

Transportation Planning at MCAS Iwakuni, Japan: Accommodating Growth in a Multi-Modal Environment

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June 29, 2023

SAME GKC



TRANSYSTEMS



Speaker Info

Mike Wahlstedt, PE, PTOE, TranSystems

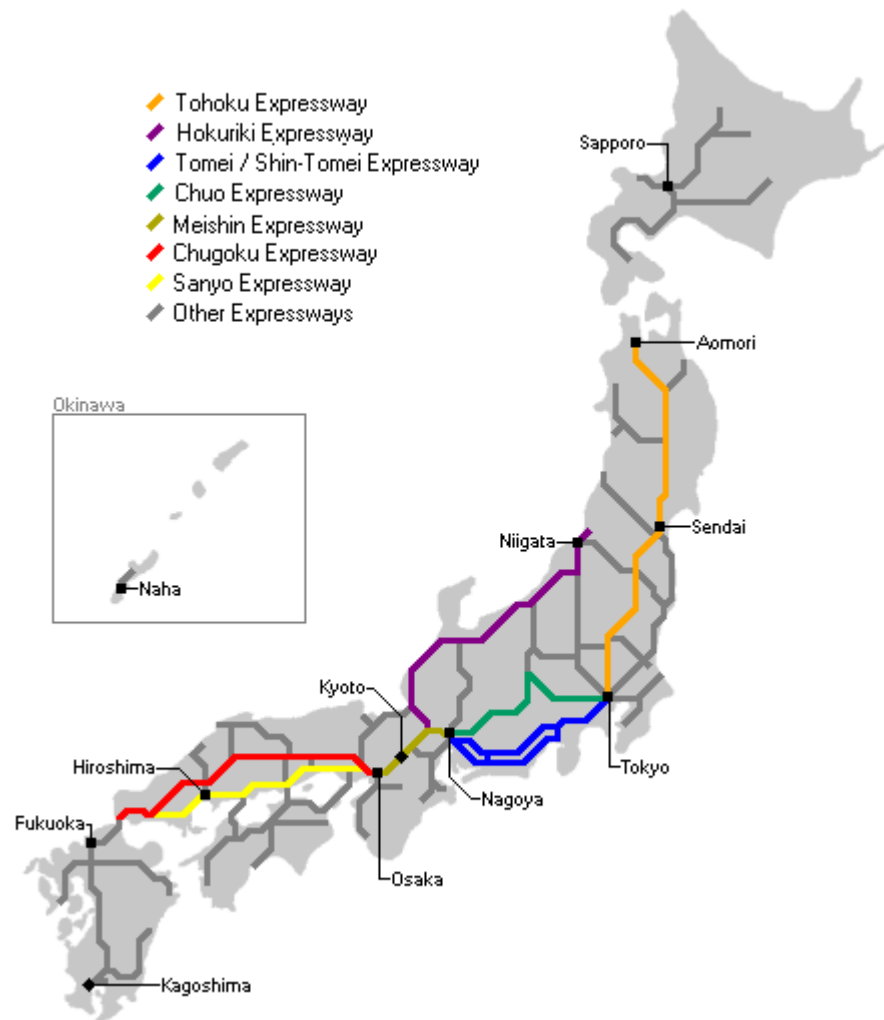
Mike is the leader of the Traffic Engineering and Planning Group at TranSystems. He has an extensive background as project manager and project engineer with a wide range of transportation related projects, including both operations and planning. He has worked extensively on alternative intersections and interchanges, including nine DDIs that are either in design or open to traffic. Mike is a member of the TRB Access Management Committee and the TRB Alternative Intersections Working Group and served on the TRB review panel for NCHRP Project 20-05; Alternative Intersection Design and Selection.



Agenda

- Transportation in Japan
- Iwakuni, Japan
- Phase 1/2 – Comprehensive Transportation Plan
- Phase 3 – Bike/Transit/Bridge/Intersections

Transportation in Japan: Highways



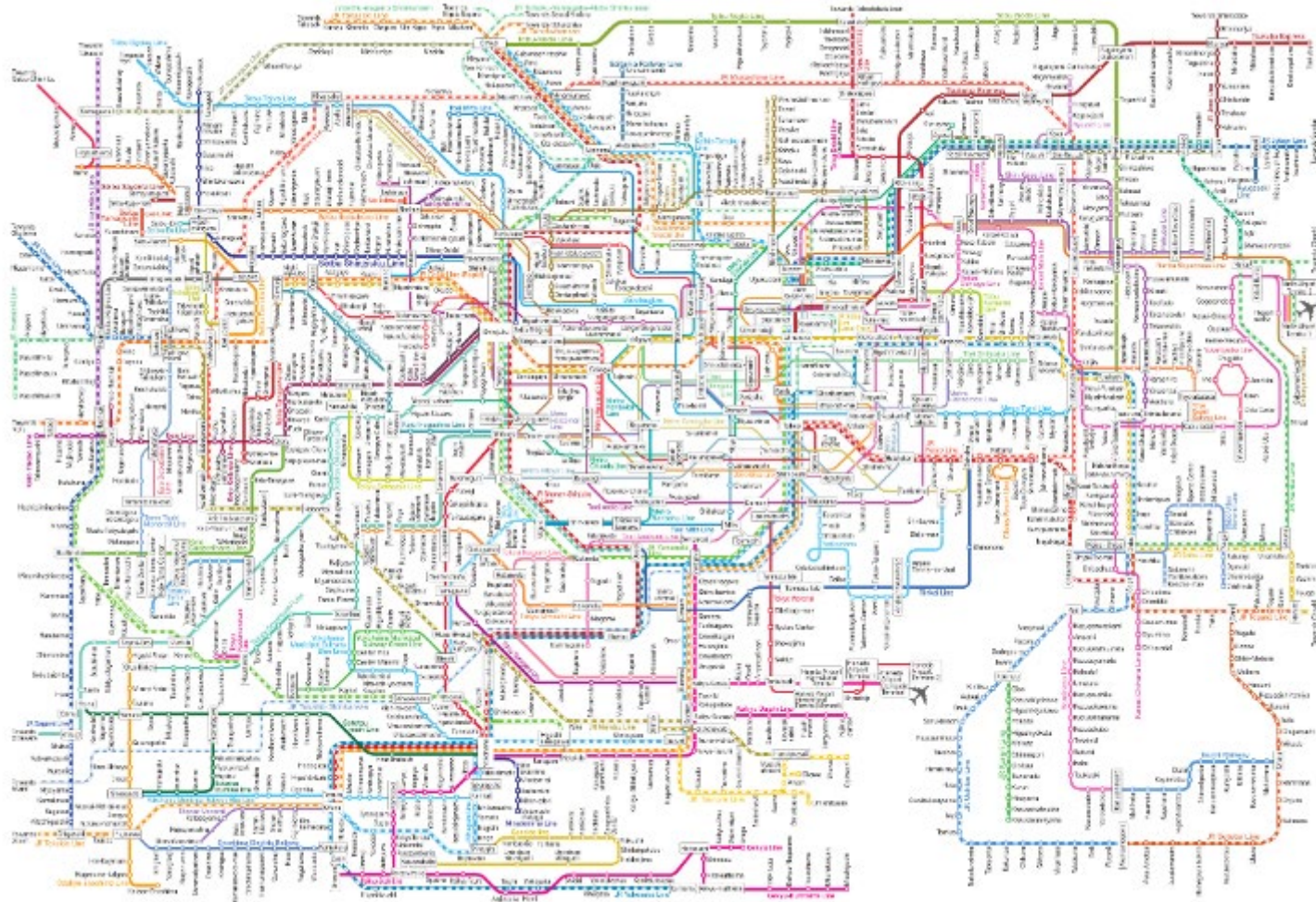
Tokyo to
Hiroshima ~\$170
toll, 10 hours

Approximate Tolls (in yen)

	Kagoshima	Fukuoka	Hiroshima	Osaka	Kyoto	Nagoya	Aomori
Tokyo	27,500	23,000	17,000	12,000	10,500	8,000	14,000
Aomori	39,000	34,000	28,500	23,000	22,000	20,500	
Nagoya	21,000	16,000	10,500	3,500	3,500		
Kyoto	18,500	13,500	8,000	2,000			
Osaka	18,000	13,000	7,500				
Hiroshima	11,500	6,500					
Fukuoka	6,000						



Transportation in Japan: Rail



Tokyo Passenger Rail



High-Speed Rail (Shinkansen)

Tokyo to Hiroshima
~\$190 ticket, 4 hours
 (1 week rail pass ~\$200 for
 visitors)

Transportation in Japan: Shin Pass-thru

Transportation in Japan: Shin Pass-thru



Iwakuni Station Bike Parking Facility



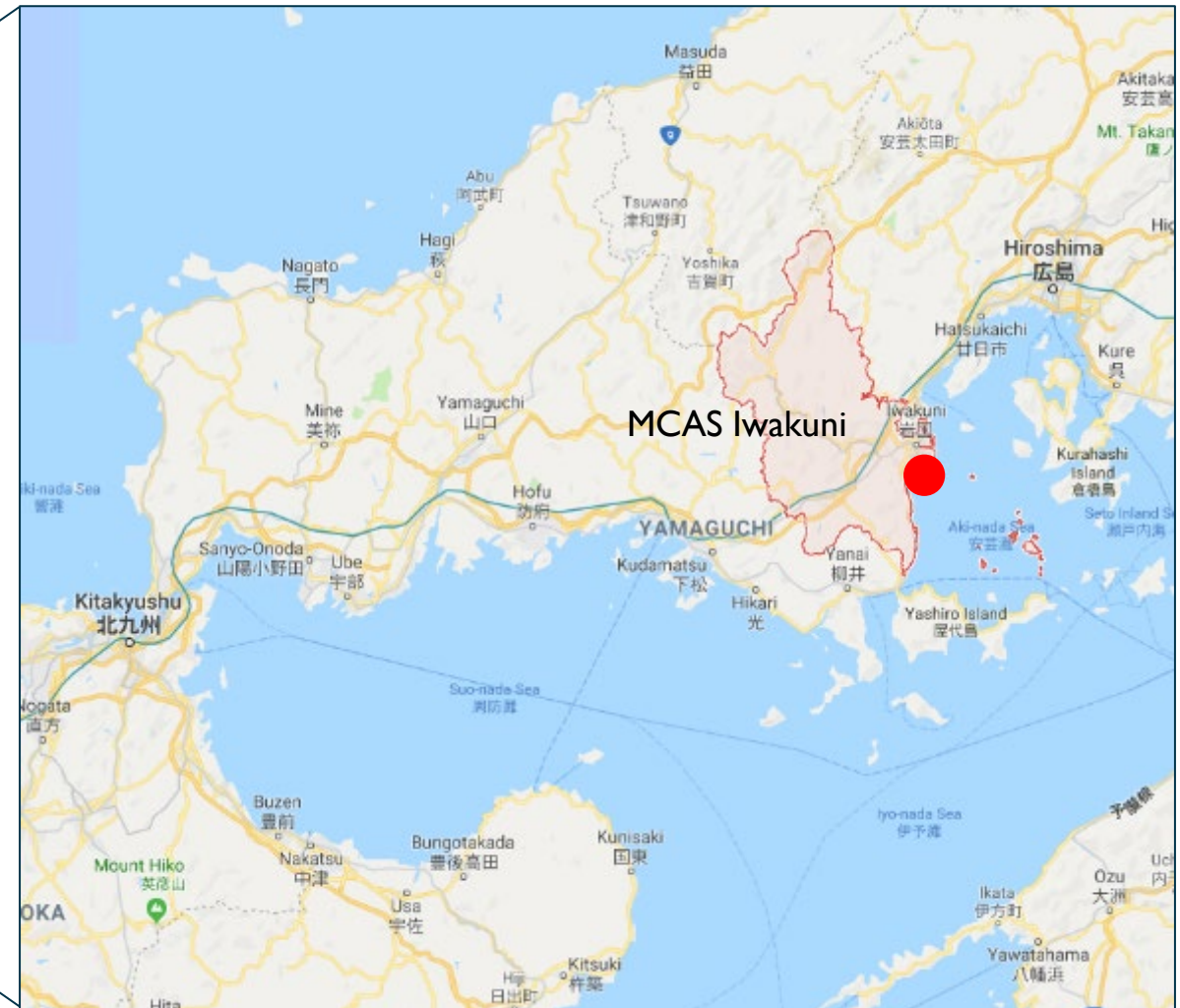
Transportation in Japan: Pedestrians

Transportation in Japan: Walking to School



Transportation in Japan: Mario Kart!

