

# VALIDATING MEASURES OF ALCOHOL USE AMONG MALE GOAN DRINKERS

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(T. Greenfield, PI; V Patel, Sangath, Goa PI)



# Alcohol and HIV-Risk Community Survey - Background

Accurate assessment of heavy drinking is particularly important in India, since half of all male drinkers meet criteria for heavy use.

However, assessing drinking patterns is difficult in cultures where there is no concept of a “standard drink.”

As part of a collaborative community survey in Northern Goa, during a formative phase of the research we used qualitative methods to adapt a widely used GF measure so as to overcoming this difficulty.

In in-person interviews, 743 urban and rural male drinkers completed the new 5-item drinking pattern measure – termed the Fractional Graduated Frequencies (F-GF) measure.

F-GF results were compared to beverage-specific (Bev-S) and typical QF summary measures. In a sample of hazardous drinkers (n=56), F-GF was validated using 28 days daily drinking diaries (gathered weekly).

# Alcohol Use Measures

- Usual Quantity/Usual Frequency (**QF**) of drinking in the past 12 months combined across all types of alcohol. The almost ubiquitous 2-item measure.
- Assessment of frequency of consumption of each beverage type separately and relative frequencies of several quantity levels within each beverage (**BevS**).
- The new Fractional Graduated Frequencies (**F-GF**) measure: 1) assesses the Maximum Quantity consumed in any one day (7 types of alcohol with various container sizes) 2) how often you drank about this amount 3-5) the frequency of drinking about  $\frac{3}{4}$ ,  $\frac{1}{2}$ , and  $\frac{1}{4}$  of this amount (i.e., of the Max.)

## The Fractional Graduated Frequencies Measure

This is a 12 month combined alcohol intake measure.

For the largest amount drunk in a single day in the last year, we ask the numbers and sizes of each of 7 beverage types drunk (Beer, Wine Spirits inc IMFL, Caju Feni, Coconut Feni, Urrack, Pre-mixed Drinks). Then ask how often did you drink “about this amount” (Max. Frequency) In turn, how often did you drink about...

- $\frac{3}{4}$  of this maximum amount;
- $\frac{1}{2}$  of this maximum amount;
- $\frac{1}{4}$  of this maximum amount.

# SAMPLING DESIGN

## MEN

<b>Approached</b>		<b>MEN</b>	
			<i>Refused</i>
Rural	1085		8 (0.7%)
Urban	850		28 (3.3%)
<b>TOTAL</b>	<b>1935</b>		

### SCREENING INTERVIEWS

Rural	1077	(88 palm)
Urban	822	(145 palm)
<b>TOTAL</b>	<b>1899</b>	
(1500 planned)		

*Refused main interviews:  
Rural 5 (1%); urban 3 (0.6%)*

### MAIN INTERVIEWS

Rural	493 (350 drinkers)
Urban	541 (393 drinkers)
<b>TOTAL</b>	<b>1033</b> (743 drinkers)
(1000 total, 750 cases planned)	

## WOMEN

		<b>WOMEN</b>	
		<i>Approached</i>	<i>Refused</i>
Rural	1435		7 (0.5%)
Urban	1223		21 (1.7%)
<b>TOTAL</b>	<b>2658</b>		

### SCREENING INTERVIEWS

Rural	1428	(60 palm)
Urban	1202	(458 palm)
<b>TOTAL</b>	<b>2630</b>	
(3000 planned)		

*Refused main interviews:  
Rural 0 (0%); urban 5 (0.9%)*

### MAIN INTERVIEWS

Rural	393 (259 drinkers/partner drinkers of 388)
Urban	545 (409 drinkers/partner drinkers of 543)
<b>TOTAL</b>	<b>938</b> ( 668* cases, 263 controls)
(1000 total, 750 cases planned)	

*\*7 WOMEN COULD NOT ANSWER MOST QUESTIONS ABOUT PARTNER DRINKING,  
2 DID REPORT THAT THEIR HUSBANDS HAD COME HOME DRUNK AT LEAST ONCE IN THE PAST YEAR*

