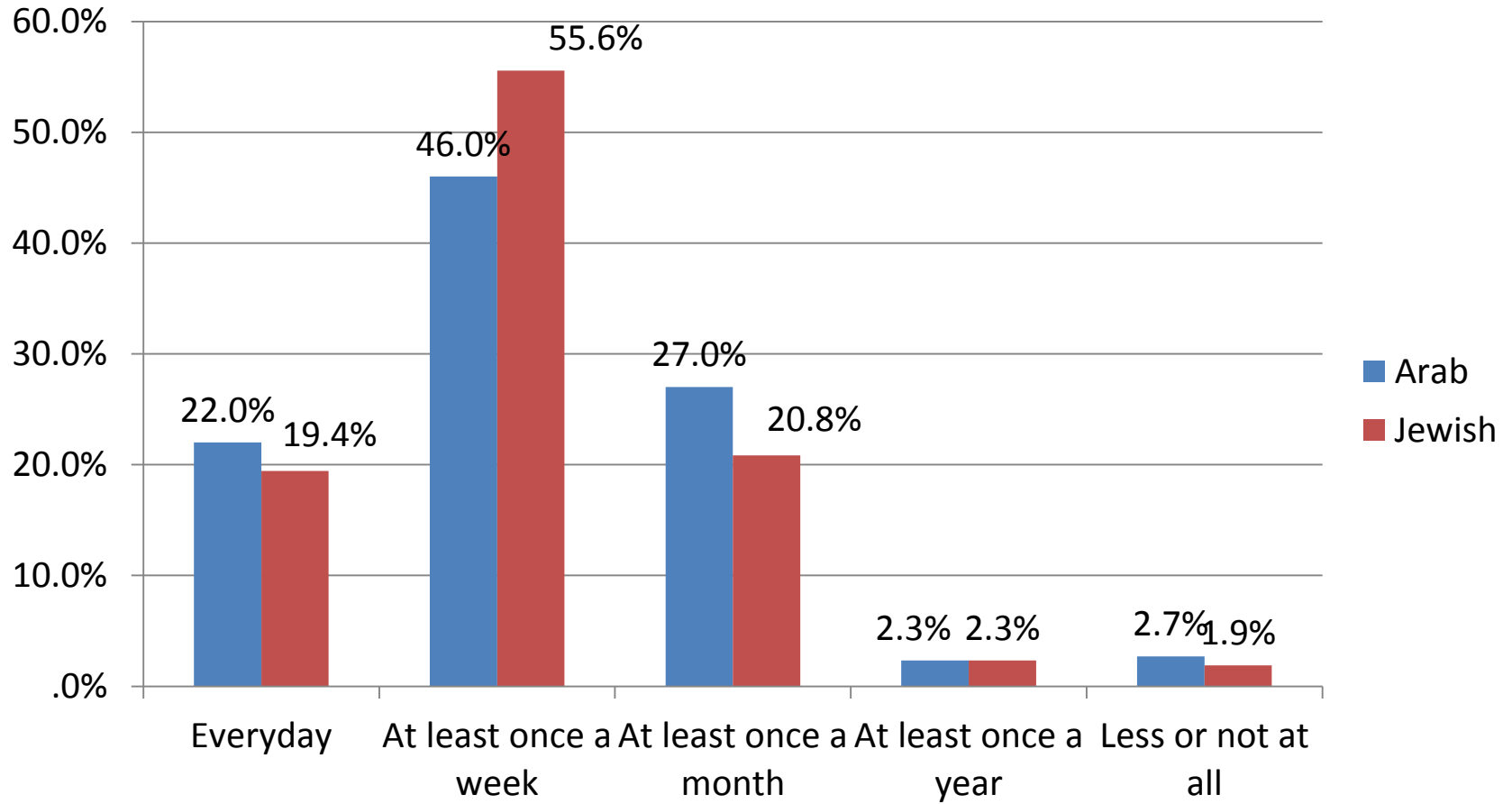
Do you know any of your friend or family that was convicted in a traffic violation?