Iwakuni, Japan



Iwakuni, Japan

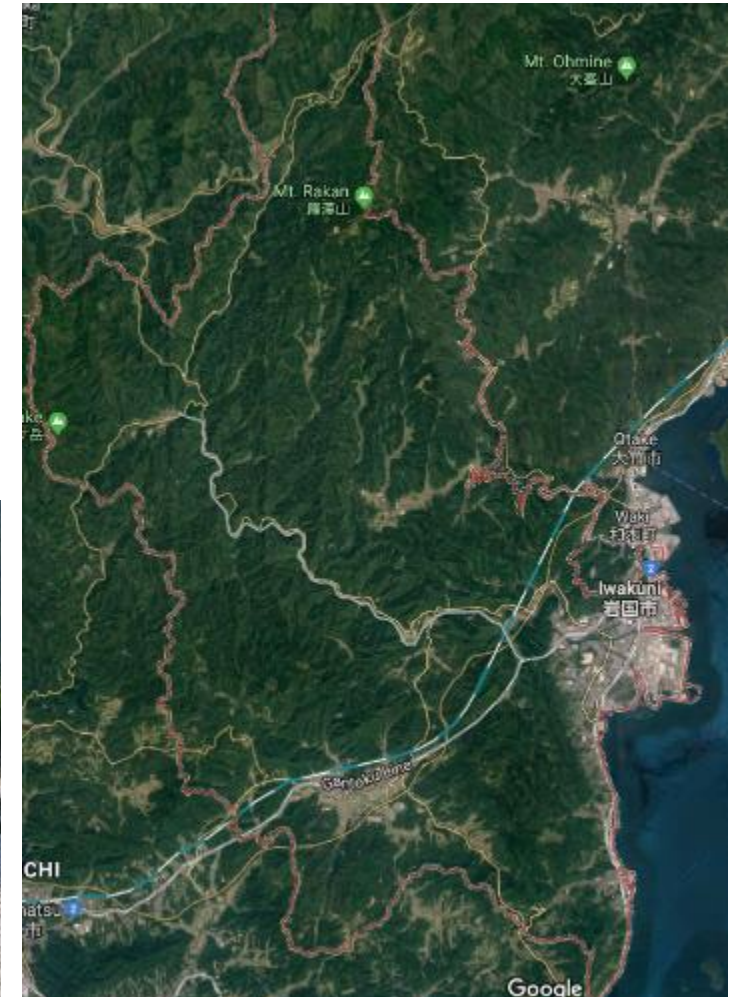
- Population: 137,000 (includes city and region)
- Industrial town – refining, carbon fibers
- Also know for variety of lotus root, sake



Iwakuni Castle - 1608



Kintai Bridge - 1673

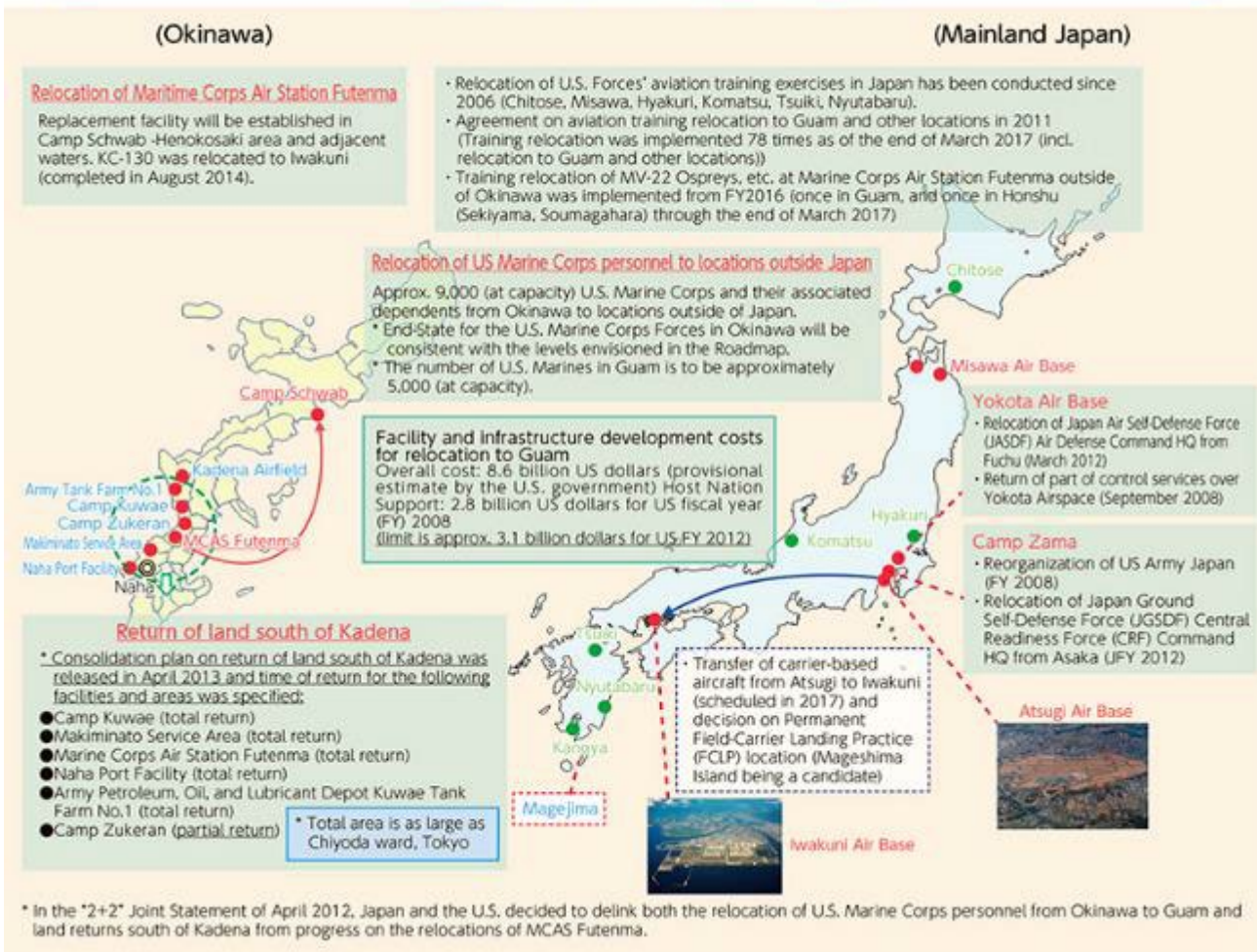


Iwakuni Military Base

- Established as Japanese Naval Base in 1940
- Japanese Admiral Yamamoto planned Pearl Harbor from Iwakuni air base
- Occupied by US and Australia after WW II
- Became a joint US military base in 1950
- Currently shared operation by the US Marines, Navy and the Japanese Maritime Self Defense Force (JMSDF)

Defense Policy Review Initiative (DPRI)

Realignment of U.S. Forces in Japan



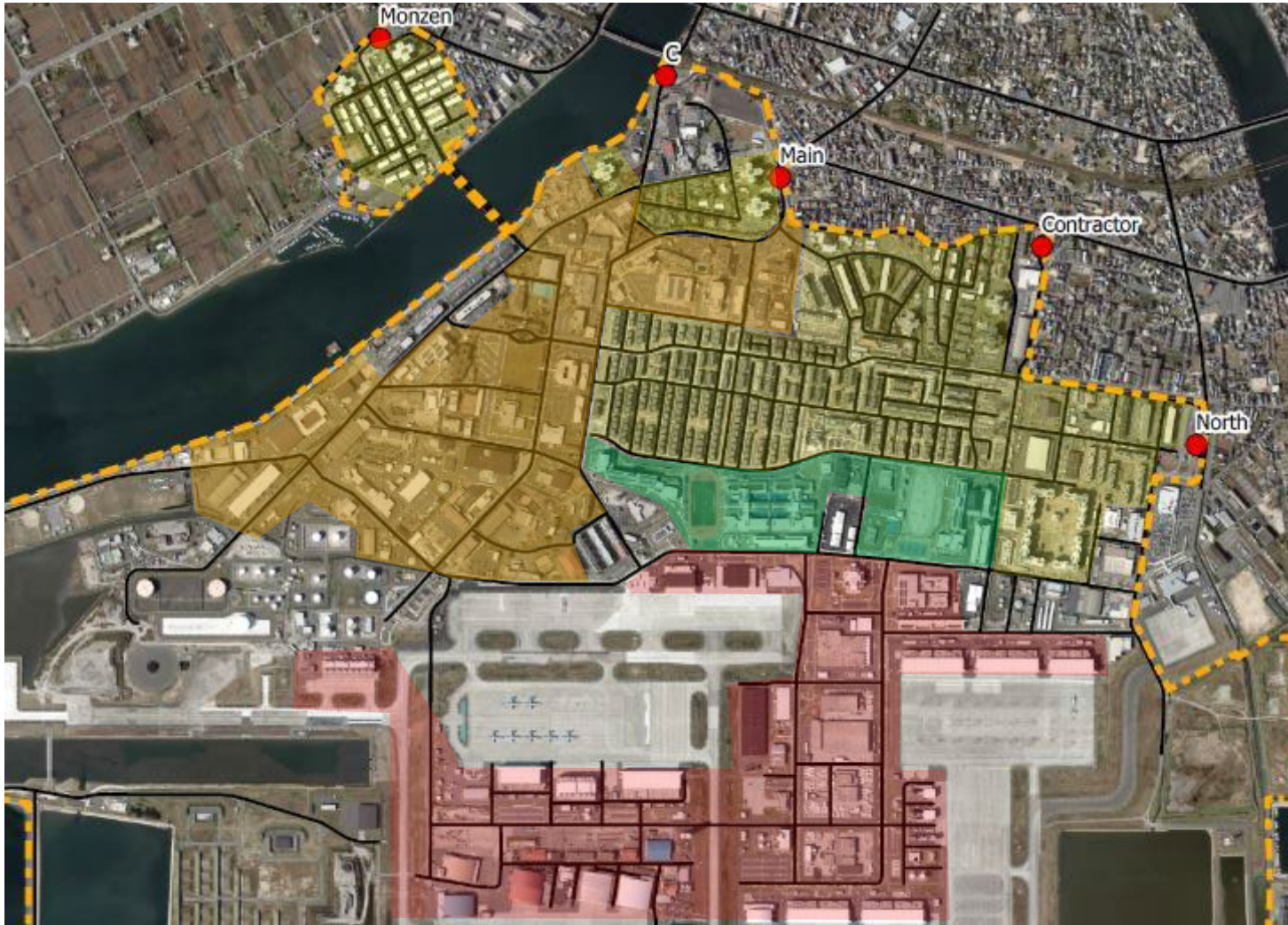
- CVW-5 (Navy Carrier Air Wing) relocated from Atsugi
- VMGR-150 KC-130 Tanker Squadron relocated from Futenma
- New Branch Medical Services
- VFMA-121 F-35B's Join MAG-12 (Marine Air Group)



\$7B Expansion/Reconstruction of Base



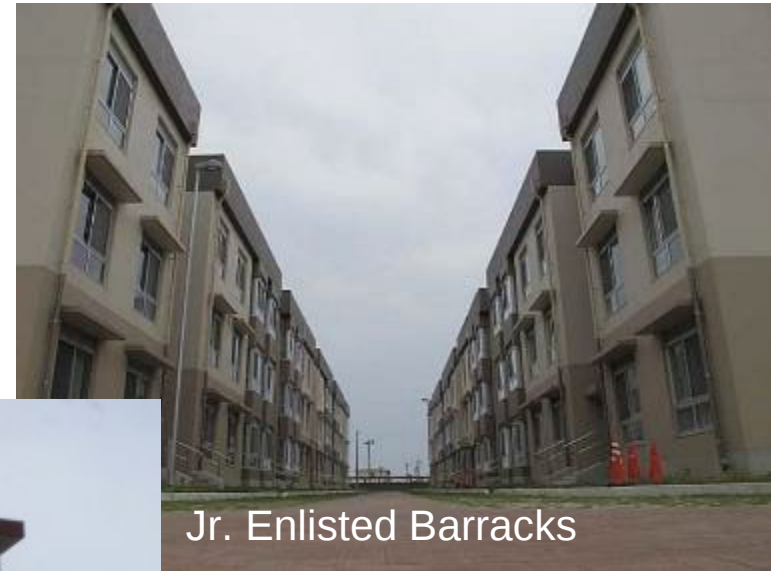
MCAS Iwakuni



On-Base Housing



Family Housing



Jr. Enlisted Barracks



Family Towers

Street Network



Streets



Study Needs

- Major expansion of base resulting in “growing pains”
- Congestion at gates and other spot locations
- Desire to maintain installation as a “walking base” and encourage bicycle use
 - Junior enlisted can’t have cars
 - Taxis and shuttle busses
 - Plenty of parking, but still some hotspots – “there is a walking problem, not a parking problem”
- DoD requires master planning for all installations, transportation is a component of master plan

Study Components

- Phase 1/2 – Installation Transportation Plan
- Phase 3
 - Bike/Transit
 - Intersection Improvements (roundabouts)
 - Freedom Bridge expansion
- Phase 4 – Gate Study
- Other efforts
 - Warehouse plan
 - Utility plan

MCAS Iwakuni: Growth Projections

MCAS Iwakuni Population/Employment Data

	Aug'16	2019	Future
SF Units	2028	2956	5130
Barracks/TLF	2495	4055	4683
Off-Base	1406	2452	4241
TOTAL US	5929	9463	14054
JMSDF	1466	1623	1795
Japanese Empl/MCCS**	1488	1647	1822
TOTAL	8883	12733	17672
Contractors***	4110	1767	2013
TOTAL w/Contr.	12993	14500	19685
Total minus Enl. without veh.	10534	10470	14829

Includes Family/
Dependents

Joint use facility with Japanese Maritime
Self Defense Force (JMSDF)

Transportation Study Phase 1/2

Data Collection

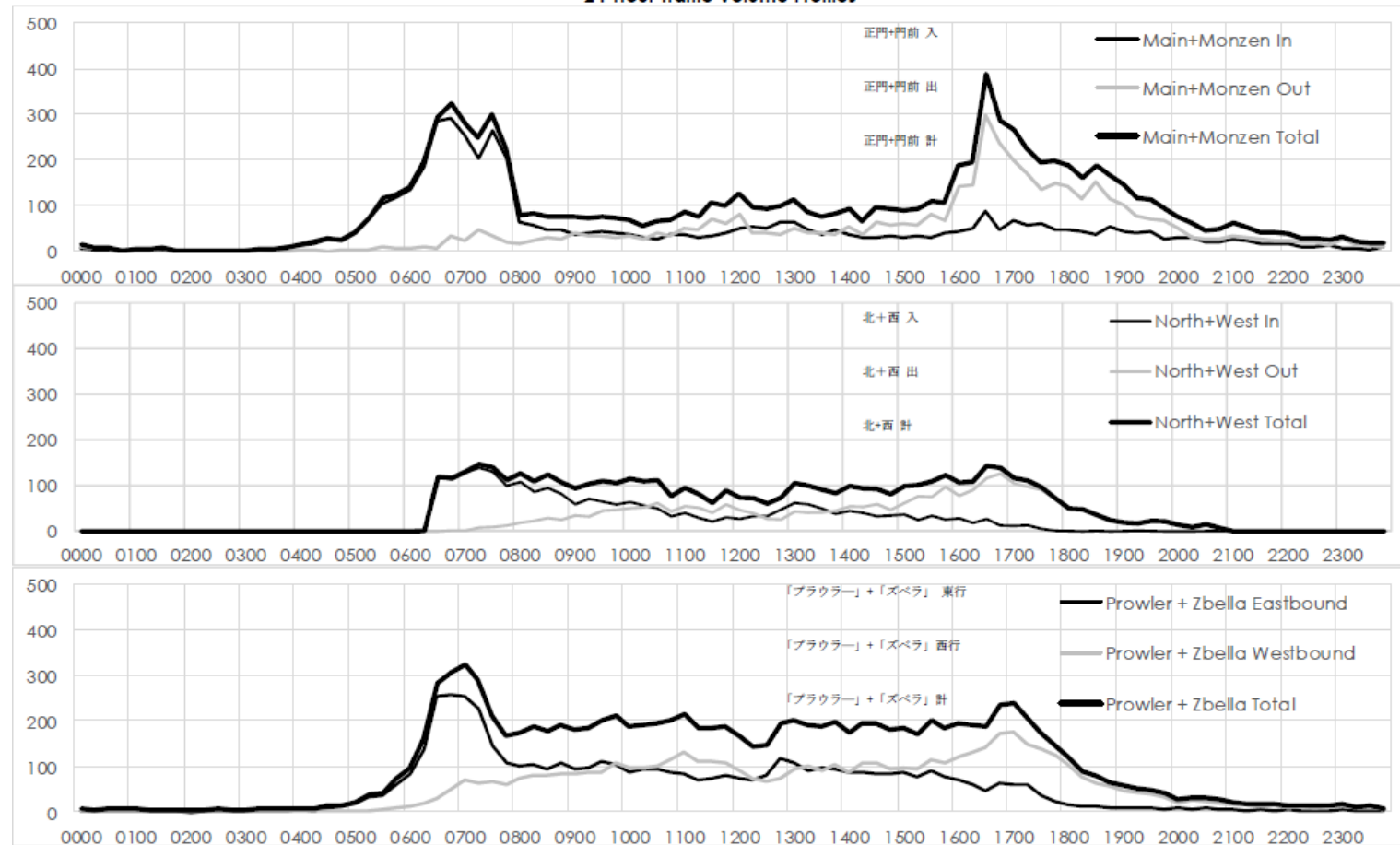
- Counted ~50 intersections
 - Counts in Japan can be a challenge