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# Formative work

- Social mapping of the sampled sites
- Focus groups
- Key informant interviews
- In-depth interviews
- Discussions with local leaders to gain sanctioned entrée
- Presentations at churches and temples to local residents
- Assays of alcohol content of Goan beverages

# Estimated grams of pure ethanol in a peg of liquor

Beverage	Ethanol concentration*	Standard serving & Metric Volume	Ethanol Gram equivalent**
Indian Manufactured Foreign Liquor (IMFL)	42.8%	Small or half 30ml peg	10.19
		Regular 40 ml peg	13.60
		Regular 60ml peg	20.39
		Patiala or Large 80ml peg	27.19
Desi sharaab	40%	Regular 42ml Peg	13.34
Daaru	70.0% (Alcoholmeter assessed)	Regular 40ml Peg	22.23
	42.6% (Chemical analyses)		13.66
	57.5% (Chemical analyses)		18.42
	24.8% (Chemical analyses)		27.54
		Mixed 140ml Peg (40ml Daaru, 100 ml water)	
Coconut Feni	26.9% (Chemical analyses)	Full 60ml peg	12.81
Urrack,	21.6% (Chemical analyses)	Full 60ml peg	10.29
	26.5% (Analox AM3 analyses)		12.61
Cashew Feni :	38.8% (Chemical analyses)	Full 60ml peg	18.48
	36.8% (Analox AM3 analyses)		17.53
Coconut Feni	26.9% (Chemical analyses)	Full 60ml peg	12.81

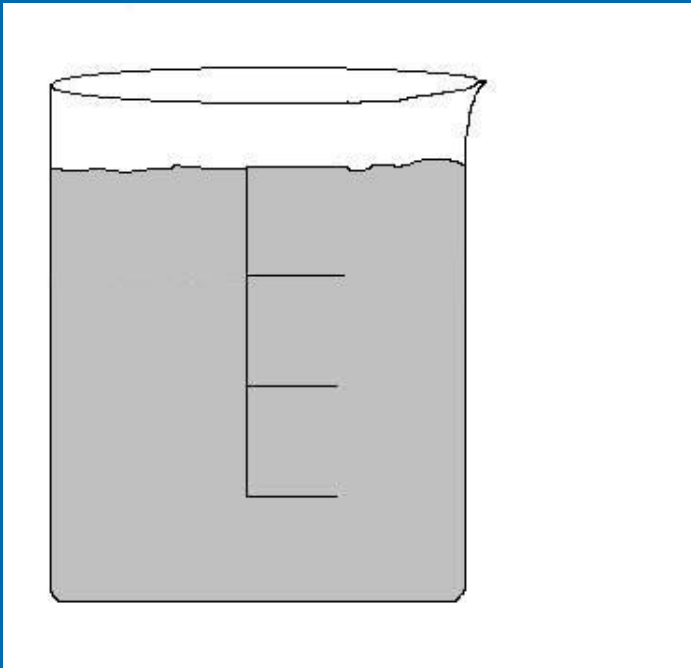
\* Percentages are rounded up to one decimal point

\*\*Gram equivalents of pure alcohol are computed by multiplying the ethanol concentration of the beverage consumed by X the metric volume by .794 (relative weight of alcohol).

