

TUCSON FORWARD SURVEY

REGARDING MILITARY OVERFLIGHTS

PURPOSE

The Tucson Forward survey was designed to provide residents of the Tucson neighborhoods most affected by military overflights, an opportunity to anonymously state their opinions about Air Force (AF) plans to increase the frequency of overflights as compared to the current level of Operation Snowbird, and to bring in noisier, riskier aircraft.

EXECUTIVE SUMMARY

- * Fifty-three to 57% of all responses were opposed to replacing the fighters that regularly fly over Tucson, with F-18, F-22 and F-35 jet aircraft.
- * There was slightly more opposition to increased noise (57% re Davis-Monthan, 56% re Air National Guard) than to the increased safety risk (54% re D-M, 53% ANG) from the Air Force's plans to expand the number of overflights and bring in the newer jets.
- * Very strong support exists (83%) to keep Davis-Monthan Air Force Base open with the current fighters and current overflight operation levels.
- * However, this support drops to 59%, (a drop of 24 percentage points) if the noisier, riskier fighter airplanes are brought in.
- * Strong support (63%) is expressed for limiting operations at D-M and ANG to those operations currently in place.
- * A clear majority of respondents (66%) were previously unaware of the much larger direct economic contribution of the tourism industry to Tucson (4.6% of GDP) as compared to that of Davis-Monthan (2.6% of GDP).
- * There is wide variation in the responses from different parts of the city (see section on analysis by zip code) that can be correlated with their proximity to the D-M and ANG runways.

METHODOLOGY

Consultation and advice regarding survey design and process, analysis and interpretation of the results were provided by Margot W. Garcia, PhD, AICP, who is a retired professor of urban planning. Professor Garcia studied statistics and surveys with two internationally known sociologists, Beverly and Otis Dudley Duncan, and has taught courses at Arizona State University and Virginia Commonwealth University on developing valid surveys, and on the conducting and analyzing of the results. She has been a co-principal investigator in large national surveys conducted for the U.S. Army Corps of Engineers, and has supervised doctoral students in a variety of surveys covering many topics.

To obtain the addresses for all single-family residential dwellings in the neighborhoods we wanted to survey, Tucson Forward utilized the services of a locally owned professional list service *That List Lady*.

A locally owned Tucson mailing house *Arizona Jet Mail* provided the services of mailing out the surveys and tallying the responses. The survey was mailed to 4,000 residents in Metro Tucson neighborhoods which are either currently most affected by military overflights, or that are likely to be most affected, if the AF plans are implemented to expand overflights.

The random selection of 4,000 residents from the 29,093 single-family residential dwellings in the area targeted, was done online via *Research Randomizer*:

<http://www.randomizer.org/form.htm>

The survey was mailed out to the 4,000 residents the first week of August 2014. Responses were accepted until the first week of October 2014.

Participants were advised in a cover letter that their responses would be kept anonymous. They were asked to provide only their zip codes on the responses. Return envelopes addressed to *Arizona Jet Mail*, were provided in the envelopes containing the surveys.

Participants mailed responses directly to *Arizona Jet Mail*, who provided the tallying.

Information on aircraft noise comparison cited in the survey was obtained directly from Air Force data (Table E-2 of the Eglin Air Force Base Environmental Impact Statement and the "ACFT dB Level" provided by Davis-Monthan AFB).

Economic comparison information cited in the survey was obtained from Davis-Monthan's economic analysis for FY 2012 and the U.S. Bureau of Economic Analysis for 2012.

Zip code boundaries and demographic information used in this analysis of the survey responses, were obtained in October 2014 at the following websites:

www.city-data.com/zipmaps/Tucson-Arizona.html

<http://www.usa.com/85745-az-income-and-careers-historical-employment-status-data.htm>