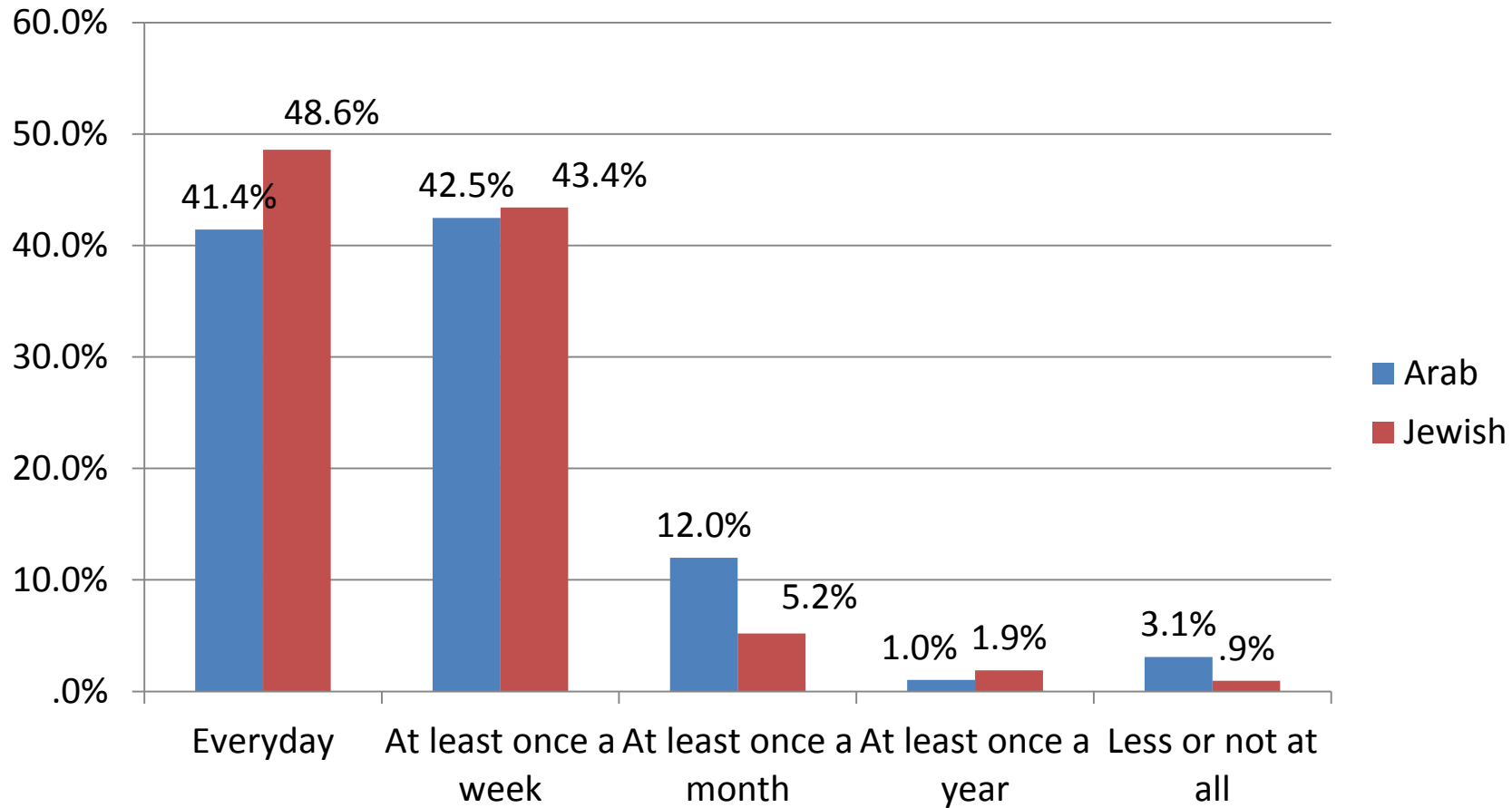
How often do you meet your family members (except from those who live with you at home)



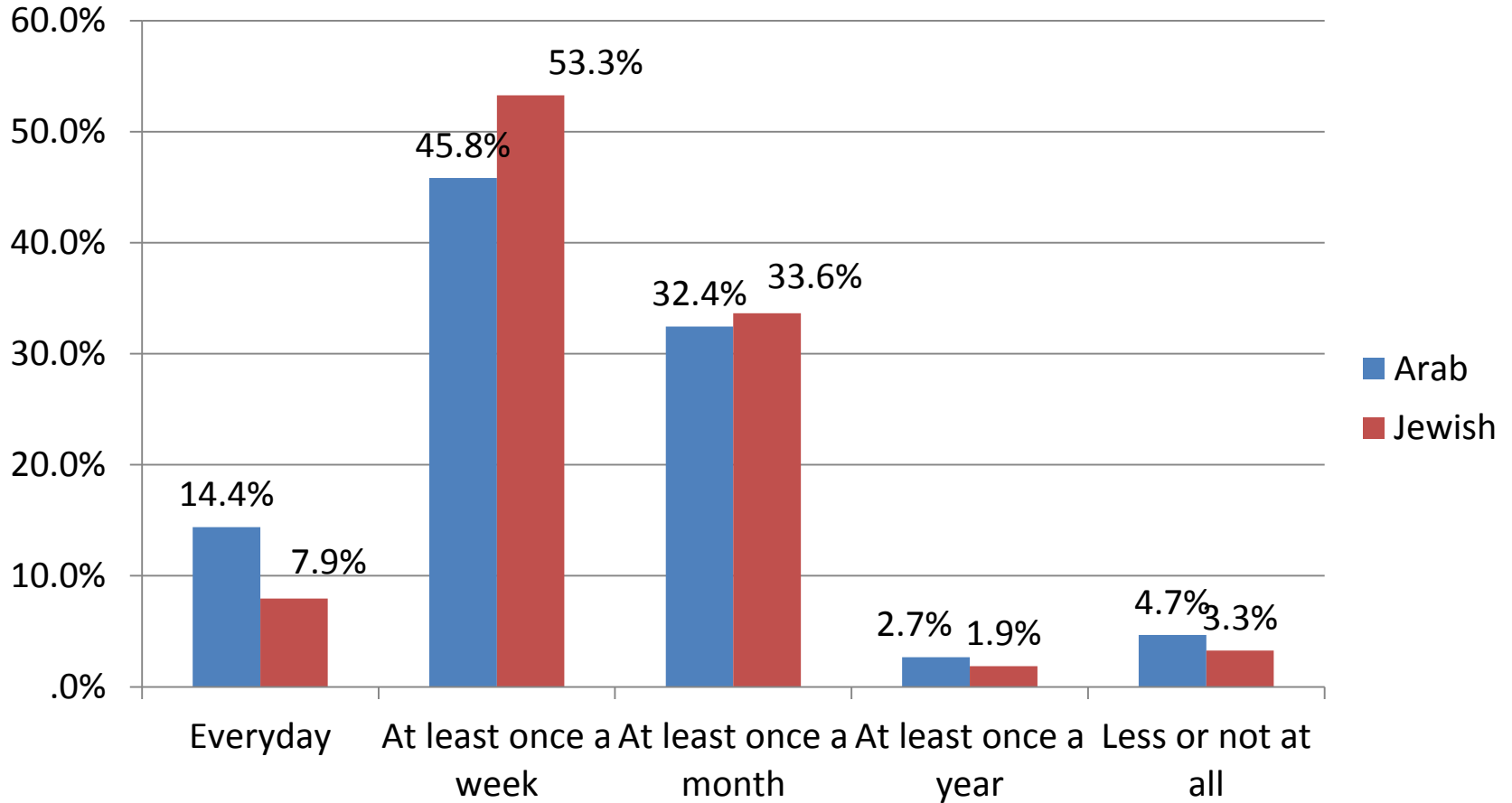
How often do you meet friends?