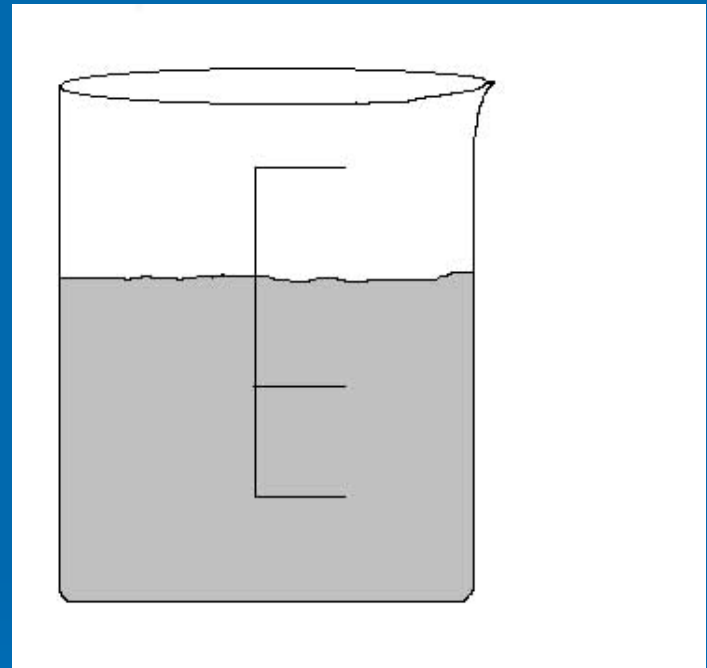
	Container	Grams of ethanol	Grams × Number of containers	Total
<b>Regular Beer</b>	650 ml (full bottle)	26	26 × _____	
	330 ml (pint)	13	13 × _____	
	1 glass (150 ml <i>Not beer mug</i> )	6	6 × _____	
<b>Strong Beer</b>	650 ml (full bottle)	41	41 × _____	
	330ml (pint)	21	21 × _____	
	1 glass (150 ml Not beer mug)	10	10 × _____	
<b>Spirits</b>	750 ml (full bottle)	255	255 × _____	
	375 ml (pint)	127	127 × _____	
	180 ml (quarter)	61	61 × _____	
	90 ml(half quarter)	31	31 × _____	
	60 ml (peg)	20	20 × _____	
	30 ml (half peg)	10	10 × _____	
<b>Wine</b>	750 ml (full bottle)	74	74 × _____	
	375ml (half bottle)	37	37 × _____	
	90 ml(1 glass)	9	9 × _____	
<b>Caju Feni</b>	1000 ml (1 litre –Bisleri bottle)	308	308 × _____	
	750 ml (full bottle)	231	231 × _____	
	375 ml (pint)	116	116 × _____	
	180 ml (quarter)	55	55 × _____	
	90 ml (half quarter)	28	28 × _____	
	60 ml(1 peg)	18	18 × _____	
	30 ml (half peg)	9	9 × _____	
<b>Coconut Feni</b>	1 litre (1000 ml Bisleri bottle)	214	214 × _____	
		160	160 × _____	

## PICTURE CARDS FOR A22 – MAIN INTERVIEW

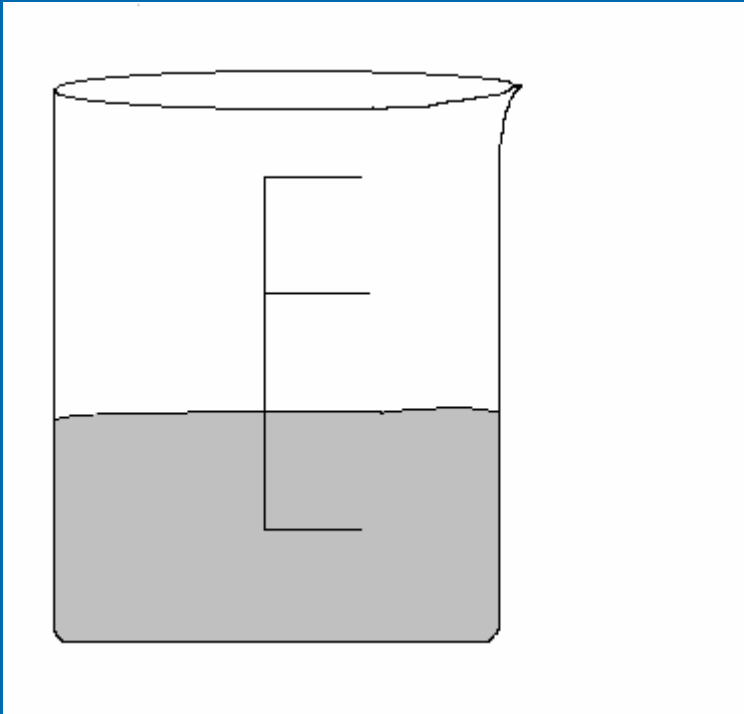
These pictures represent the maximum amount of alcohol you told me you consumed on a single day during the last 12 months and different proportions of this amount.