Transportation Study Phase 1/2

Gate Traffic

図 3-8
24時間交通量プロフィール
Figure 3-8
24-Hour Traffic Volume Profiles



Primary Gates

Contractor Gates

To/from airfield

Transportation Study Phase 1/2

PM Peak Traffic



- [illegible]

Transportation Study Phase 1/2

Pedestrian Volumes



Transportation Study Phase 1/2

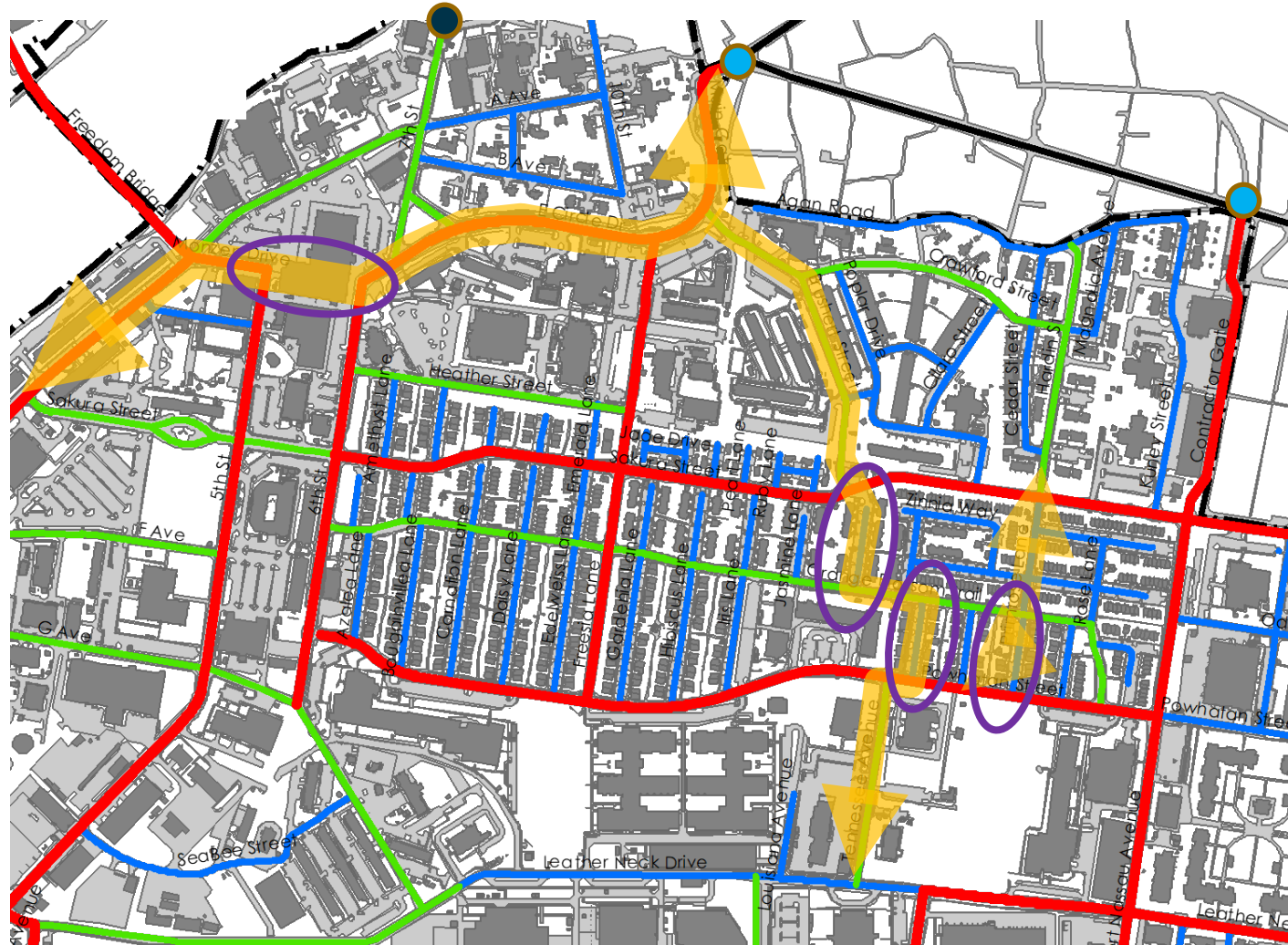
- Gate queues
 - Max queue ~1/2 mile
 - Max delay ~10 minutes
- Addressed by subsequent gate study

図 3-24
ゲート車列観測
Figure 3-24
Gate Queue Measurements
車列最後尾 ● Back of Queue Points
最長車列 ■ Maximum Queue



Transportation Study Phase 1/2

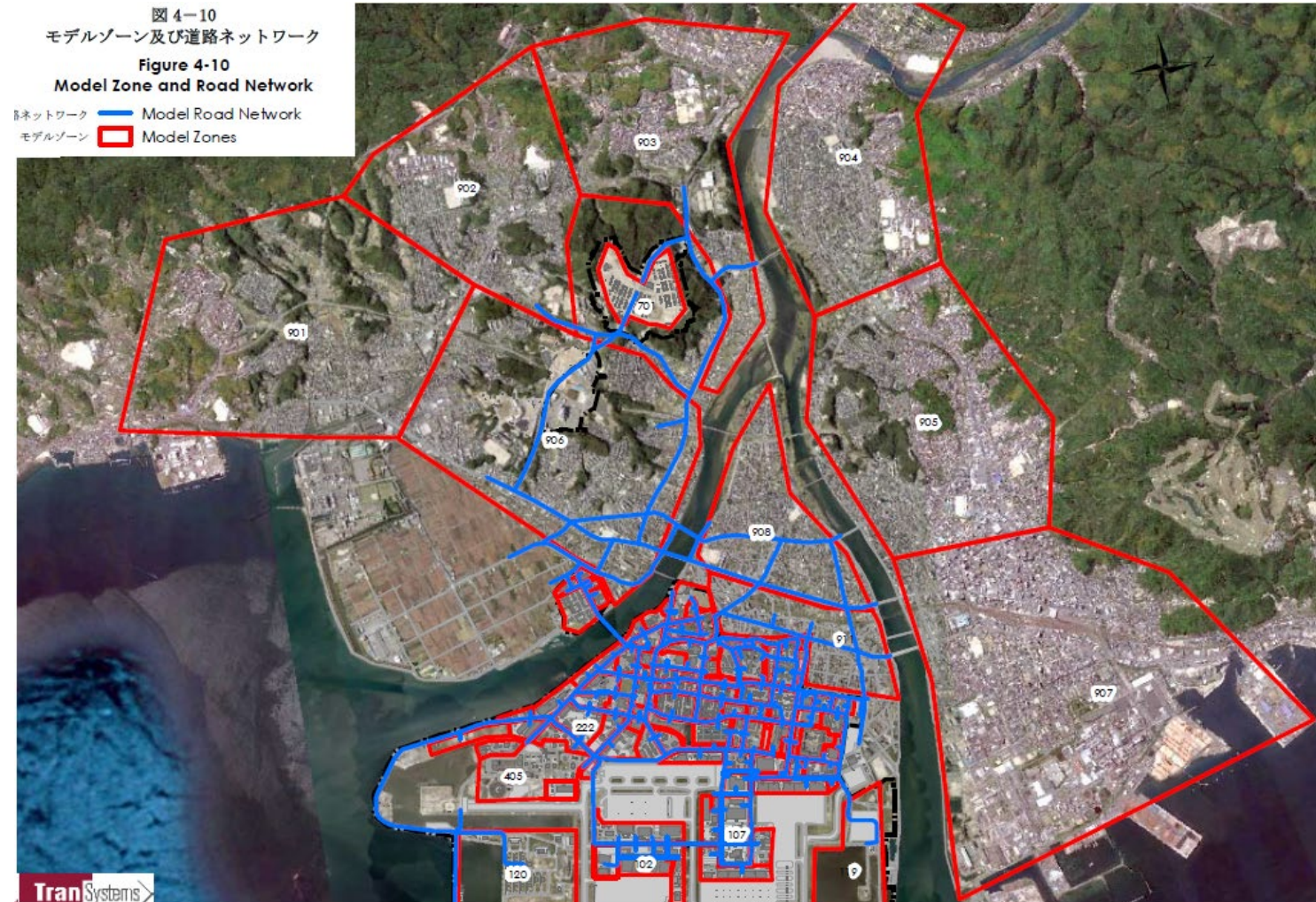
Roadway Network Issues



Transportation Study Phase 1/2

- Travel Demand Model

- Study was done before DPRI personnel arrived
- Also projected “Master Plan” (long term) traffic and conditions
- Impact of changes in gate locations/operation



Transportation Study Phase 1/2

- Post DPRI projections
 - Now that most DPRI shifts have happened, it appears projections were pretty good!



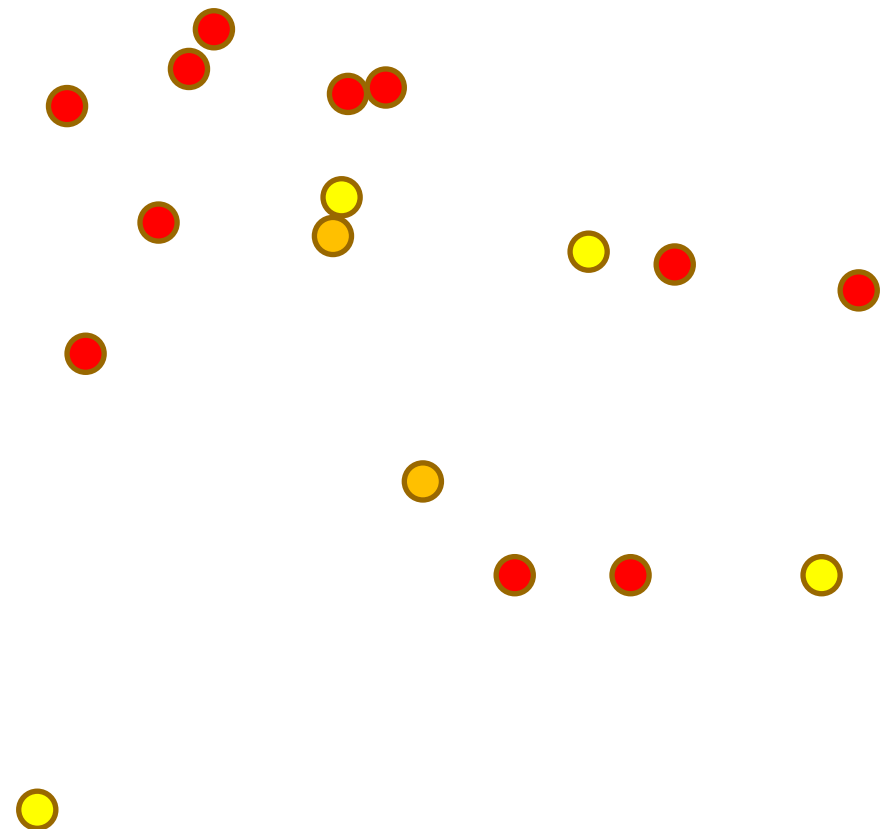
Transportation Study Phase 1/2

Post-DPRI Levels of Service



Transportation Study Phase 1/2

- “Capacity Plan”
Levels of Service
 - Master Plan
includes significant
additional
development after
DPRI
 - As-needed capacity



Transportation Study Phase 1/2

- Roundabouts

- Recommended at 8 locations (short and long term)
- Roundabouts exist in Japan but are not common
- Developed preliminary designs in Phase 3

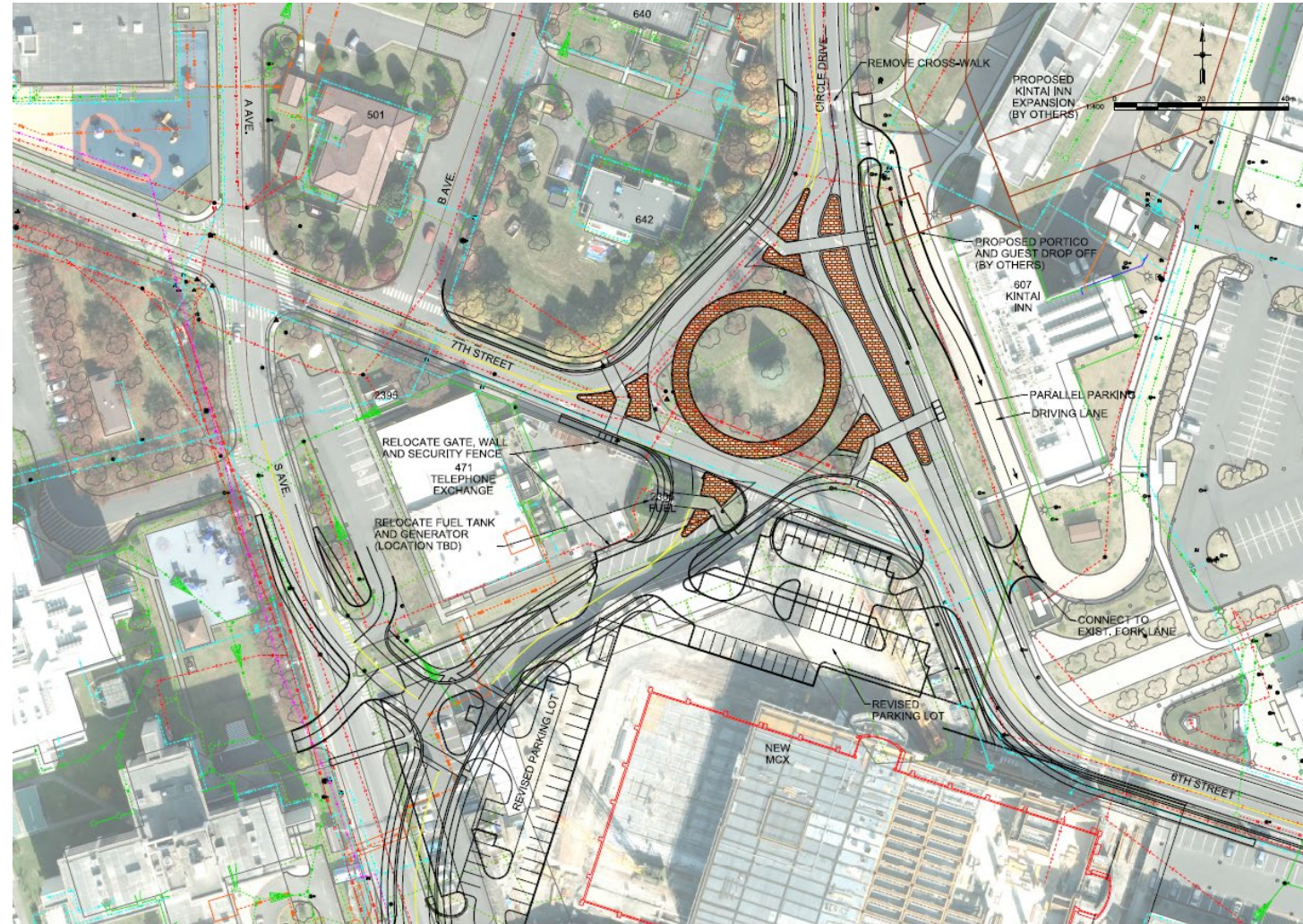
Roundabouts:

- Reduce Delay
- Increase Safety
- Address Substandard Intersection Configurations
- Accommodate Bikes and Pedestrians

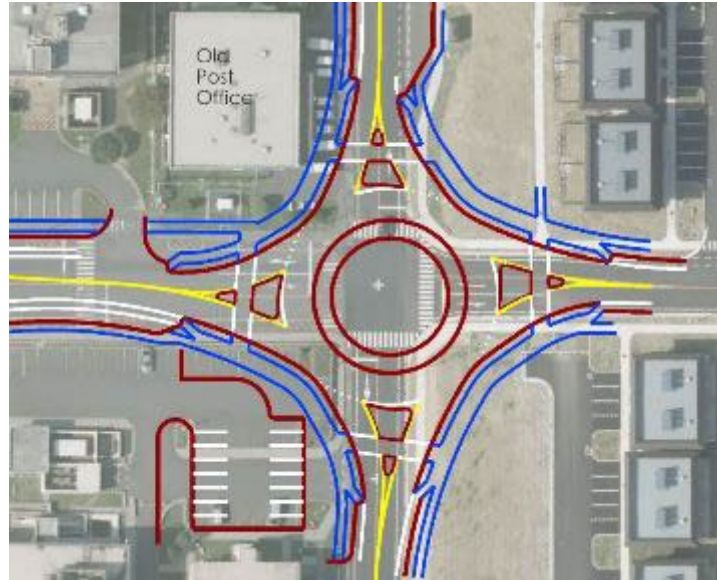


Transportation Study Phase 1/2

- 6th Street roundabout reestablishes north-south link
- Left-side driving!



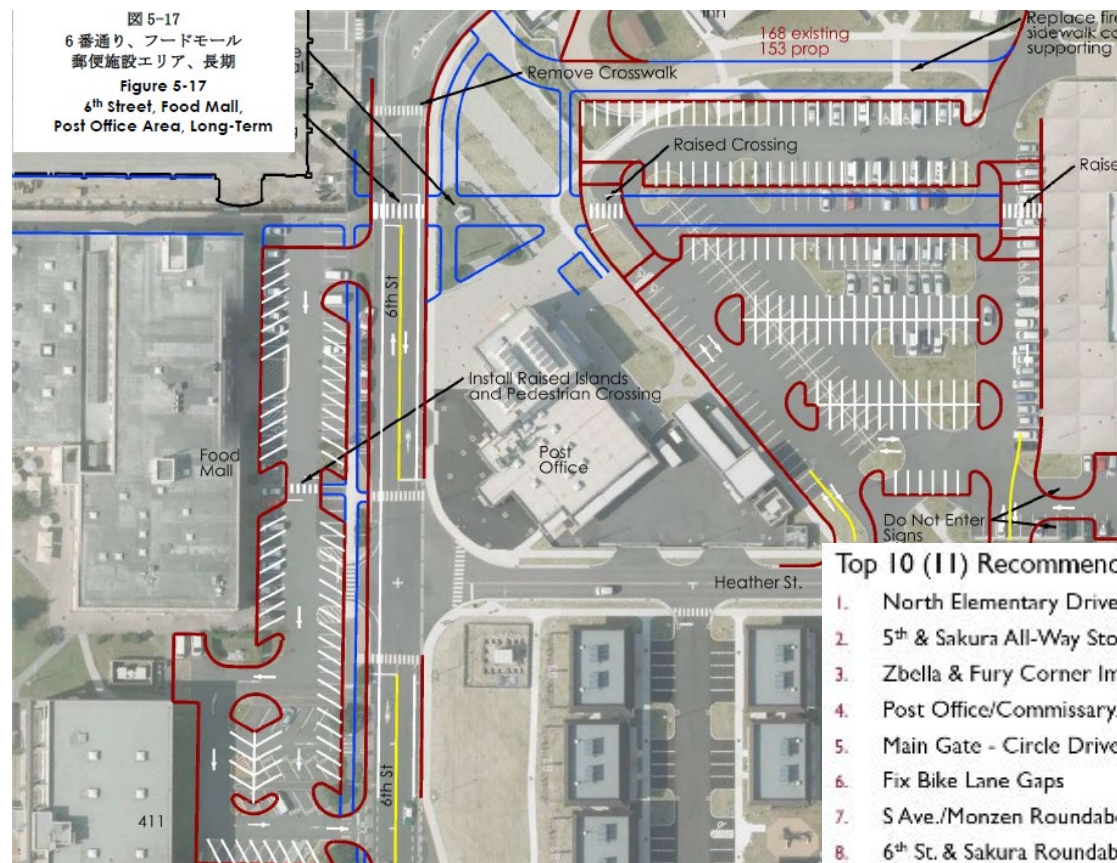
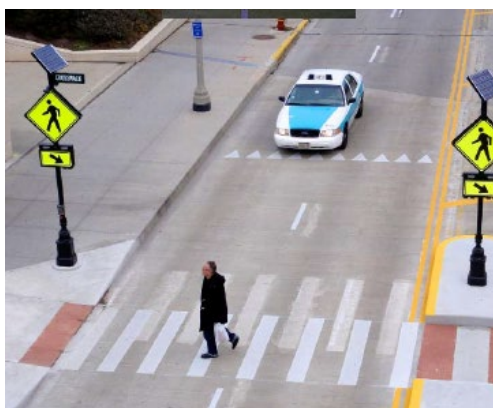
Transportation Study Phase 1/2



Transportation Study Phase 1/2

- Other Recommendations

- Crosswalks
- Parking layouts
- Bike lanes and parking
- Freedom Bridge



Top 10 (11) Recommendations:

1. North Elementary Drive
2. 5th & Sakura All-Way Stop/Intersection Improvements
3. Zbella & Fury Corner Improvements
4. Post Office/Commissary/6th Street Improvements
5. Main Gate - Circle Drive/Brushert Conflict
6. Fix Bike Lane Gaps
7. S Ave./Monzen Roundabout/Monzen Bridge
8. 6th St. & Sakura Roundabout
9. 7th St./S Ave./A Ave. Roundabout
10. Leather Neck & 5th St./Prowler Roundabout
11. Transit Improvements

Transportation Study Phase 1/2

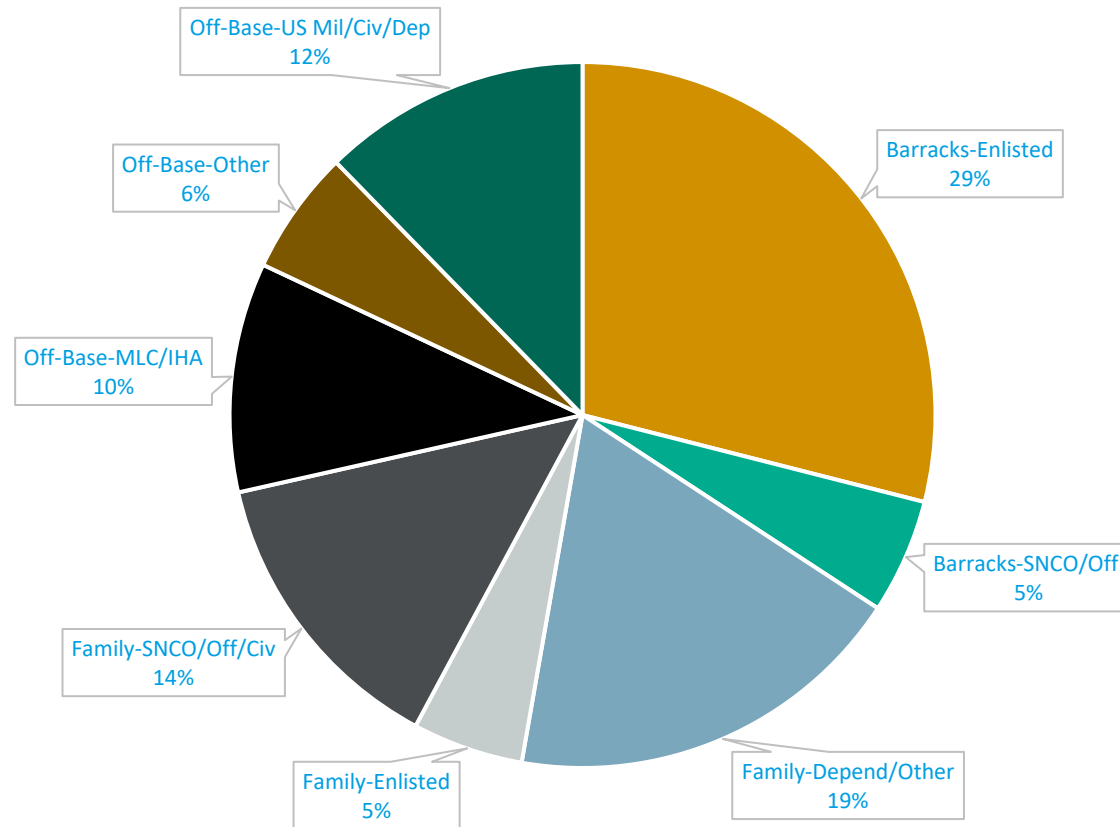
Parking



Transportation Study Phase 3

- Transportation needs survey
- Roundabouts – Complete concept designs
- Freedom Bridge – Improve Bike/Ped. Facilities
- Bike/Transit Study – Wide range of mobility improvements

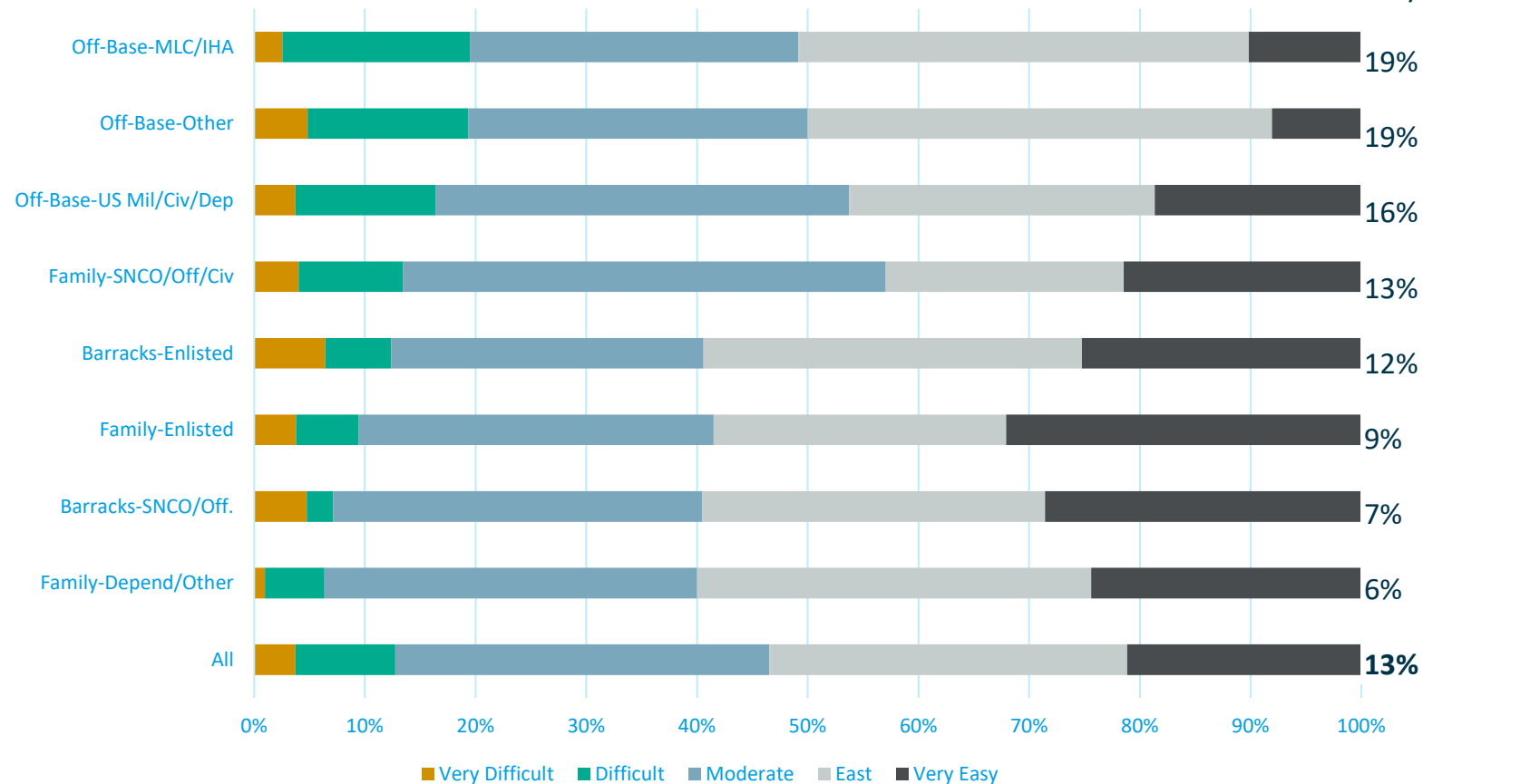
User Survey



Group	Count
Barracks-Enlisted	325
Barracks-SNCO/Off.	59
Family-Depend/Other	208
Family-Enlisted	57
Family-SNCO/Off/Civ	153
Off-Base-MLC/IHA	118
Off-Base-Other	64
Off-Base-US Mil/Civ/Dep	138
Grand Total	1122