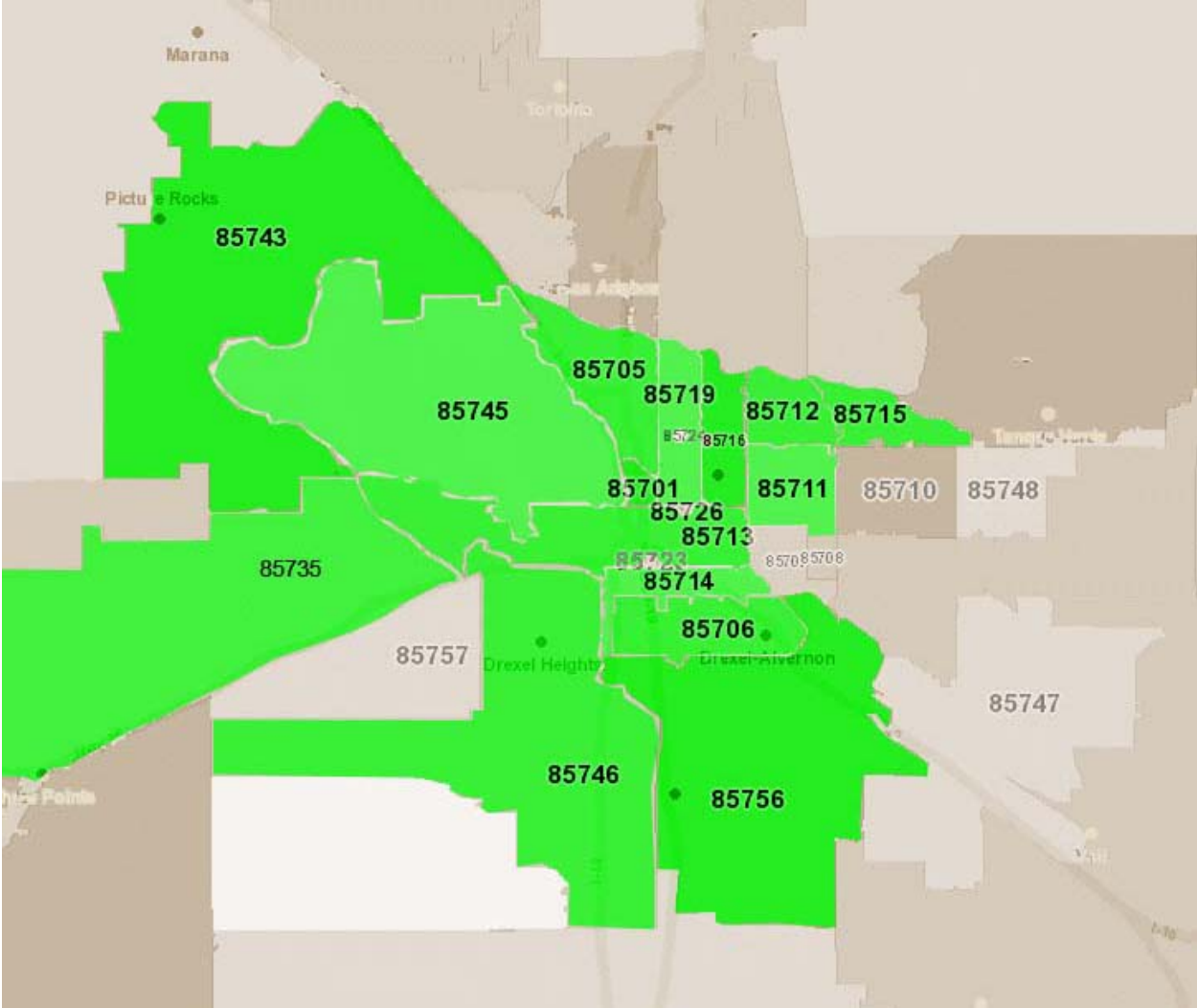
SURVEY RESULTS

PARTICIPATION

The rate of response to the 4,000 mailed surveys was just over 14% (a total of 571 responses).

The survey area covered the following zip codes: 85701, 85705, 85706, 85711, 85712, 85713, 85714, 85715, 85716, 85719, 85725, 85726, 85735, 85743, 85745, 85746, and 85756. These include 46 neighborhoods, comprised of 38 Neighborhood Associations (NAs), 3 Homeowner Associations (HAs), 4 neighborhoods with no NAs or HAs, and the City of South Tucson.

MAP OF ZIP CODES SURVEYED

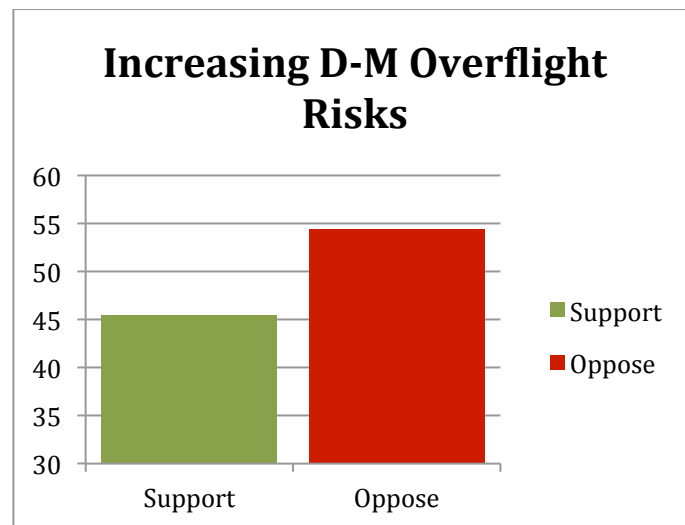


SURVEY QUESTIONS AND OVERALL RESPONSES BY QUESTION

Question 1) The F-16, F-18,¹ F-22,¹ and F-35 are considered high-risk fighters, because these single-engine jets have no backup engines, as compared to the A-10 fighter, which has two engines. All five fighters have a single seat, so there is no backup pilot. The majority of current flights over Tucson are by A-10s. F-16s fly over Tucson regularly, but less frequently.