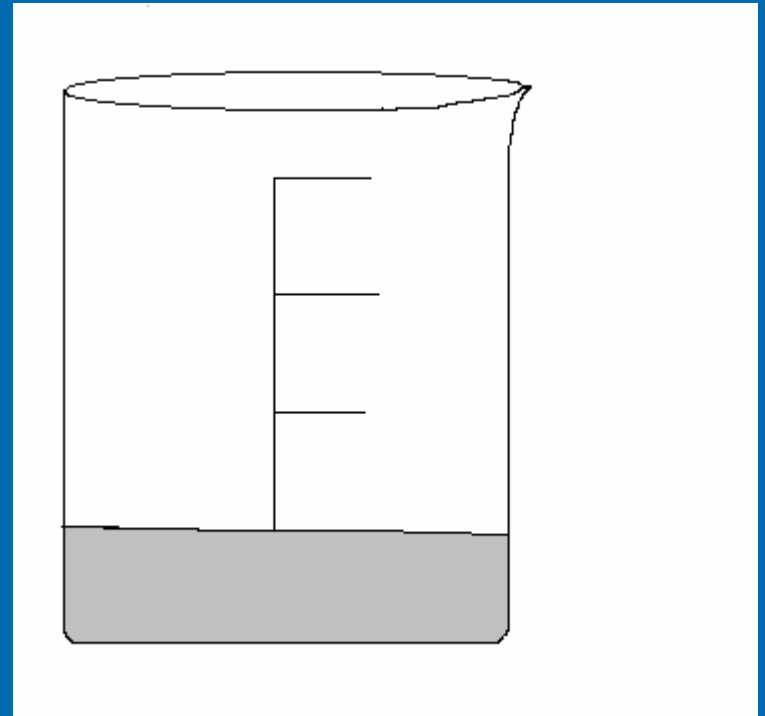
Maximum amount of alcohol you had on a single day during the last 12 months  
(Do not read to respondent: \_\_\_\_\_ gm of ethanol)



$\frac{3}{4}$ <sup>th</sup> of the maximum amount of alcohol you had on a single day during the last 12 months (\_\_\_\_\_ gm of ethanol)



Half of the maximum amount of alcohol you had on a single day during the last 12 months (combination of all you had)



1/4<sup>th</sup> of the maximum amount of alcohol you had on a single day during the last 12 months (combination of all you had)

# Categorical Frequencies for F-GF Levels

**Assesses Max Quantity** in a day by adding up grams of ethanol across all beverage types. Then asks the **Frequency (10 levels) of each of the 4 individually defined quantities** (Max.,  $\frac{3}{4}$ ,  $\frac{1}{2}$ ,  $\frac{1}{4}$  Max.):