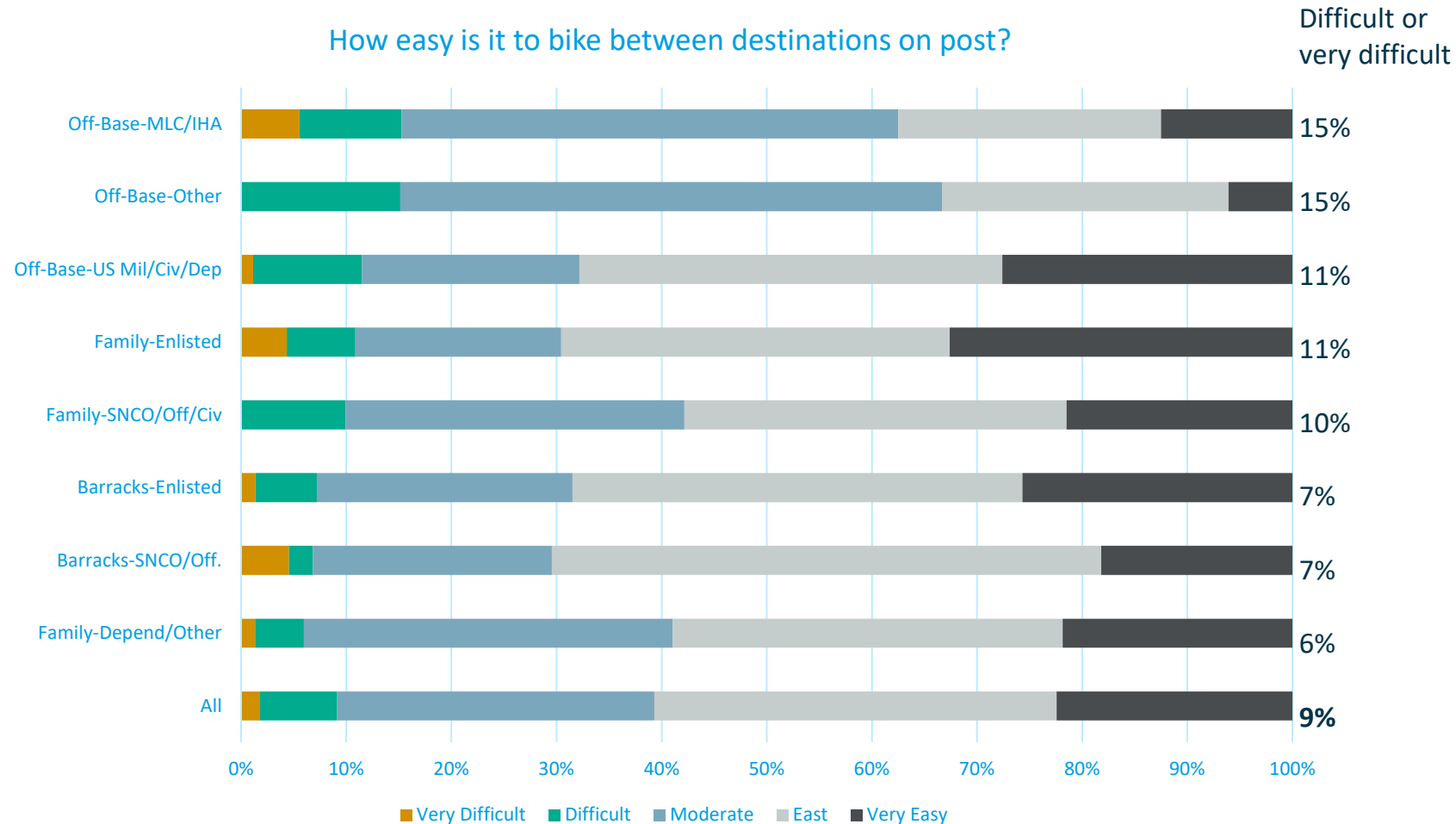
Survey: General Questions

How easy is it to drive between destinations on post?



Off-base drivers seem to have more issues, possibly due to having to pass through the gates. They may be considering the gates part of “on-post”.

Survey: General Questions

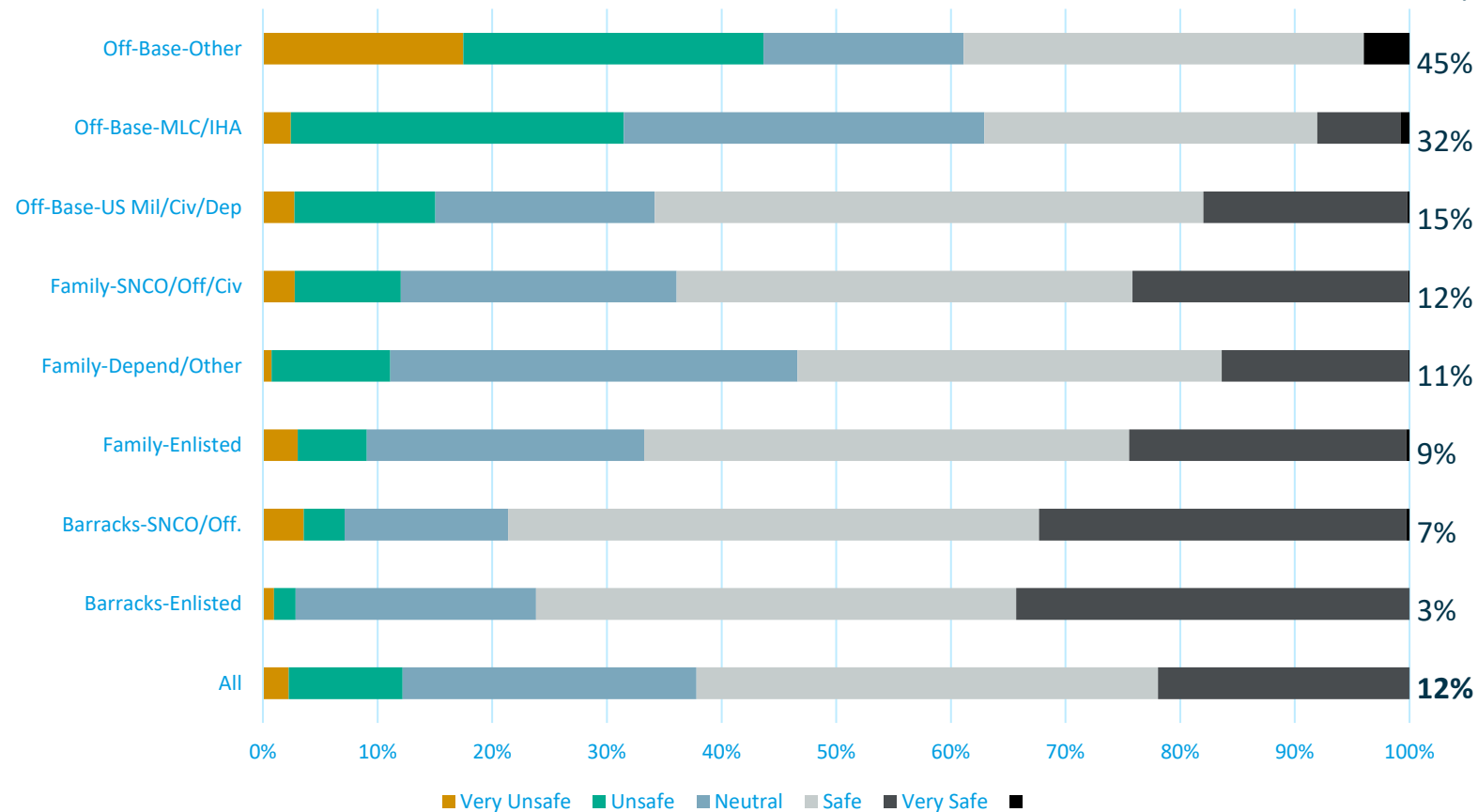


Overall, these are lower than driving. More regular riders, including those in the barracks and dependents have the least concerns.

Survey: General Questions

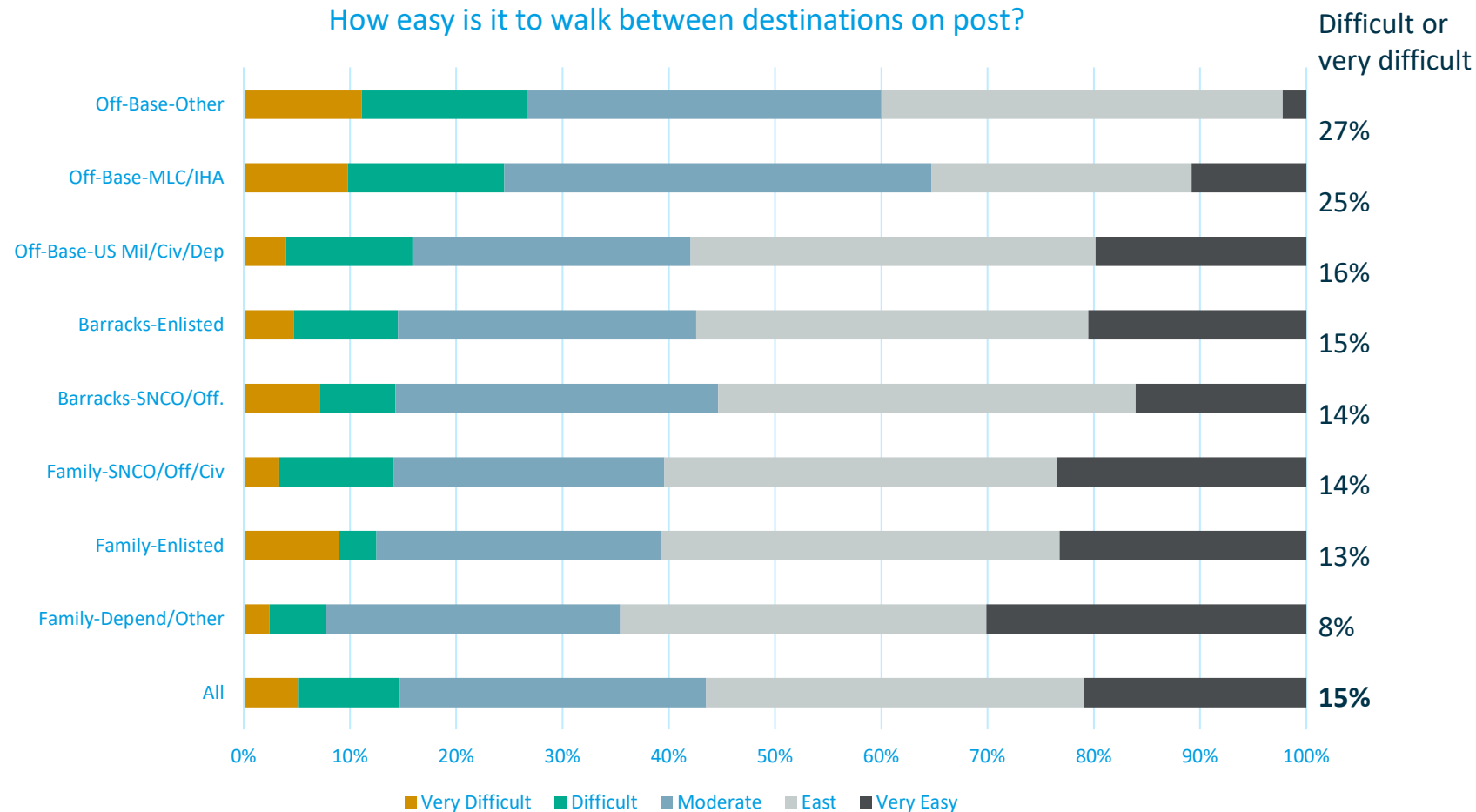
How safe do you feel cycling on base?

Unsafe or
very unsafe



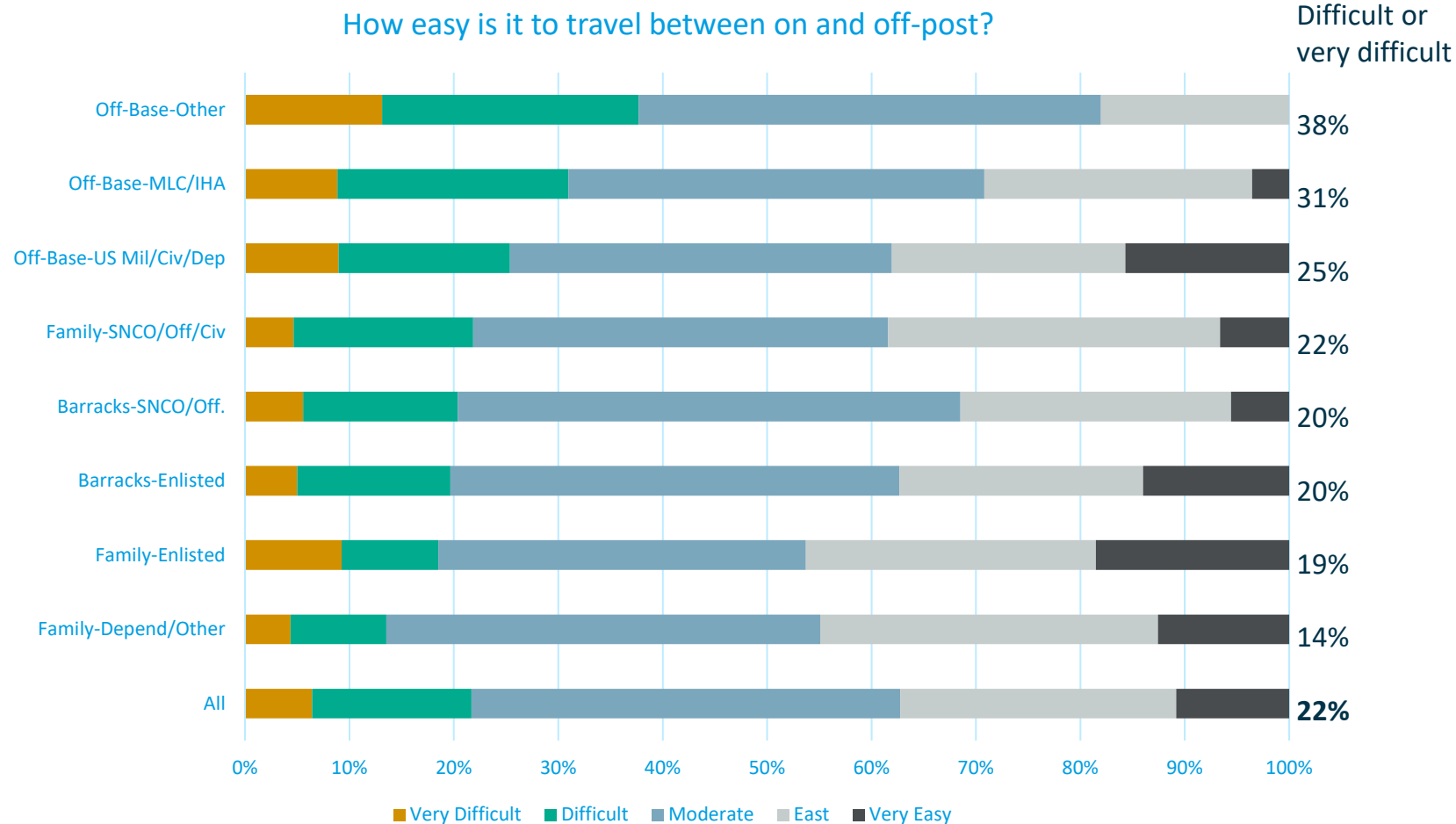
The “unsafe” numbers for those living off base are high and those living the barracks are low, again probably relative to how much they ride on base. Despite the high number of cyclists, Japanese roads are not always bike friendly.