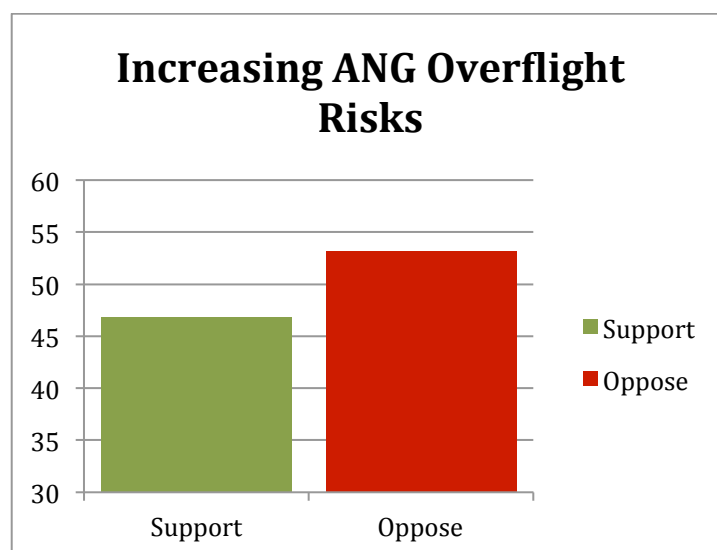
A) Given this information about risk, do you support or oppose replacement of the jets that now regularly fly over Tucson from Davis-Monthan, with the F-18s, F-22s, and F-35s described above?

Total responses: 563 54% oppose 45% support



B) Given this information about risk, do you support or oppose the Air National Guard replacing the jets (that now regularly depart from Tucson International Airport and fly over Tucson and the Tucson Mountains) with the F-18s, F-22s, and F-35s described above?

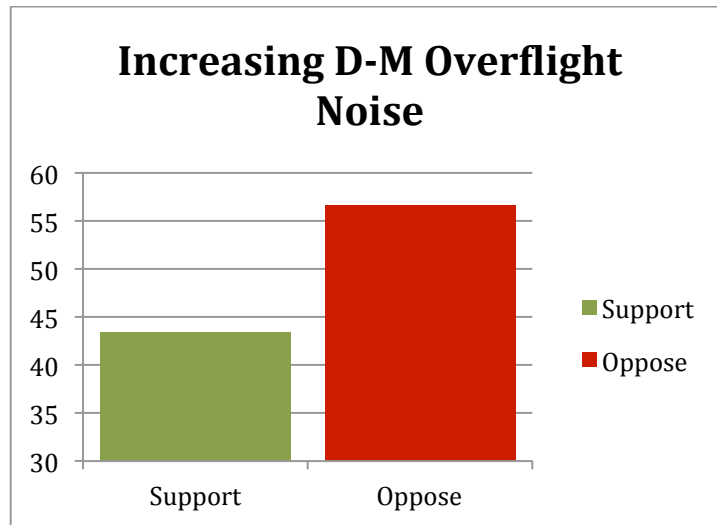
Total responses: 555 53% oppose 46% support



Question 2) According to Air Force data¹, the F-35 is 8 times louder than the A-10, and nearly 4 times louder than the F-16. Noise generated by the F-35 will cover more than 4 times the area currently affected by over-flights. F-18s, and F-22s are 3 to 4 times louder than the A-10. These noise comparisons are for over-flights 2,000 ft. above the ground, the level of the jets as they fly over midtown Tucson neighborhoods.