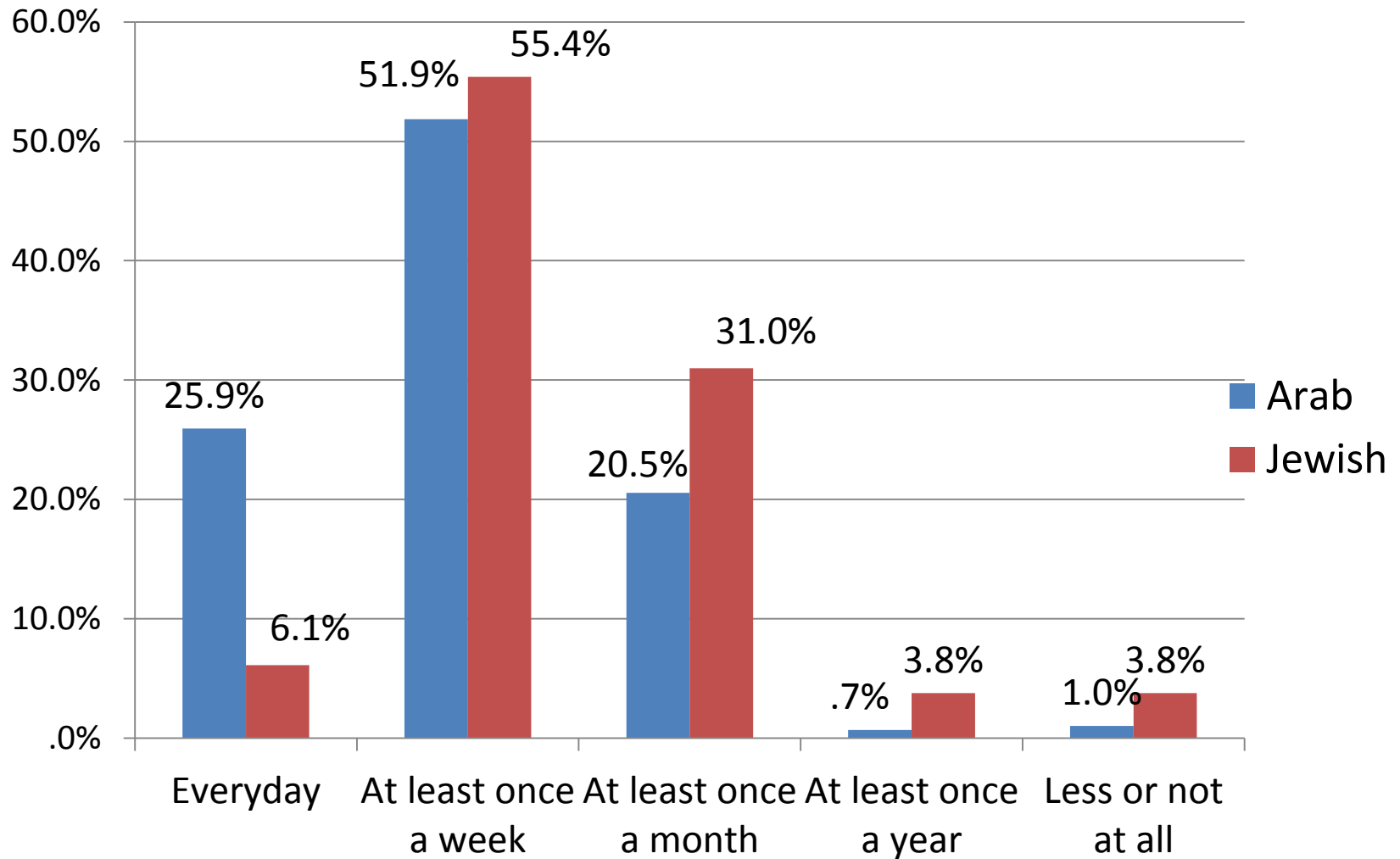
How often do you have telephone contact with your friends?