Survey: General Questions



Overall, these are higher than both biking and driving. Family housing is lower than those in the barracks, unlike the other questions. Base has good sidewalks.

Survey: General Questions



These numbers are significantly higher than the other questions, likely due to congestion at the gate and on city streets.

Survey: Bicycles

Do you own or have regular access to a bicycle?			
Group	Yes	No	% Yes
Barracks-Enlisted	107	218	33%
Barracks-SNCO/Off.	29	30	49%
Family-Depend/Other	138	70	66%
Family-Enlisted	34	23	60%
Family-SNCO/Off/Civ	111	42	73%

Interestingly, bike accessibility is lowest for those in the barracks, particularly enlisted personnel.

Survey: Bicycles

How many days did you ride a bike during the past 30 days (January)?

Group	None	Some	Avg. Days
Barracks-Enlisted	22	85	19
Barracks-SNCO/Off.	7	22	19
Family-Depend/Other	81	57	7
Family-Enlisted	9	25	13
Family-SNCO/Off/Civ	38	72	9
Off-Base-MLC/IHA	21	24	5
Off-Base-Other	13	7	5
Off-Base-US			
Mil/Civ/Dep	34	42	9
All	225	334	12

How many days did you ride a bike during the summer?

Group	None	Some	Avg. Days
Barracks-Enlisted	8	95	22
Barracks-SNCO/Off.	3	26	20
Family-Depend/Other	18	120	8
Family-Enlisted	1	33	13
Family-SNCO/Off/Civ	9	102	12
Off-Base-MLC/IHA	13	32	7
Off-Base-Other	9	11	4
Off-Base-US			
Mil/Civ/Dep	8	68	12
All	69	487	13

These numbers are just for those that have bikes. The number that ride their bike in the summer is significantly higher, as expected. The number of days of riding doesn't change much, though.

Survey: General Questions

Survey Comments - Open Ended Questions

Bike lanes	92	Wayfinding/Signing	36	Transit	128
Wider Lanes	26	Gate Operations	82	Route/Stop Locations	34
More Lanes	43	Bike-Peds	11	Op Times/Freq	42
Offroad paths	9	W Gate Distance	18	Off Base Destin.	34
Use Sidewalk	5	Congestion	24	City Transit xfer	15
Safety	29	Ops-Lanes	29	Who can ride	13
Monzen Bridge	32	Hours	19	Taxis	65
Bike racks	29	Lighting	8	Expensive	16
Theft	11	Construction	91	Have to use	9
More racks	21	Sidewalks/Crosswalks	59	Issues getting taxi	32
Weather	4	Walking difficult	6	Parking	19
Abandoned bikes	4	More sidewalks	19	Education/Enforcement	122
Intersection Control	117	Maintenance	19	Driver Inattention	29
More stop signs/signals	49	Safety	11	Child Safety on roads	9
Less stop signs	10	Width	13	Theft	6
Sight Distance	28	Weather	1	Education/Info	35
Congestion	16			Enforcement	55
Stop lines	16			Bike share/exchange	37

Survey: General Questions

Survey Comments - Open Ended Questions

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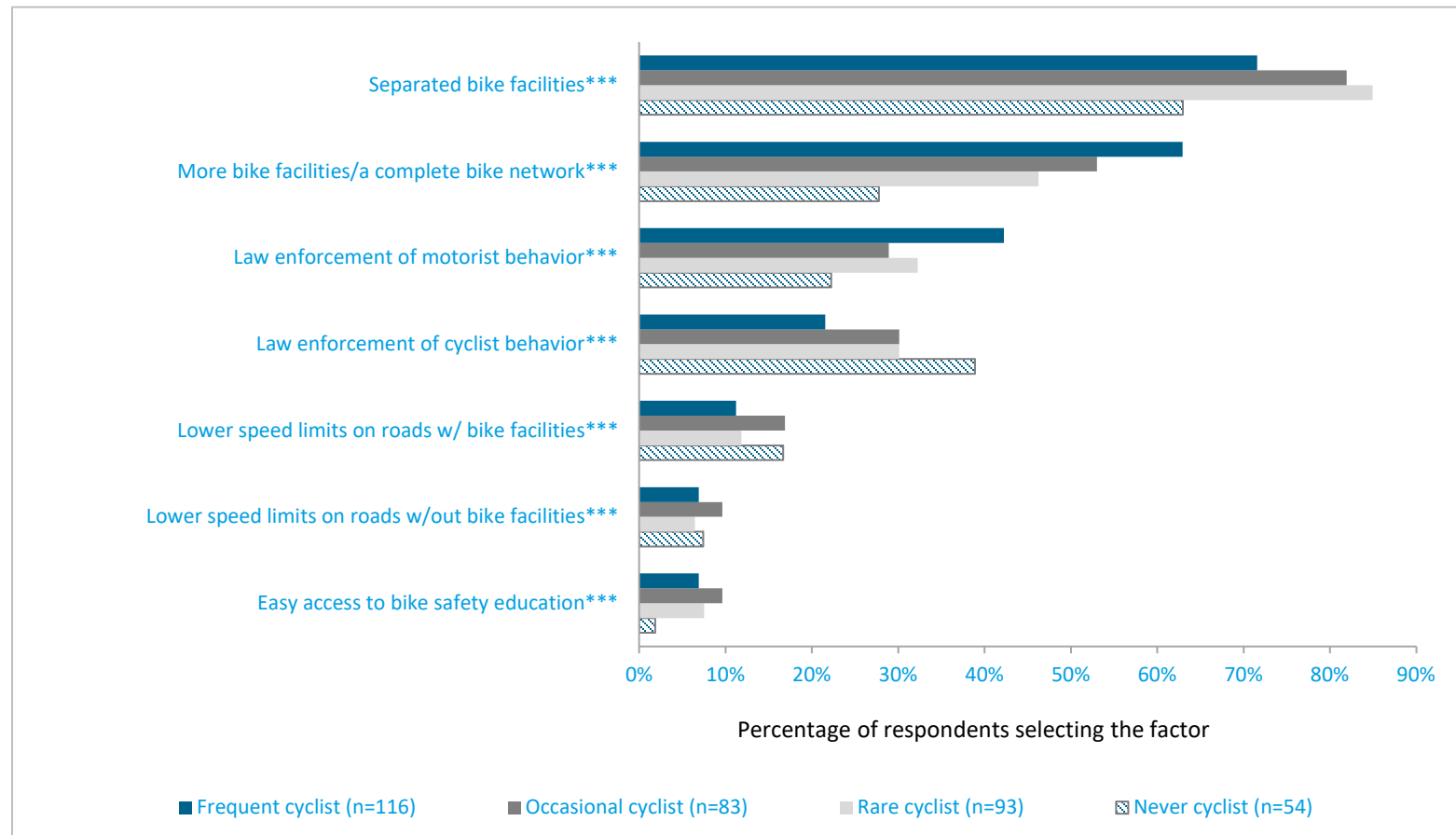
Survey: Bike Improvements

Rank in order which FIVE of the items below would encourage you to ride a bike more often (results below weighted: 1st choice = 5 pts., 5th=1)

	Barracks	Family Housing	Off-Base	All
1. Wider bike paths within MCASI	180	431	142	753
2. More off-street paved bicycle paths	108	267	89	464
3. Make motorists aware of bicyclists	60	241	113	414
4. More connections to paths off-base	96	166	148	410
5. More bicycle racks	137	193	75	405
6. Better maintenance of existing paths	125	175	91	391
7. More on-street bike paths in MCASI	75	184	128	387
8. More information about routes / cycling	77	234	76	387
9. Access to a working bicycle	115	146	119	380
10. More distance b/w paths and roads	60	230	84	374
11. Better directional signage for bicyclists	64	228	69	361
12. Improved crosswalks/intersections	40	209	90	339
13. Better lighting on paths	66	174	51	291
14. Rest stations, water fountains, etc.	79	112	60	251
15. Access to cycling groups	48	119	53	220
16. More pedestrian furniture along paths	37	116	45	198
17. More off-street un-paved bicycle paths	55	72	43	170

Survey: Bike Lanes

Desire for more and wider bike facilities is consistent with general population



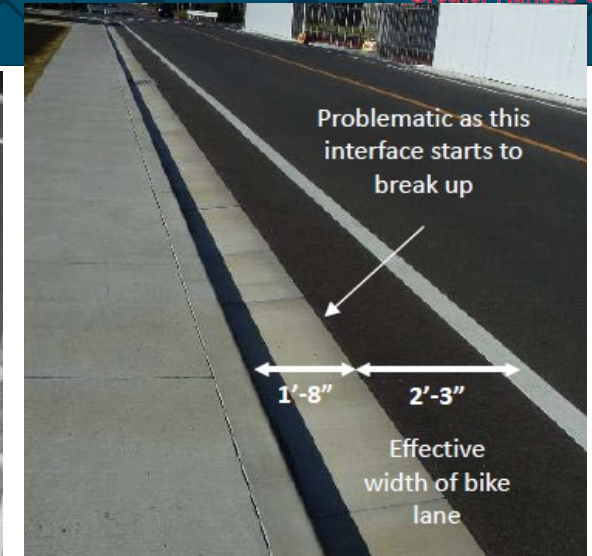
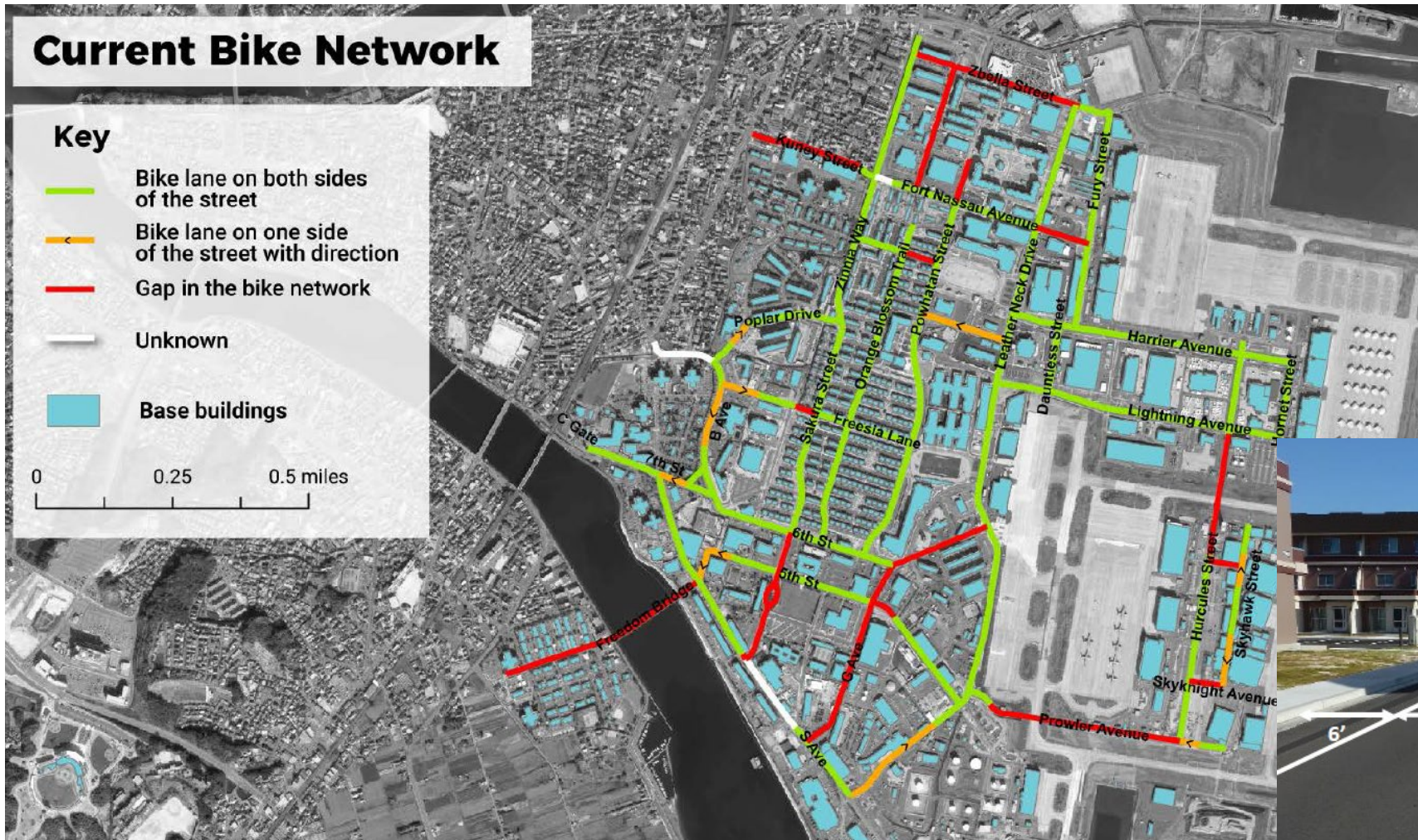
Bike Lanes