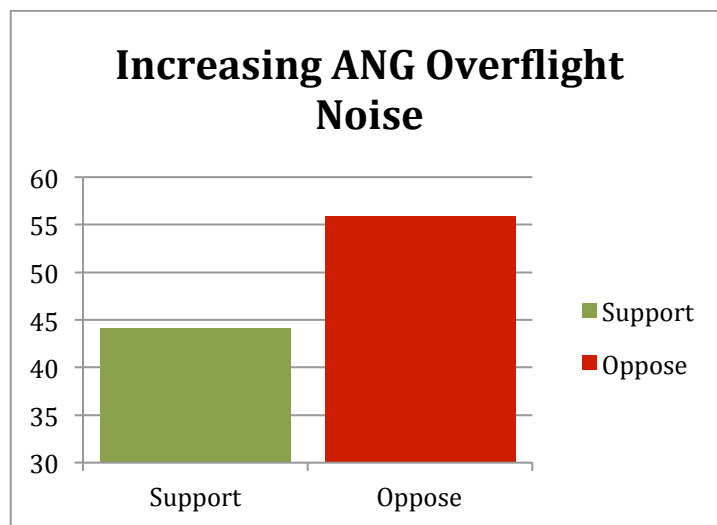
A) Given this information about noise, do you support or oppose the Air Force replacing the jets that now regularly fly over Tucson from Davis-Monthan, with the F-18s, F-22s, and F-35s described above?

Total responses: 567 57% oppose 43% support



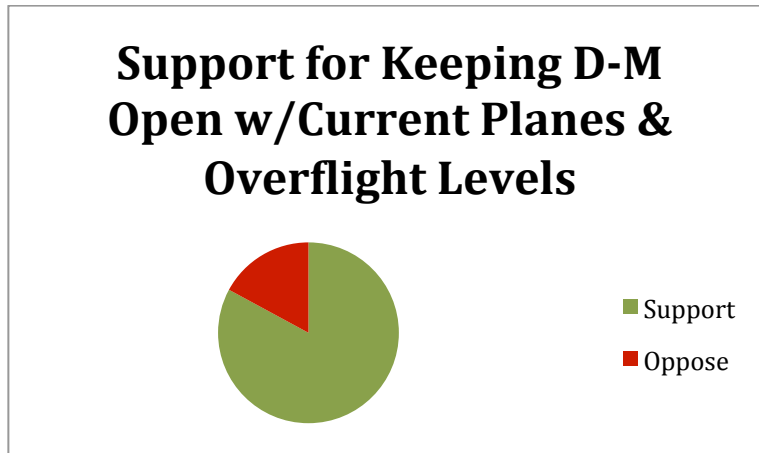
B) Given this information about noise, do you support or oppose the Air National Guard replacing the jets (that now regularly depart from Tucson International Airport, and fly over Tucson and the Tucson Mountains) with the F-18s, F-22s, and F-35s described above?

Total responses: 562 56% oppose 44% support



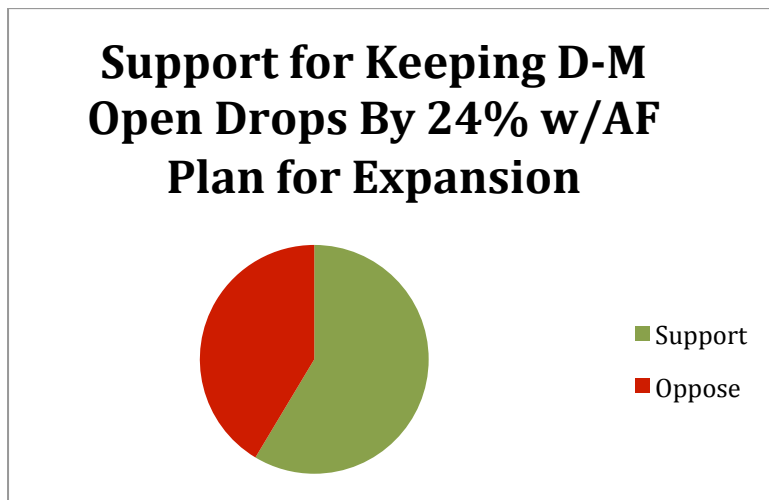
Question 3) If the types of military aircraft flying over the city and county, and the frequency of flights remain the same as now, do you support or oppose Davis-Monthan Base remaining open?

Total responses: 560 17% oppose 83% support



Question 4) If the F-18, F-22, and/or F-35 jets described in questions one and two, replace the current types of military aircraft flying over the city, do you support or oppose Davis-Monthan Base remaining open?