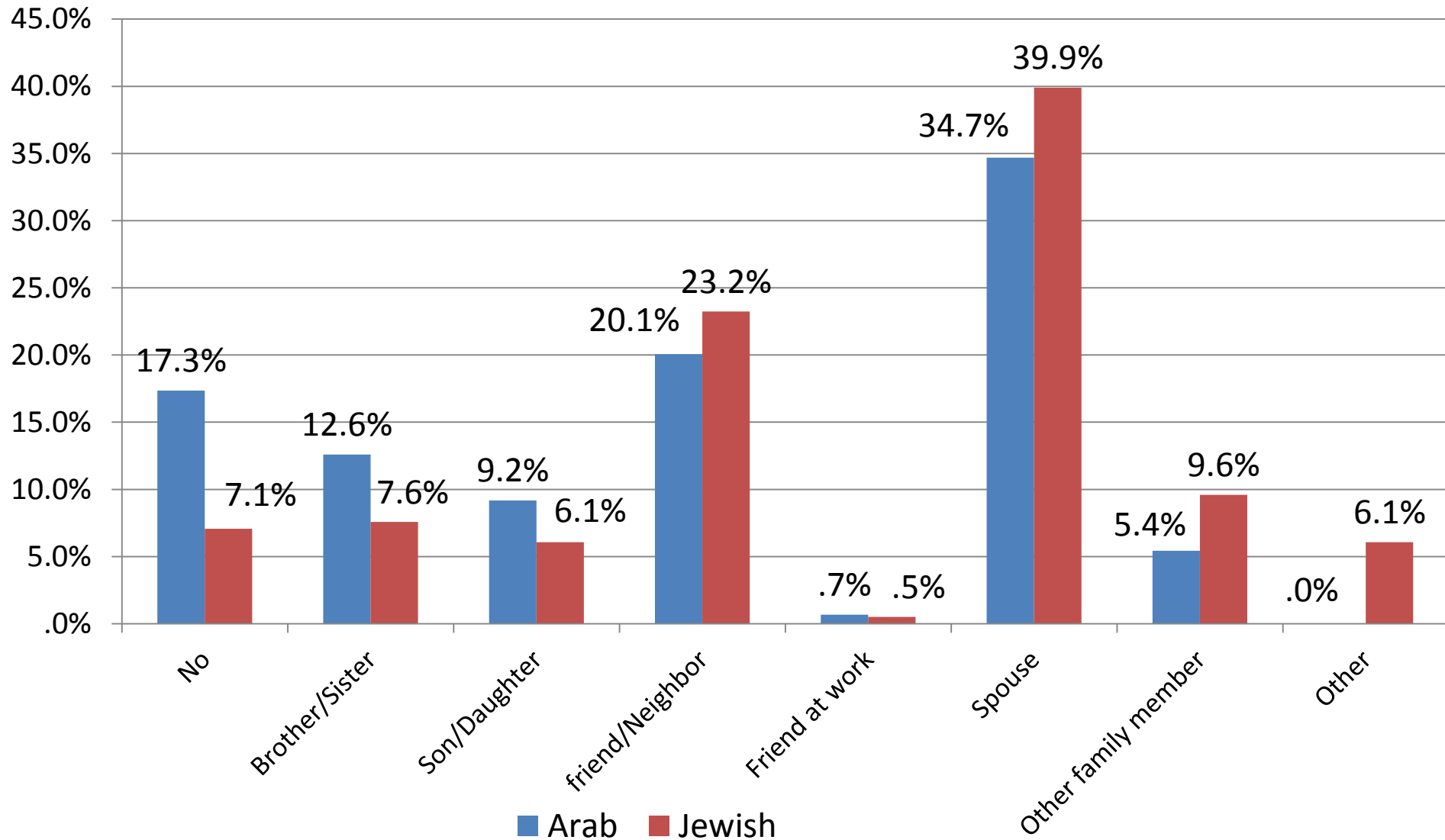
How often do you go out and meet with people who do not live with you?



How often people tend to visit you in your home?