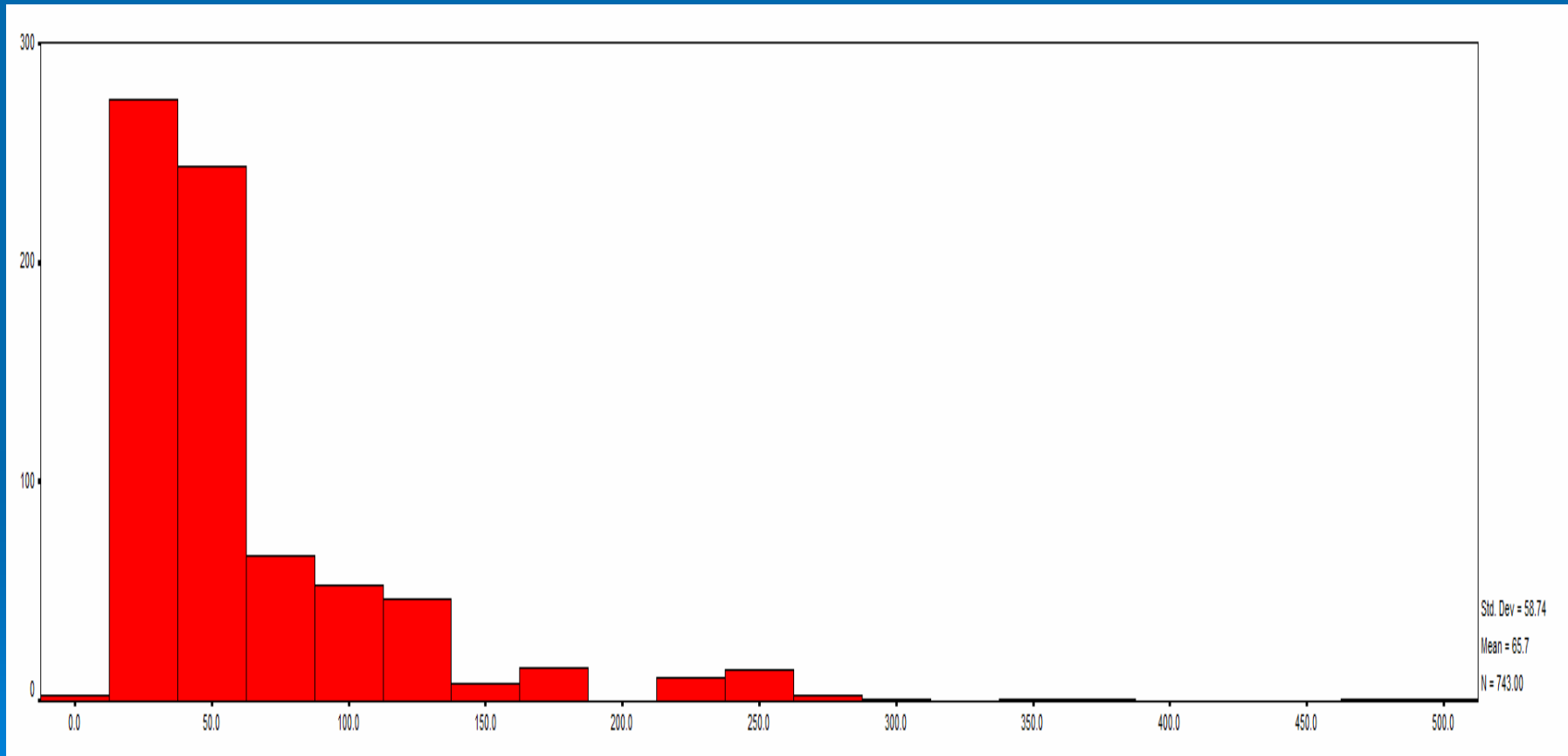
- Every day or Nearly Every Day
- 3-4 times a week
- 1-2 times a week
- 2-3 times a month
- 1 time a month
- 7-11 times in the last 12 months
- 3-6 times in the last 12 months
- 2 times in the past 12 months
- 1 time in the past 12 months
- Never in the past 12 months

## Variables Yielded by the F-GF (or any GF) Measure

- (1) **Volume** Summed QFs (g ETOH or # of “drinks”)
- (2) **Maximum Quantity** of consumption in any day
- (3) **Frequency of Drinking** both overall as well as at each quantity levels: Maximum,  $\frac{3}{4}$ ,  $\frac{1}{2}$ , &  $\frac{1}{4}$  Max.
- (4) **Profile** days of drinking at each quantity level

The frequencies for the GF are typically “capped” from the highest quantity level downward so that the sum of the # of days of drinking across each of the 4 quantity levels is  $\leq 365$  days.