Total responses: 562 41% oppose 59% support

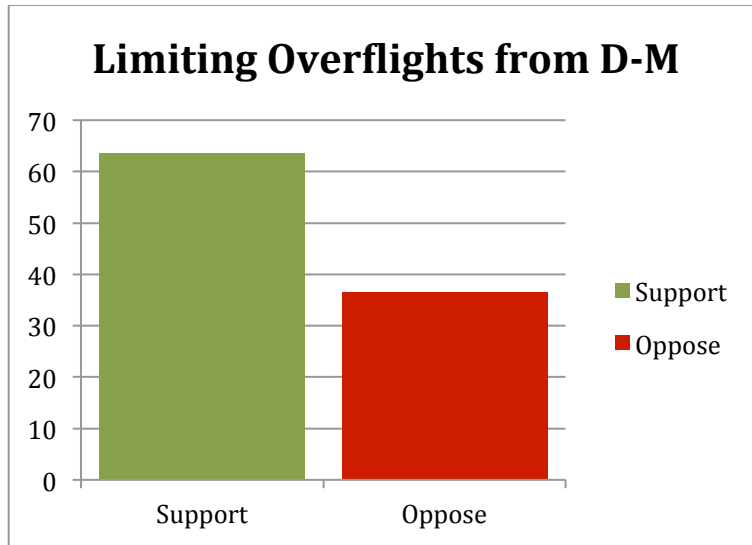


Question 5) Converting a conventional Air Force Base to an urban-friendly base has succeeded elsewhere (e.g. Ames AFB in CA) by switching to on-the-ground operations. On-the-ground operations could include: simulator training, regional coordination,

remote guidance, and collaborative research with the University, Raytheon and other high tech industries such as solar, and other alternative energy.

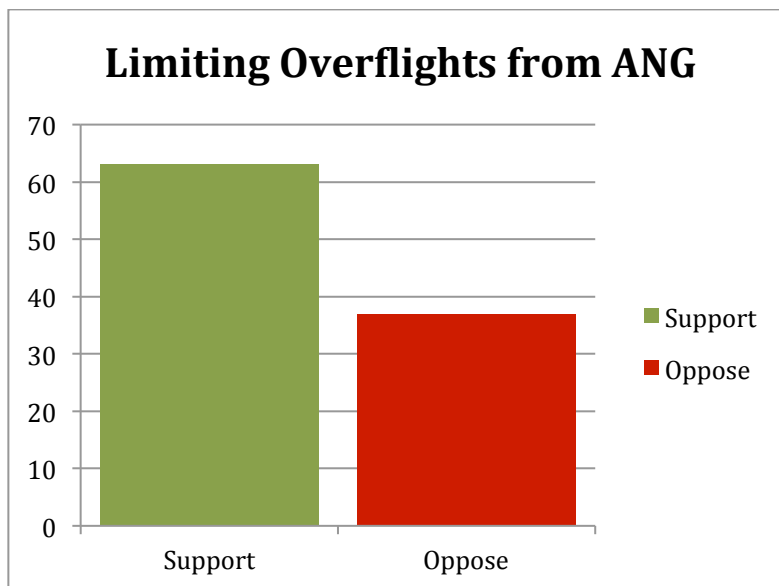
A) Do you support or oppose limiting new operations and expansion of existing operations at Davis-Monthan, to operations that do not increase the types of planes, flight frequency, or noise from military jets over Tucson?

Total responses: 556 36% oppose 63% support



B) Do you support or oppose limiting new operations and expansion of existing operations at Air National Guard at Tucson International Airport, to operations that do not increase the types of planes, flight frequency, or noise from military jets over Tucson?

Total responses: 547 37% oppose 63% support

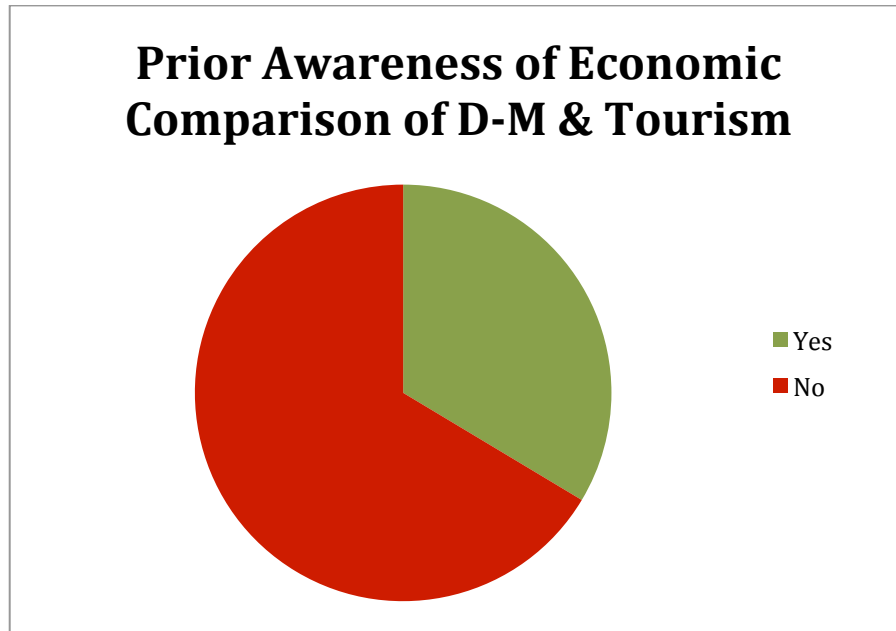


Question 6) Davis-Monthan's economic analysis for 2012 shows that its direct contribution was 2.6% of Tucson's economy (Tucson's Gross Domestic Product). By comparison, according to the U.S. Dept. of Commerce, Tourism made a direct contribution of 4.6% to Tucson's economy in 2012. **Were you previously aware of these facts?**