Current Bike Network

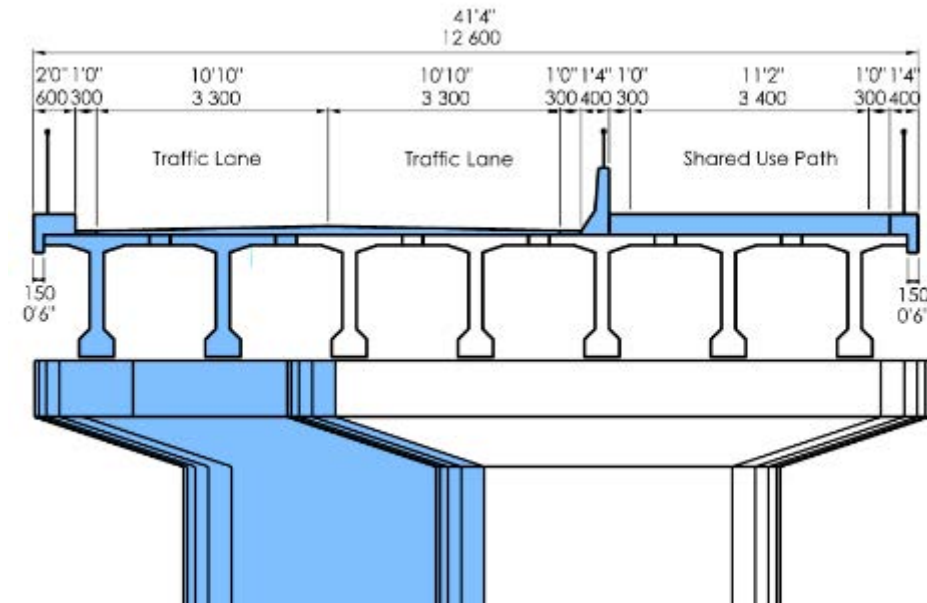
Key

-  Bike lane on both sides of the street
-  Bike lane on one side of the street with direction
-  Gap in the bike network
-  Unknown
-  Base buildings

0 0.25 0.5 miles



Bike Lanes: Freedom Bridge



Bike Parking



No shelter



Metal shelter, high walls



Metal shelter, roof only



Marked parking area



Metal shelter, half-walls



Fiberglass shelter, cantilever

Bike Parking

Inventory

275 sheds

~2,000 bikes

AM, PM, Evening

Many over-full

Many empty



Abandoned/Stolen Bikes

- Base personnel is transient, often leave bikes behind
- Bikes often not registered
- Bikes “wander off”
- Difficult to identify abandoned vs. little used
- Police salvage abandoned bikes, which then get reported stolen



Bike Theft

Have you ever had a bike stolen while on base?

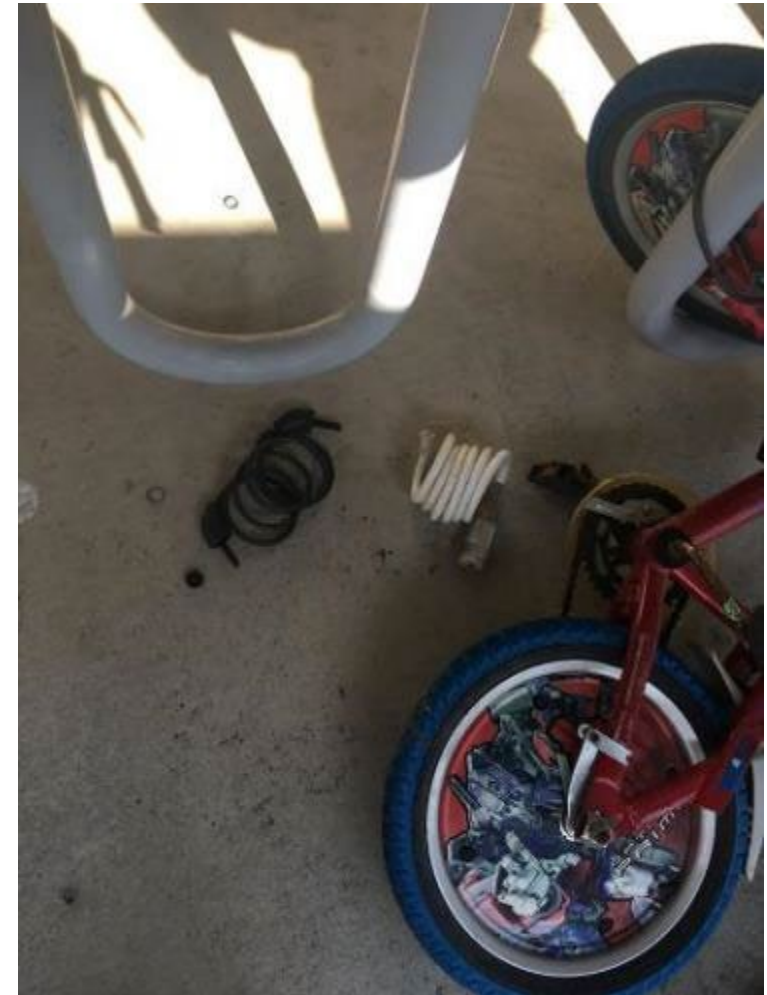
Residence	Yes	No	% Yes
Barracks	44	92	32%
Family	34	249	12%
Off-Base	17	124	12%

These numbers seem surprisingly high.

Do you lock your bike?

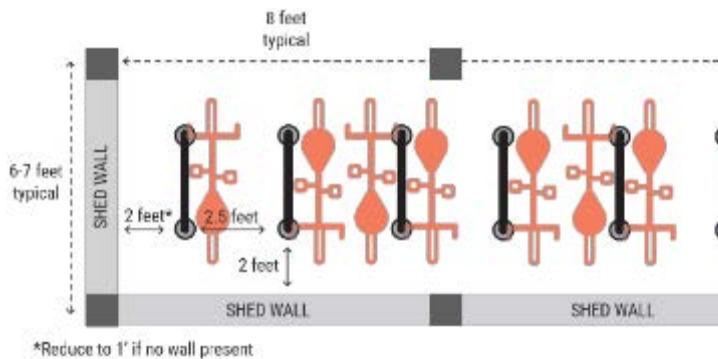
Residence	Yes	No	% Yes
Barracks	122	14	90%
Family	194	89	69%
Off-Base	114	27	81%

Those in single-family and off-base likely keep their bikes inside.



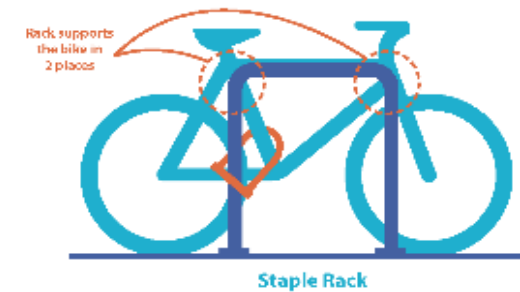
Bike Racks

- Most racks are “single point”
- 2-point racks will require more space
- Rack-by-rack recommendations
- Phased implementation



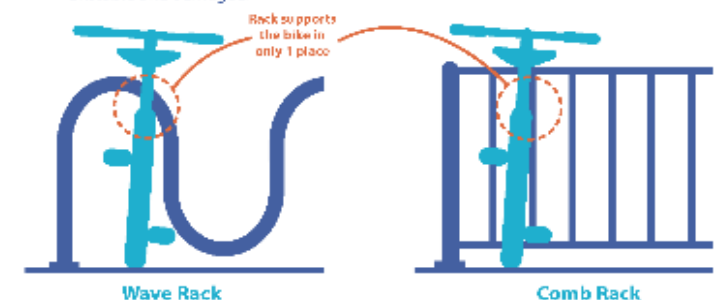
Well Designed Bike Parking *Provides security and stability*

1. The frame and front wheel, which can swivel, need to rest fully supported against the rack with two points of contact.
2. Must be able to lock the frame to the bike rack with a U-Lock or one that is similarly secure.



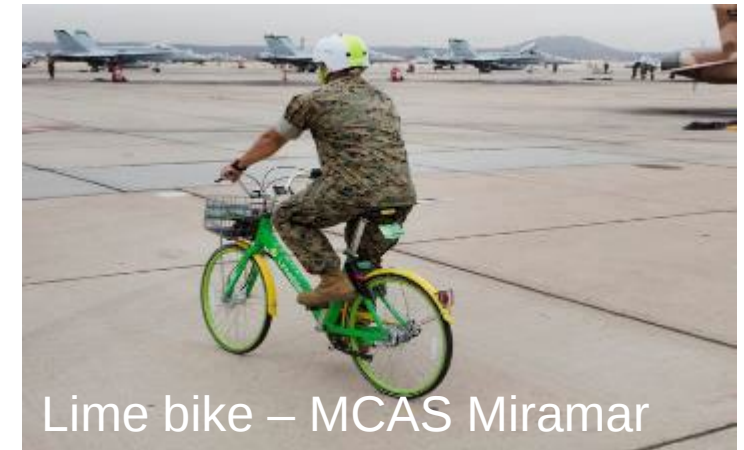
Poorly Designed Bike Parking *Is insecure and unstable*

1. The front wheel and front part of the frame is the only point of contact supported against the rack. This causes bikes to become unstable and damaged.
2. Being the point of contact, the front wheel is typically the only part of the bike that can be locked to the rack, increasing the chance of theft.



Bike Share

- Like US, bike share becoming popular in Japan
- Programs are also being implemented on military bases in US – similar to college campuses
- Some concern about “untidiness” of rackless systems
- Currently identifying interested programs
- Helmet policy



Bike Share

Do you own or have regular access to a bicycle?

Group	Yes	No	% Yes
Barracks-Enlisted	107	218	33%
Barracks-SNCO/Off.	29	30	49%
Family-Depend/Other	138	70	66%
Family-Enlisted	34	23	60%
Family-SNCO/Off/Civ	111	42	73%

Interestingly, bike accessibility is lowest for those in the barracks, particularly enlisted personnel.

[If you live on base] What do you intend to do with your bike once you leave MCASI?

Group	Take it with me	Sell/Give Away	%Take
Enlisted	40	82	33%
SNCO/Off/Civ	190	59	76%

There is a distinct difference between enlisted and SNCO/Officers. This may make bike share/lending more attractive for enlisted personnel.

How did you acquire the bike you used most recently?

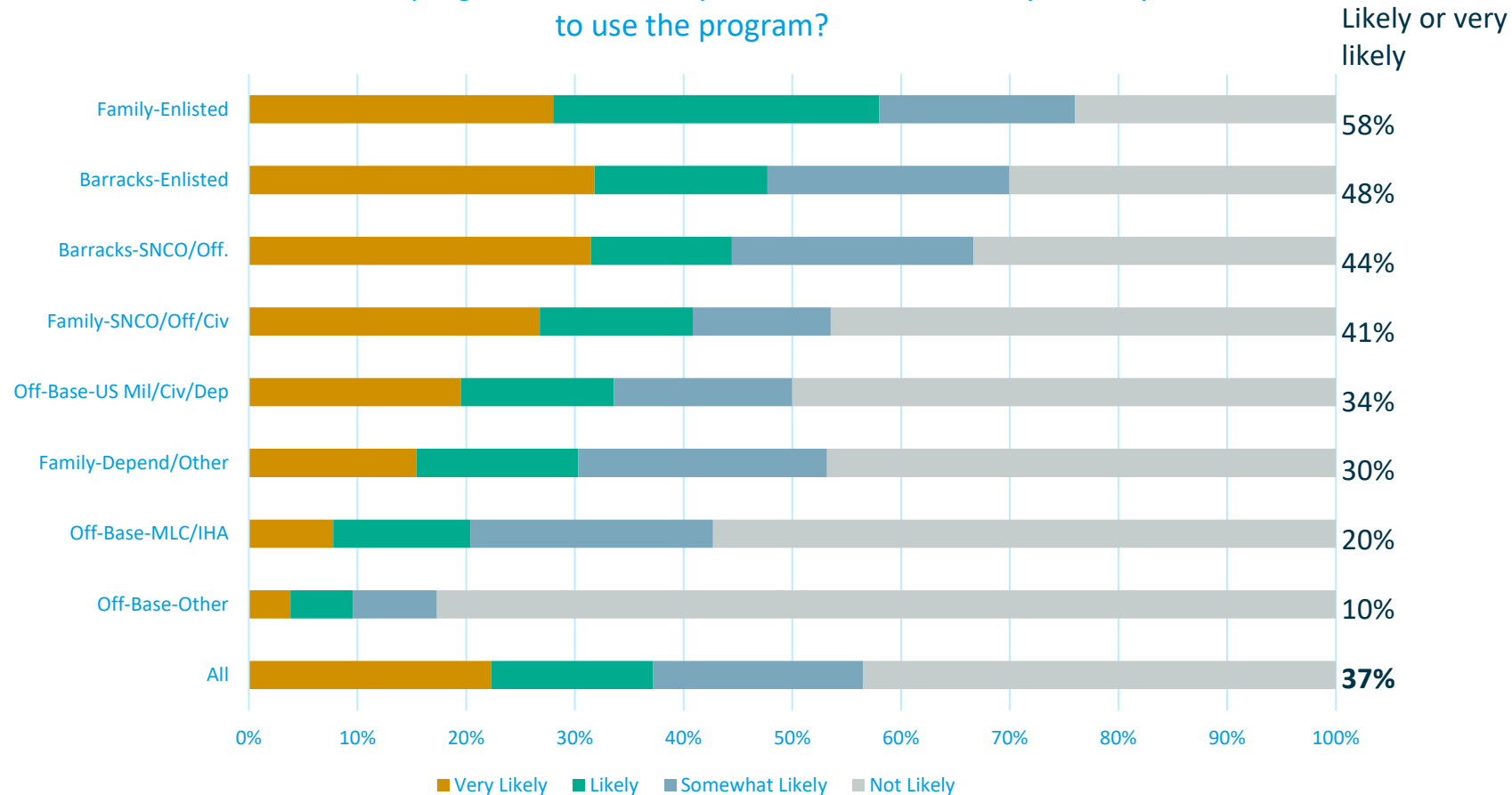
Group	Brought	Bought	Borrow	%Bought
Enlisted	13	108	8	84%
SNCO/Off/Civ	126	139	7	51%

How would you use a bike-share program? (Check all that apply)

	Barracks	Family Housing	Off-Base	All
In place of trips on an existing bike	63	58	88	209
As a supplement for on-base trips by other modes	180	171	141	492
As a supplement for off-base trips by other modes	76	45	89	210
To make new on-base trips	68	58	88	214
To make new off-base trips	89	50	81	220
Other	7	20	7	34