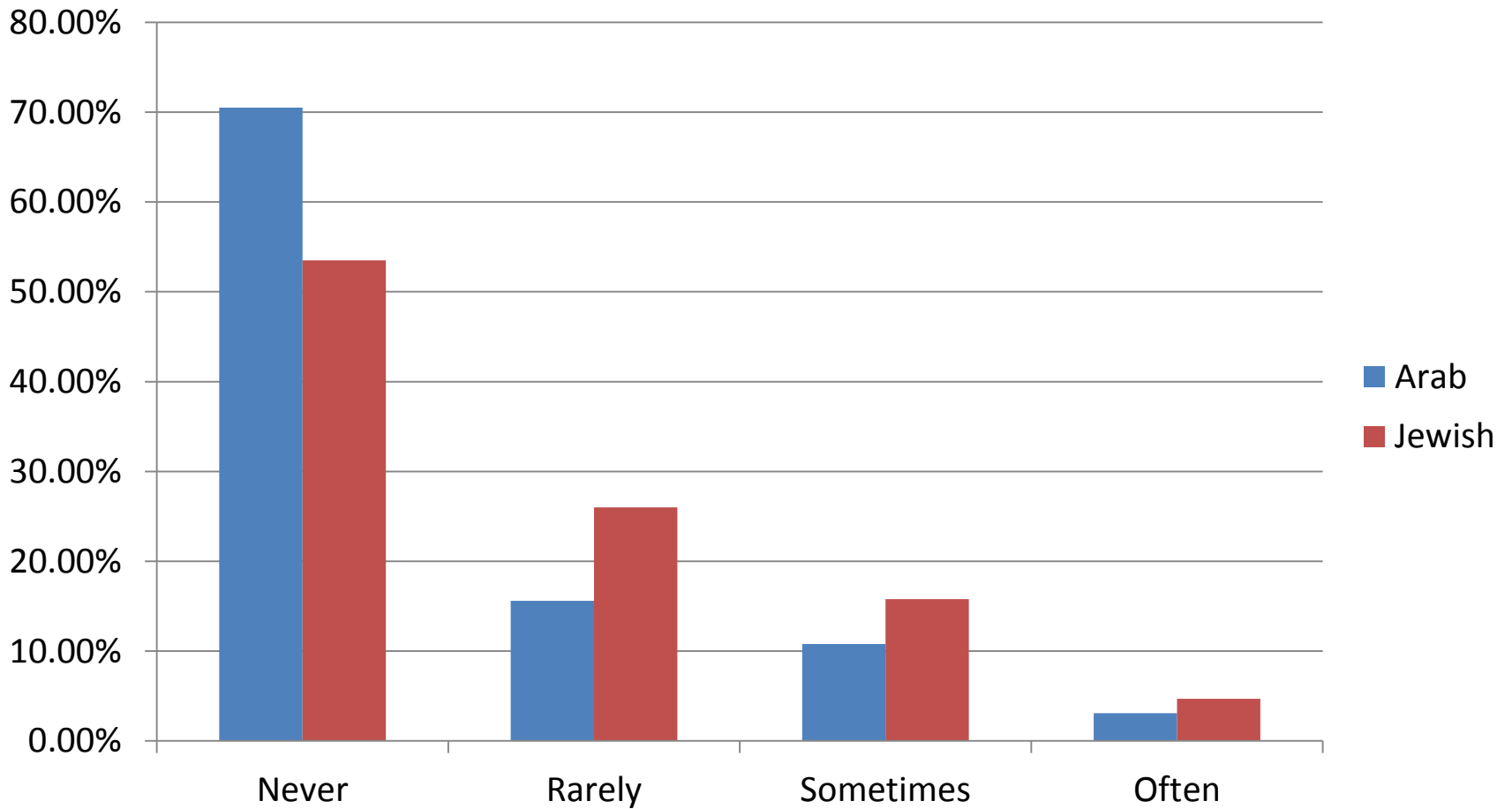
Do you have someone you feel very close to? someone you can share your problems with?



Friends' social interaction factor

	Statements	Score	Cronbach's Alpha
Friends' social interaction factor	How often do you meet friends?	0.793	0.716
	How often do you have telephone contact with your friends?	0.805	
	How often do you go out and meet with people who do not live with you?	0.769	

Speeding over 20 kmh



Speed violation of over 20 kmh (in 3 years: never, rarely, sometime/often)

	Estimate	Std. Error	Sig.
[= 1.00]	.293	.722	.685
[= 2.00]	1.547	.730	.034
Work in the village of residence	-.863	.303	.004
Man	.649	.274	.018
Academic degree	.071	.047	.132
Factorsocial1	.116	.065	.056
Arab	-.729	.276	.008
Salaried employee	-.681	.326	.037
Income level (1 low, 3 high)	.590	.162	.000
Mandatory trips outside the village	-.066	.042	.122
Know friends/family with violation	0.163	0.126	0.196

Number of Leisure trips outside the town per week (0,1,2,3+_

	Estimate	Std. Error	Sig.
Threshold 1	-1.975	.556	.000
Threshold 2	.281	.544	.606
Threshold 3	1.716	.574	.003
Work in the village of residence	-.421	.224	.061
Man	.376	.228	.098
Married	-.707	.312	.023
Academic degree	.085	.039	.029
factorsocial1	.129	.061	.033
Frequency of family interaction	.290	.141	.040
Arab	.423	.229	.064