Total responses: 554

66% No

34% Yes



1. According to Air Force data (Table E-2 of the Eglin Air Force Base Environmental Impact Statement and the "ACFT dB Level" provided by Davis-Monthan AFB):

* F-35s are 8 times louder than A-10s (the majority of our current flyovers). A-10s are based at Davis-Monthan AFB.

* The F-35 is nearly 4 times louder than the F-16 (the loudest fighters regularly flying over Tucson). F-16s are under the Air National Guard, and based at Tucson International Airport.

* The noise generated by the F-35 will be spread over more than 4 times the area currently affected by over-flights, and will have 50 times the physical energy.

* F-18s and F-22s are respectively 3 to 4 times louder than the A-10, and are proposed for basing at Davis-Monthan.

(The above comparisons are for flyovers at an altitude of 2,000 feet from the ground... representative of what most Midtown Tucson neighborhoods experience).

1. Correction: In the wording of the questions dealing with risk factors (1-A and 1-B), the F-18 and F-22 were mistakenly described as single-seat, single-engine fighters, when they are actually single-seat twin-engine fighters.

RESPONSES BY ZIP CODE

TABLE OF RESPONSES BY ZIP CODE IN PERCENTAGES

Zip code	Regarding Risk		Regarding Noise		D-M w/o	D-M With	Limits on	Limits on	Prior
	D-M	ANG	D-M	ANG	Flyover Expansion	Flyover Expansion	D-M	ANG	Economic Awareness
	Q 1A	Q 1B	Q 2A	Q 2B	Q 3	Q 4	Q 5A	Q 5B	Q 6
85706 O	67.1	70	66.2	67.6	23.5	47.1	35.2	35.7	N=71.8
S	32.8	30	33.8	32.4	76.5	52.9	64.8	64.3	Y=28.2
85711 O	51.1	55.6	55.6	48.9	10.4	29.8	46.8	40.4	N=58.1
S	48.9	46.8	46.8	51.5	89.6	70.2	53.2	59.6	Y=41.9
85713 O	50.9	56.3	58.9	56.3	12.2	33.9	38.1	36.5	N=63
S	49.1	45.4	41.3	43.6	85.9	66.1	61.8	63.5	Y=37
85716 O	62.2	59.5	68.4	63.2	21.1	44.7	34.3	38.9	N=72.2
S	37.8	40.5	31.6	36.8	78.9	55.3	65.7	61.1	Y=27.8
85719 O	63.2	63.2	68.4	66.8	16.2	57.9	13.5	26.3	N=68.4
S	36.8	36.8	31.6	34.2	83.8	42.1	86.5	73.7	Y=31.6
85745 O	37.7	38.8	37.7	40.3	16.2	33.8	46.3	46.9	N=73.1
S	62.3	61.2	62.3	59.7	83.8	66.2	53.7	53.1	Y=26.9
All Surveys									
O	54.4	53.2	56.6	55.9	17.1	41.4	36.5	36.9	N=66.4
S	45.5	46.8	43.4	44.1	82.9	58.6	63.5	63.0	Y=33.6

Highest number in column coded O (oppose) is shaded yellow

Highest number in column coded S (support) is shaded blue

INTERPRETATIONS

RESPONSES BY ZIP CODE

There is a great deal of variation in responses among the different zip codes (please see the table above). This variation is likely due to numerous factors, some of which are noted below.

85706:

This zip code returned the largest number of survey responses, suggesting strong interest in the topic. This is not surprising, since its East boundary is D-M, and its South boundary abuts TIA where the ANG runway is located. It extends west to I-19, and north to Irvington.

Respondents from this zip code are strongly opposed to replacing the current fighters flying out of D-M (60%) and even more strongly opposed to the replacement of the ANG fighters flying out of TIA (70%).

This zip code is the only one that showed a slightly stronger opposition regarding risk than noise: for ANG flights (70% re risk, 68% re noise) for D-M flights, (67% re risk, 66% re noise).

Approximately 77% of this zip code support keeping the base open with current fighters and current levels of flight operations. But support drops to 53% of its respondents (a 24-point drop) if D-M brings in noisier, riskier fighters.

Respondents in this zip code strongly support limiting operations to maintaining status quo for D-M (65%) and for ANG (64%).