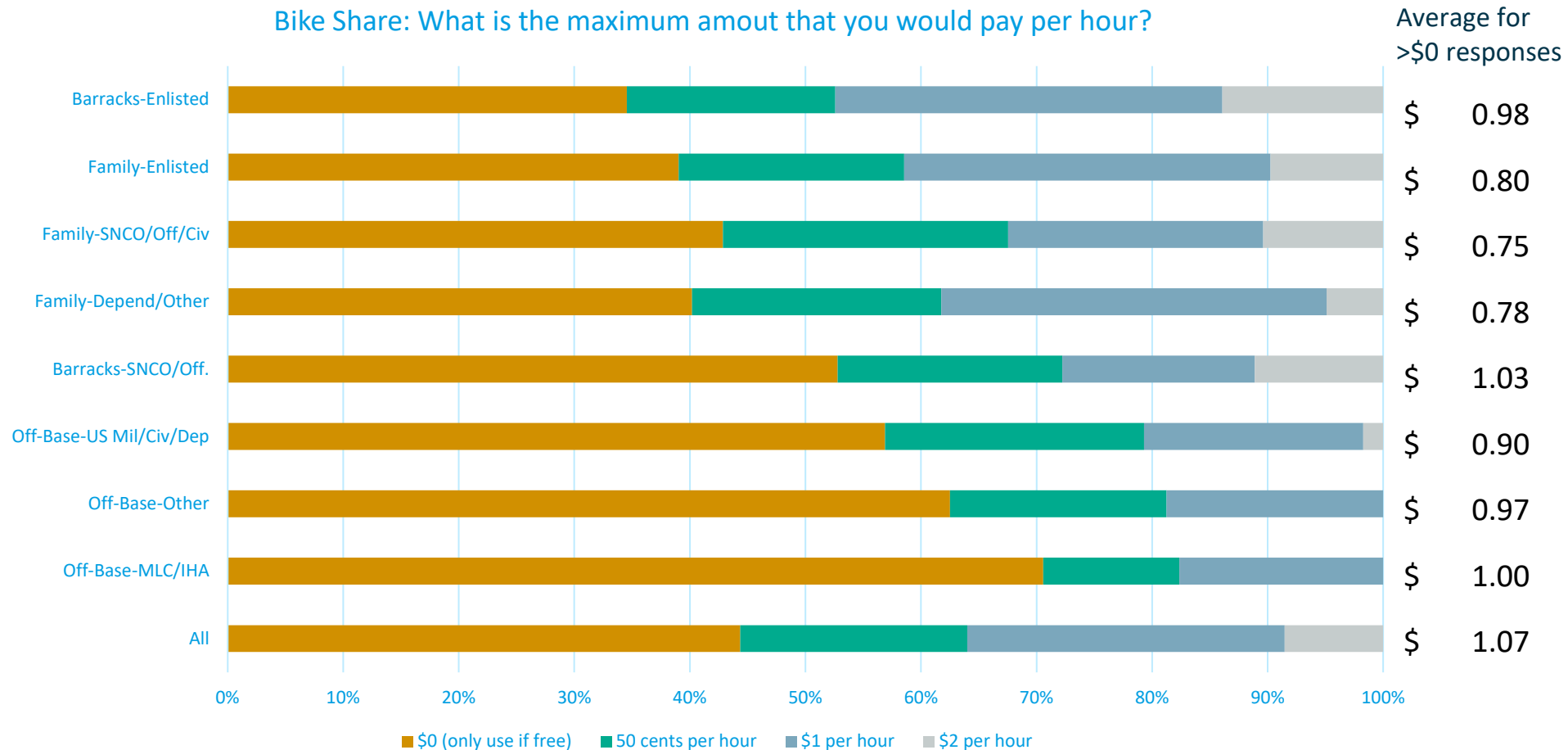
Survey: Bike Share

If a free bike share program were developed on MCASI, how likely would you be to use the program?



There appears to be a high level of interest across military personnel and dependents. 7% of enlisted and 11% of SNCO/Officers/Civilians have used a bike share before.

Bike Share



Bike Lending

- Longer-term rentals (e.g. monthly)
- Establish program using salvaged abandoned bikes?



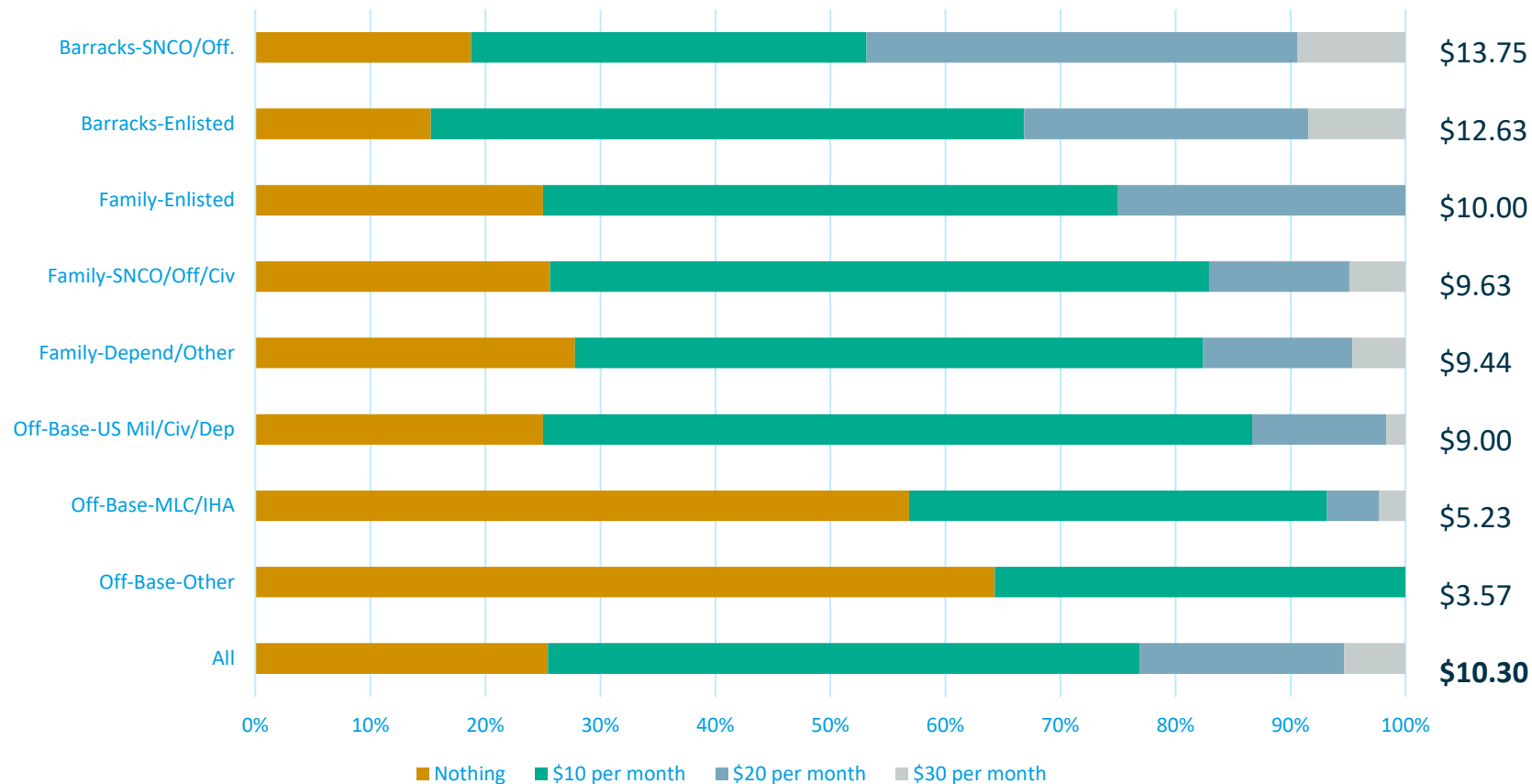
Would you use a bike exchange/library?

	Yes	No	% Yes
Barracks-Enlisted	219	99	69%
Barracks-SNCO/Off.	36	23	61%
Family-Depend/Other	133	75	64%
Family-Enlisted	38	19	67%
Family-SNCO/Off/Civ	101	52	66%
Off-Base-MLC/IHA	48	70	41%
Off-Base-Other	15	49	23%
Off-Base-US Mil/Civ/Dep	73	64	53%
All	663	451	60%

Survey: Bike Lending

Bike Lending: What is the maximum amount that you would pay per month?

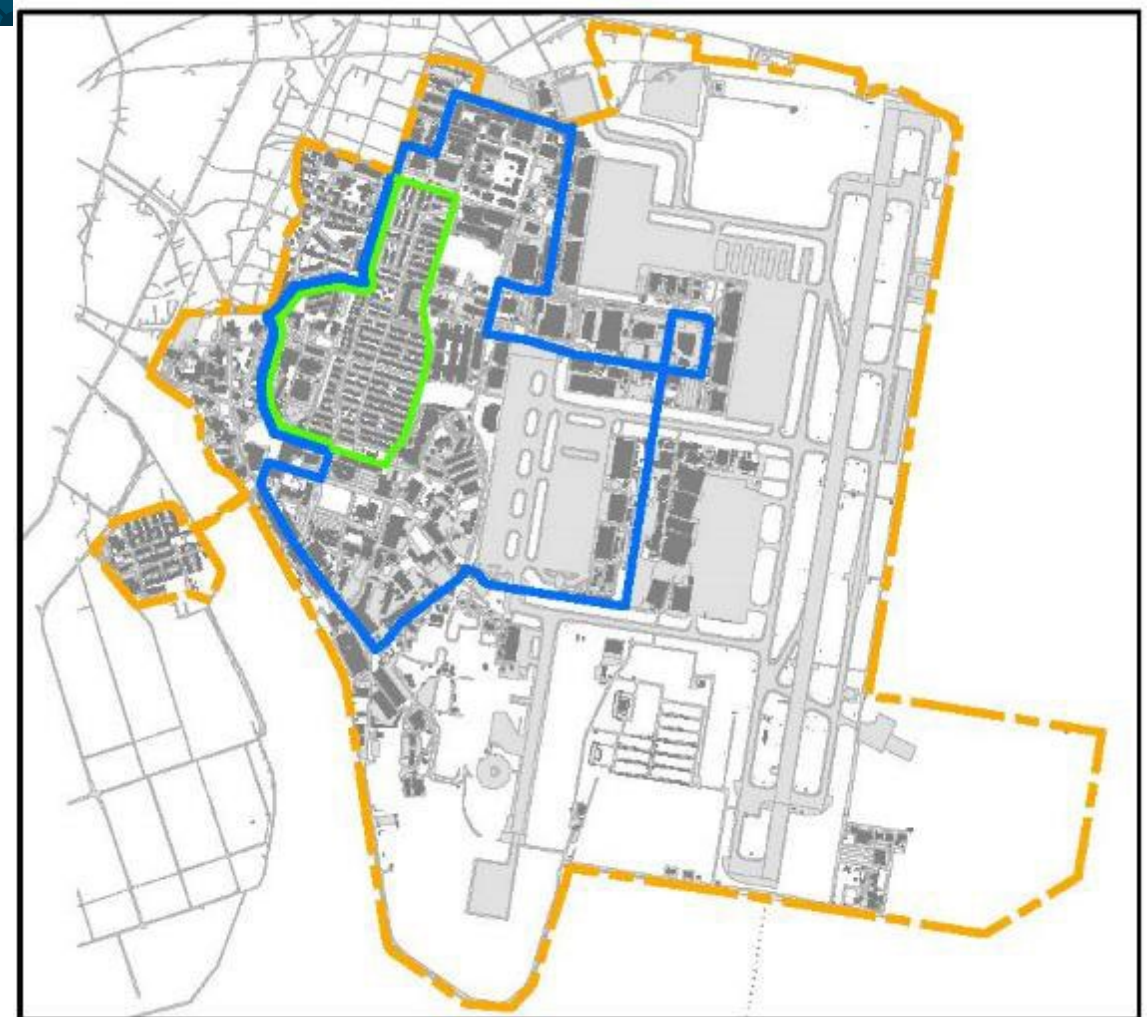
Weighted amount
(including \$0)



If the \$0 responses are removed, the weighted amount is about \$14.00. 419 responses indicated they would be willing to pay some amount (1122 total surveys, 562 responded to this question)

Transit

- Mostly used by enlisted
- US Gov't restrictions on military transit programs
- Existing routes will be reconfigured at end of DPRI construction
- Route to Atago has security and utilization concerns
- Exploring minor modifications to system
- Connectivity to city transit is a challenge
- City taxis can come on base (typical fare \$5-\$10)



Transit

- About 1/3 at least occasionally use transit
- As with most systems, users desire more frequent service
- Off-base service is desirable but challenging

How often do you use on-base transit?

	Almost Daily	A Few Times per Week	Once a Month	Less Than Once a Month	Never	% >1/Month
Barracks-Enlisted	112	121	23	32	28	81%
Barracks-SNCO/Off.	9	10	6	9	22	45%
Family-Depend/Other	1	8	3	23	173	6%
Family-Enlisted	3	5	7	9	33	26%
Family-SNCO/Off/Civ	5	7	8	25	106	13%
Off-Base-MLC/IHA	1		1	4	112	2%
Off-Base-Other	2	1	2	1	58	8%
Off-Base-US Mil/Civ/Dep		4	7	14	113	8%
Grand Total	133	156	57	117	645	31%

Which of the following would get you to use transit on-base more often?

	Barracks	Family Housing	Off-Base	All
Nothing	75	152	102	329
More Frequent Service	197	76	46	319
Off Base Service	143	109	69	321
Live Info About Bus Arrival	86	101	48	235
Stops Closer to Destinations	72	65	42	179
More Info About Using Transit	14	74	37	125
More Service In My Neighborhood	23	75	9	107
Busses Had Bike Racks	37	28	10	75
Other	22	30	21	73

Rideshare/Carshare



The Army & Air Force Exchange Service (AAFES) at Joint Base Myer-Henderson Hall offers carsharing service to customers. This is the first Zipcar venture to debut on a military installation. AAFES has a contract and partnership with Zipcar for the next five years.



Rideshare/Carshare



Times Car Plus is a Japanese carsharing provider operating in Iwakuni. This is a roundtrip model.

Rideshare/Carshare

Other options:

- Operate on-demand rentals through the current MCCS car rental system
- Informal on-base taxi system
- Peer-to-peer carshare (private vehicles/drivers)
- Social carpooling
- Vanpool
- Ridehailing (Uber) – implemented at some US bases

Mobility Transformation Working Group



- Military program - Uses a try and learn pilot model to become more informed about opportunities and knock down barriers to full implementation
 - Lyft/Uber trials (several locations)
 - WAZE Pilot for car pooling (San Diego)
 - Bikeshare (several locations)
 - Scooters (helmet concerns)

Questions?

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