Conclusion

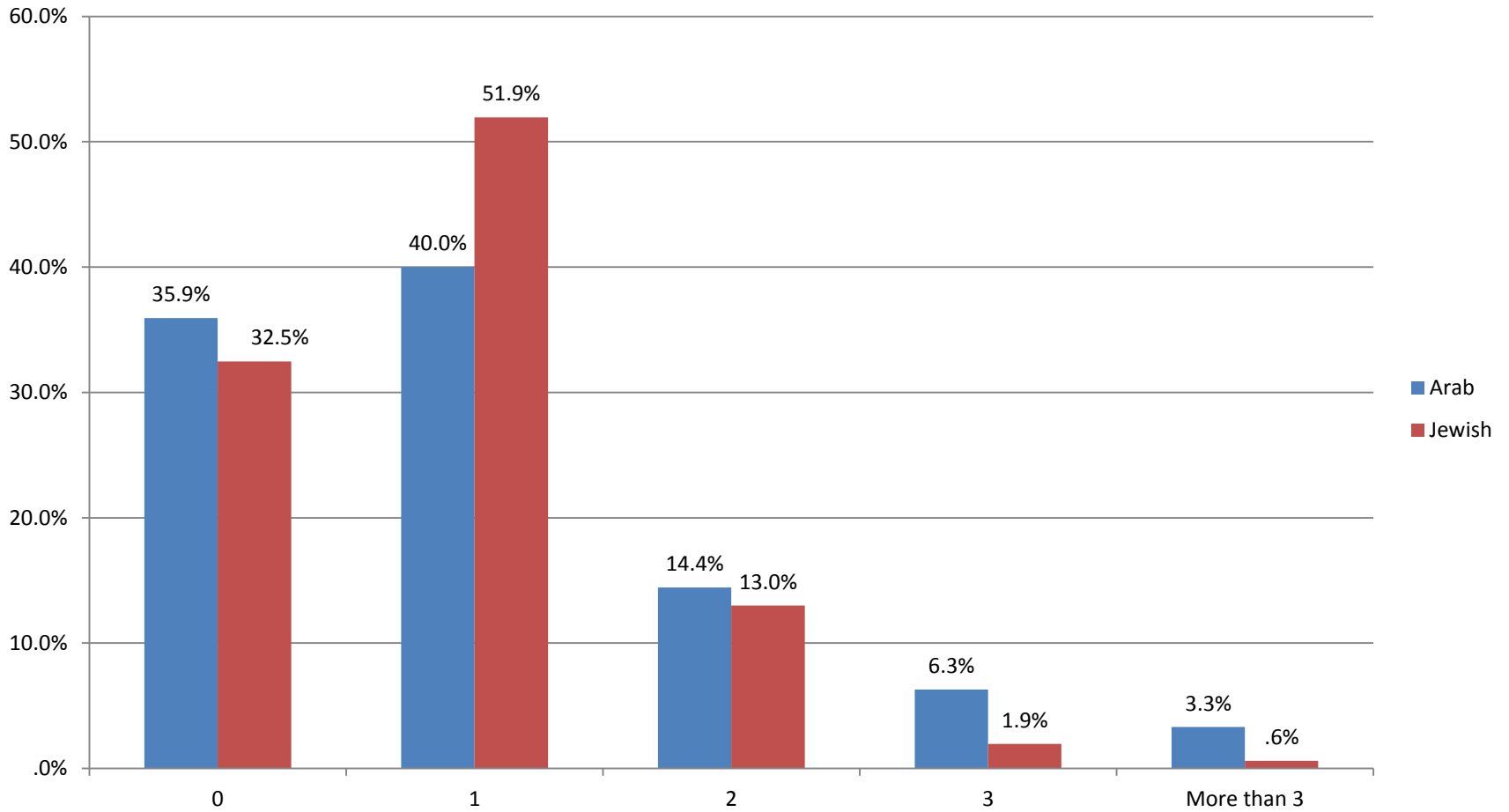
More research is needed about social interaction and driving behavior!!!

**THANKS YOU FOR YOUR
ATTENTION**

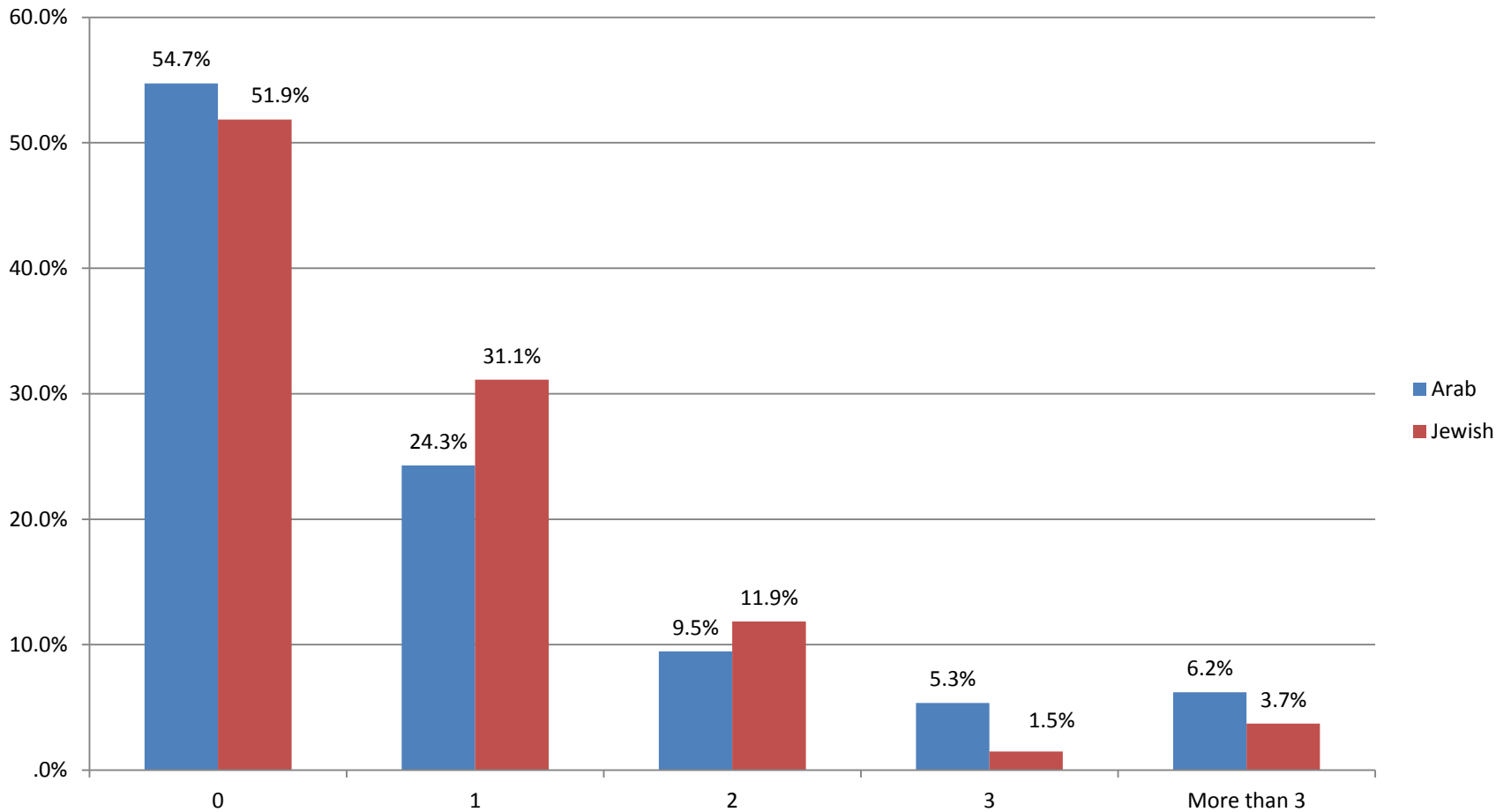
Statements		Everyday	At least once a week	At least once a month	At least once a year	Less or not at all
How often do you meet your family members (except from those who live with you at home)	Arab	38.1%	51.0%	8.8%	1.4%	.7%
	Jewish	18.7%	56.1%	19.6%	2.8%	2.8%
How often do you meet friends?	Arab	22.0%	46.0%	27.0%	2.3%	2.7%
	Jewish	19.4%	55.6%	20.8%	2.3%	1.9%
How often do you have telephone contact with your friends?	Arab	41.4%	42.5%	12.0%	1.0%	3.1%
	Jewish	48.6%	43.4%	5.2%	1.9%	.9%
How often do you go out and meet with people who do not live with you?	Arab	14.4%	45.8%	32.4%	2.7%	4.7%
	Jewish	7.9%	53.3%	33.6%	1.9%	3.3%
How often people tend to visit you in your home?	Arab	25.9%	51.9%	20.5%	.7%	1.0%
	Jewish	6.1%	55.4%	31.0%	3.8%	3.8%