Seventy two percent (72%) of respondents report not previously being aware of the much larger direct economic contribution of the tourism industry to Tucson (4.6% of GDP), as compared to that of Davis-Monthan (2.6% of GDP).

The 85706 zip code is 82% Hispanic and 12% White, and the estimated average household income is \$29,883.

85711:

This zip code lies just north of Davis-Monthan AFB, stretching from Golf Links/D-M up to Speedway, and from Wilmot to Alvernon Way. It has the largest number of active military as residents (almost one and a half times more than the participating zip code with the next highest number).

This may be a factor in why this zip code (of the participating zip codes) was the most supportive in keeping the base open with the current levels of flight operations (90%) and why it was still strongly supportive of keeping the base open even with the noisier jets (70%).

Despite this support, 51% of its respondents were opposed to changing the D-M fighters due to risk, and 56% were opposed due to noise. In addition, 56% were opposed to changing the ANG fighters due to risk, and 49% opposed it due to noise.

There was also a notable 20-point drop in their support for D-M with introduction of the noisier fighters, and 53% supported limits on operations at D-M to maintain status quo, and 60% supported limits to sustain status quo on operations at ANG.

In this zip code, 60% of respondents report no prior awareness of the direct contribution of the tourism industry to Tucson's economy, as compared to the direct contribution of Davis-Monthan.

The 85711 zip code is 51% White and 36% Hispanic, and the estimated average household income is \$36,189.

85713:

This zip code is bounded on its north by 22nd St. and on its south by Ajo Way. It runs from Alvernon Way to the intersection of Gates Pass and Kinney Rd. on the west side of the Tucson Mountains.

Its respondents were opposed to changes in jet fighter planes from D-M or ANG with regard to noise (59% and 56% respectively). However, with regard to risk, they were less opposed to changes in D-M flights than ANG flights (51% and 56% respectively).

These respondents were 86% supportive of D-M with current flight operation levels, but support drops to 66% with AF expansion plans (a 20-point drop).

Zip code 85713 respondents strongly support limits on D-M and ANG operations (62% and 64% respectively) to maintain status quo.

Sixty three percent (63%) of respondents report no prior awareness of the direct contribution of the tourism industry to Tucson's economy, as compared to Davis-Monthan's direct contribution.

Zip code 85713 is 68 % Hispanic and 22% White, and the average household income is \$31,992.

85716:

This zip code is located North of D-M and TIA, running from 22nd up to the Rillito River/Prince Rd. area, between Alvernon Way and Tucson Blvd.

Respondents from this zip code were strongly opposed to changes in fighter jets at D-M and ANG based on risk (62% and 60% respectively). This opposition is even stronger with regard to noise (68% and 63% respectively).

While 79% are supportive of D-M with no changes in flight operations, support drops to 55% if AF expansion plans are implemented (a 24-point drop).

There is strong support for operational limits on D-M and ANG (66% and 61% respectively) in order to maintain status quo.

Seventy two percent (72%) of respondents from this zip code report no prior awareness of the direct contribution of the tourism industry to Tucson's economy, as compared to Davis-Monthan's direct contribution.

This zip code is 62% White and 26% Hispanic. The average household income is \$32,370.

85719:

This zip code is located to the northwest of D-M and TIA, running from 22nd up to the Rillito River/Wetmore area, between Tucson Blvd. and Euclid Ave.

Respondents were strongly opposed to changes in D-M fighter jets (63% due to risk, and 63% due to noise). They were even more strongly opposed to changes in ANG fighters (68% due to risk, and 67% due to noise).

Eighty four percent (84%) of its respondents are supportive of keeping D-M open with current levels of flight operations.

However, there is a dramatic switch from support to opposition, if the noisier, riskier fighter jets are brought in. The AF's planned expansion results in 58% of respondents opposing keeping D-M open (a drop of 42 points).

There is very strong support from respondents of this zip code for limiting expansion of D-M and ANG operations (87% and 74% respectively) in order to maintain status quo.

Sixty eight percent (68%) of respondents from this zip code report no prior awareness of the direct contribution of the tourism industry to Tucson's economy, as compared to Davis-Monthan's direct contribution.

The 85719 zip code is 62% White and 24% Hispanic, and the estimated average household income is \$29,298.

85745:

This zip code includes the farthest northwest portion of the city, and a very large area outside the city limits, extending well past the Tucson Mountains to the west.

About 62% of responses from this zip code are supportive of jet fighters from D-M and ANG flying over the city. This may be due (in part) to the fact that the largest portion of this zip code does not lie within the city.

Roughly 84% of responses from zip code 85745 are supportive of D-M with current flyover levels and current fighters.