Family's social interaction	How often do you meet your family members (except from those who live with you at home)	0.880	0.390
	How often people tend to visit you in your home?	0.646	

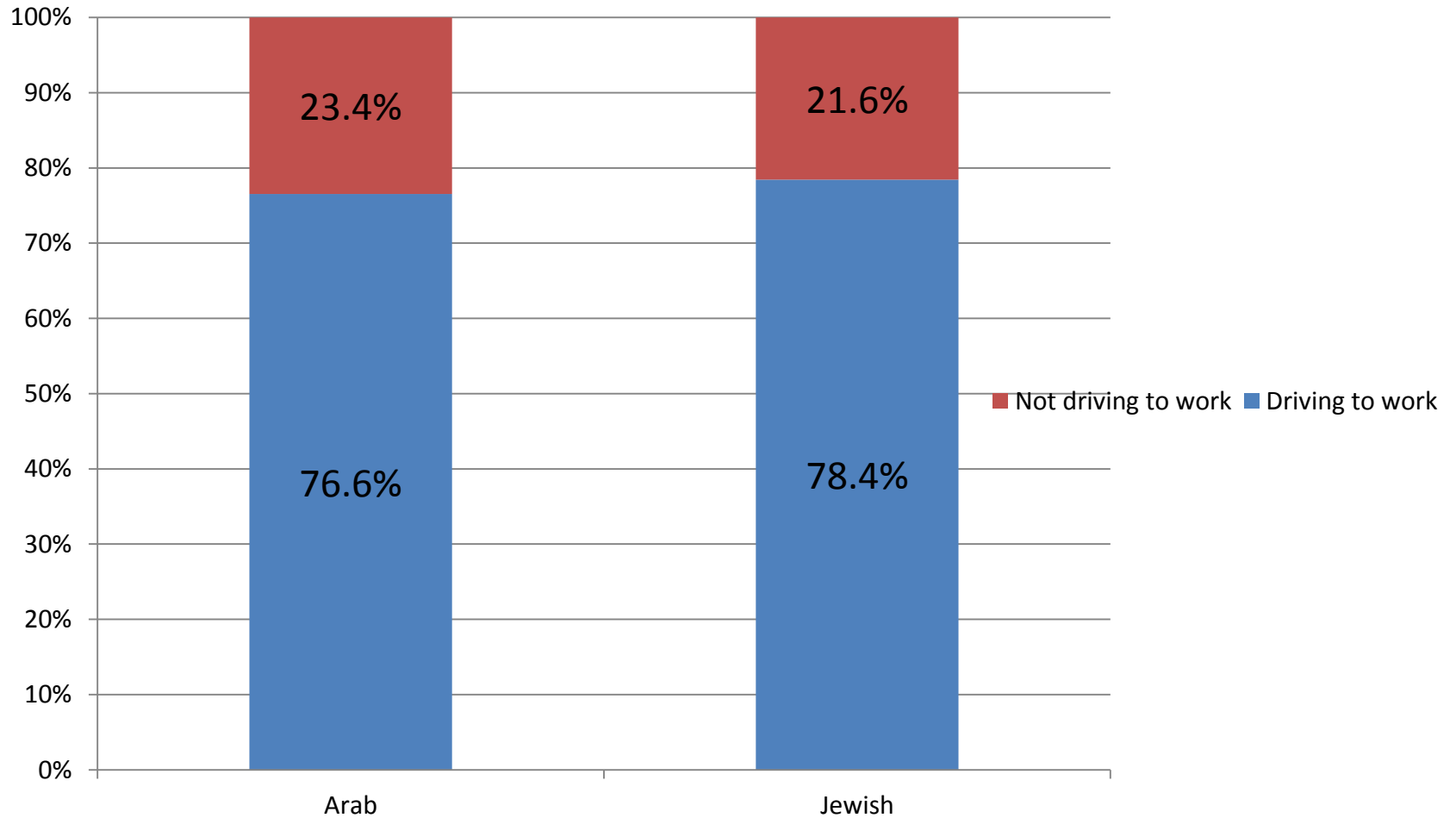
Recreation- outside



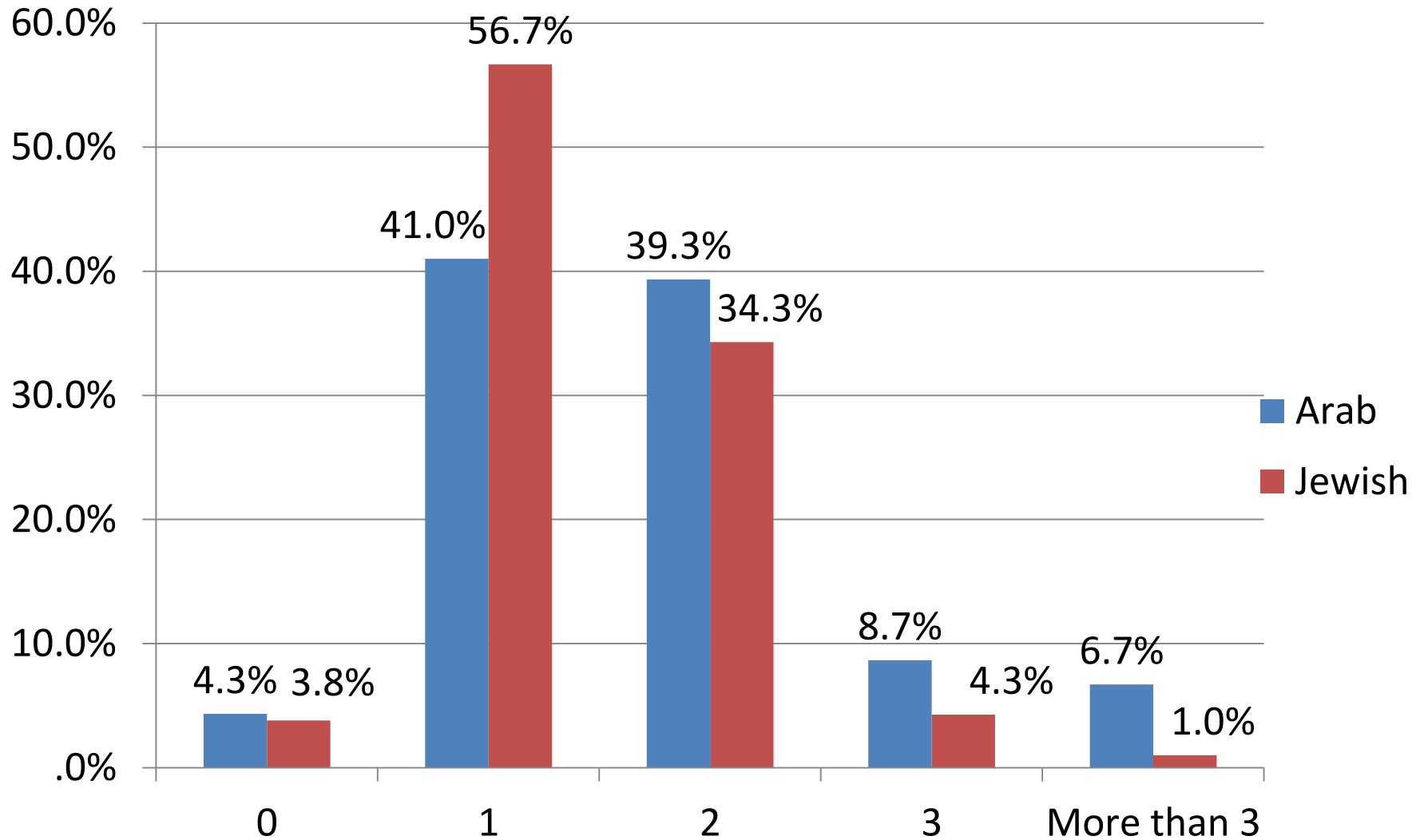
Recreation-within the city



Do you drive to work?



Number of cars in the household



Number of trips by purpose (per week)

		N	Mean	Std. Deviation
Work-outside	Arabs	274	2.5	4.32
	Jewish	159	2.7	2.5
Work-within the city	Arabs	242	2.0	3.9
	Jewish	139	2.1	2.4
study-outside*	Arabs	274	.26	.77
	Jewish	124	.45	.93
study-within the city	Arabs	227	.37	1.4
	Jewish	108	.19	.69
shopping-outside*	Arabs	257	1.1	1.7
	Jewish	145	.85	.91
shopping- within the city	Arabs	269	2.1	2.6
	Jewish	175	1.6	1.2
Leisure- outside*	Arabs	270	1.2	2.3
	Jewish	154	.87	.79
Leisure-within the city	Arabs	243	.98	1.7
	Jewish	135	.79	1.1
Self arrangement- outside	Arabs	289	1.0	2.8
	Jewish	203	1.0	1.7
Self arrangement- within the city	Arabs	289	2.6	2.9
	Jewish	203	2.3	2.6

How often do you drive