However, with implementation of the AF's planned expansion, support for D-M drops to 66% (an 18-point drop).

Consistent with that, about 53% of these respondents support limiting D-M and ANG to operations that will not expand overflights and will not increase the noise from overflights.

Seventy three percent (73%) of respondents from 85745 report no prior awareness of the comparative contributions of the tourism industry and Davis-Monthan, to Tucson's economy.

The 85745 zip code is 50% Hispanic and 40 % White, and the estimated average household income is \$49,662, substantially higher than any of the other zip codes.

CONCLUSION

In the Tucson Metro area there is opposition to Air Force plans to replace current aircraft with noisier, riskier fighters at Davis Monthan Air Force Base and at the Air National Guard (ANG), which flies out of a runway adjacent to the Tucson International Airport (TIA).

Support for Davis-Monthan Air Force Base is greatly decreased (up to 42 percentage points in zip code 85719) by the prospect of louder, riskier fighters replacing current aircraft that fly out of Davis-Monthan. The degree of opposition varies depending on location. Possible reasons for the variation are: proximity to flight paths, number of active or retired military residents in an area, and number of people living in the area who work for the base.

There is strong support for limiting expansion of flight operations at Davis-Monthan Air Force Base and the Air National Guard, in order to prevent bringing in F-18, F-22, and F-35 jet fighters, and to prevent any increase in flight frequency, or noise from military jets over Tucson.

A clear majority of respondents (66%) were unaware of the much larger direct economic contribution of the tourism industry to Tucson (4.6% of GDP), as compared to that of Davis-Monthan (2.6% of GDP) and that knowledge varied from 58% to 73% depending on location.

COMPARISON OF TUCSON FORWARD AND SADA SURVEYS

* TFI: The survey was mailed to a computer-generated random selection² of 4,000 residents from the 29,093 single-family residential dwellings in the targeted Tucson zip codes. Of those, 571 responses were received (1.96% of the targeted population).

* SADA: The survey sample size was 617, and the target population is all of Southern Arizona, which the census bureau states is a population of approximately 1.8 million. So the SADA responses were only (0.03%) of their targeted population.

* TFI: The survey specifically included the Tucson neighborhoods currently most affected, and those likely to become affected if AF plans for flight expansion are implemented.

* SADA: In the list of participating zip codes published by SADA, none are within the City Limits of Tucson. The results of the SADA survey are highly skewed by the inclusion of all of Southern Arizona, with no evidence of a valid poll of the residents most affected by overflights (i.e., those living within the City of Tucson).

* TFI: All participating zip codes are listed, and are zip codes for the City of Tucson.

* SADA: There are no zip codes or major cross streets given for the subset of 103 participants, who, without producing any substantiation, SADA asserts live near Davis-Monthan or Tucson International Airport.

* TFI: There was uniformity of method and time frame for the survey across all participants.

* SADA: There were different methods and time frames for subsets of participants.

* TFI: A standard, valid method of mail-out survey was utilized to minimize exclusion of lower economic households, which may not have access to a computer and also to ensure an acceptable geographic distribution of respondents.

SADA: The type of survey SADA describes as an intercept survey (which was administered to the subset of 103 participants at a later date) carries no validity as representative of the area supposedly targeted.

TFI: The questions allow participants to voice concerns about overflights separate from support for the airbases themselves.

SADA: Survey questions were very broad and encompassing. In order to object to overflights, participants had to object to all military bases in Southern Arizona.

TFI: Survey questions allowed residents to voice their feelings about the current level of overflights separate from feelings about AF plans to increase overflights. Because we wanted to survey the opinions of Tucson residents when they have accurate information on which to base their opinions, as opposed to misinformation or lack of information, we included background information about the AF plans for increased overflights, the aircraft they plan to bring here, and the economic contribution of D-M compared to that of tourism.

This was done to give respondents a valid basis for informed opinions.

SADA: The survey did not address, or disclose the Air Force's planned increase in overflights and did not address bringing the F-35 to Tucson. They also did not explain that the F-35 is noisier than current jets regularly flying over Tucson. Instead the survey asked only how participants felt about having the F-35 in Southern Arizona (which is a very large area comprised mostly of open desert, including the completely unpopulated Goldwater Air Force Range).

So answers to this question are not at all indicative of how Tucson residents would feel about having a fleet of F-35s regularly flying over the homes, yards, parks schools, clinics, churches, restaurants, hotels, etc. of central Tucson.

2. The random selection of 4,000 residents from the 29,093 single-family residential dwellings in the area targeted, was done online via *Research Randomizer*: <http://www.randomizer.org/form.htm>

Website for Tucson Forward, Inc. is: tucsonforward.com