# Distribution of Maximum Amount in Any Day In Prior 12 Months for Goan Male Drinkers (n=743)



5 Drinks

10 Drinks

20 Drinks

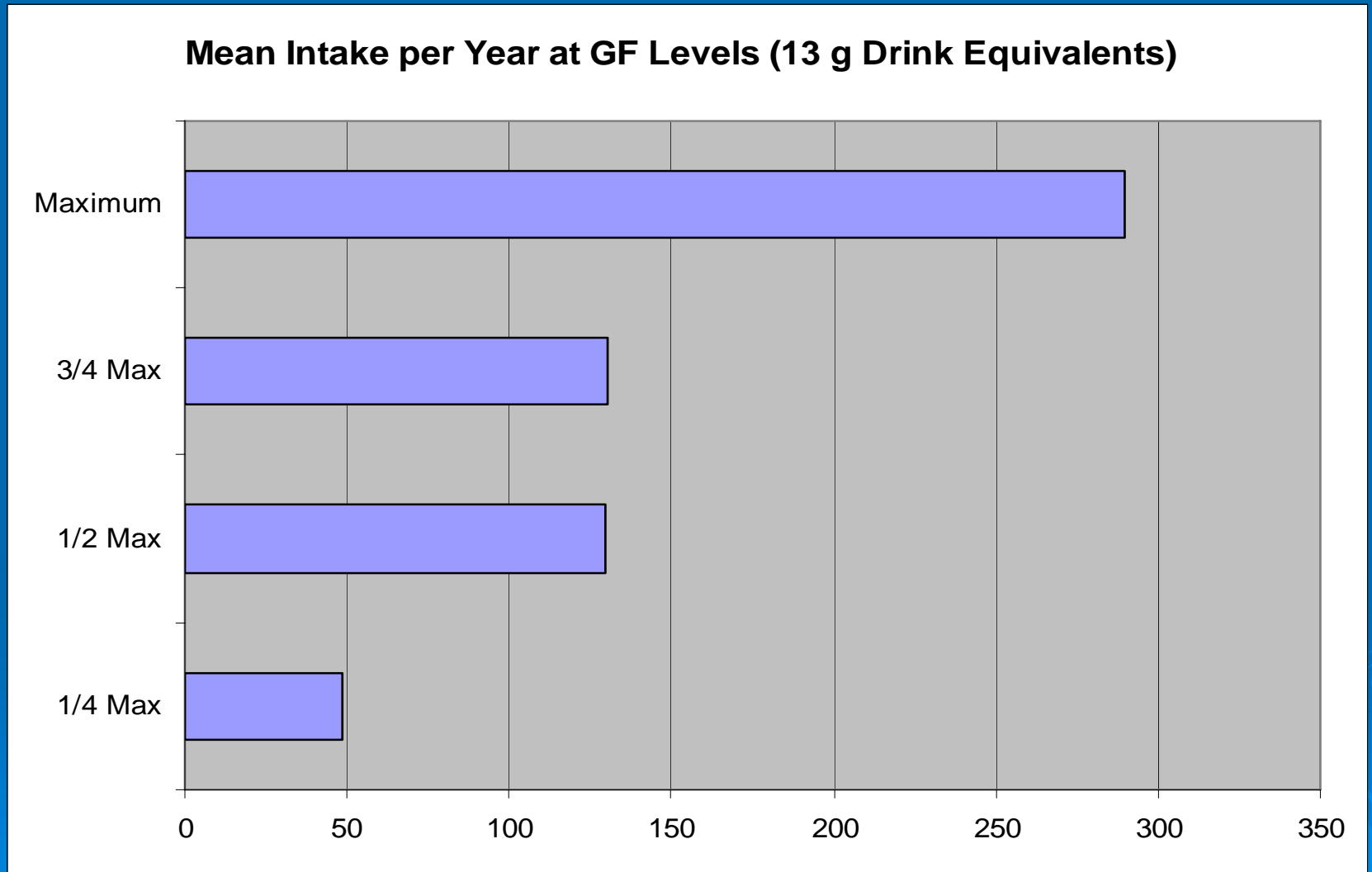
30 Drinks

40 Drinks

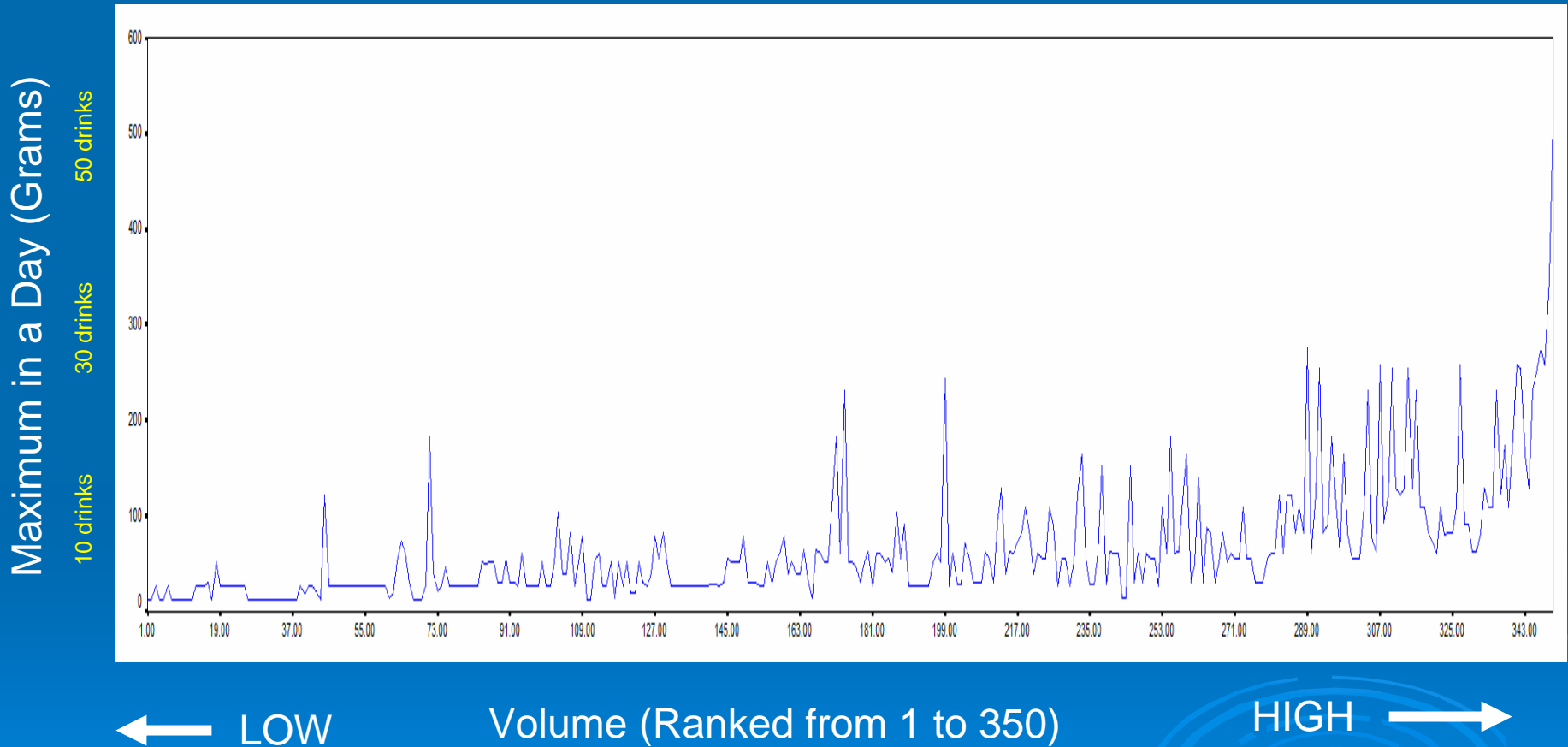
50 Drinks

Maximum Quantity Consumed in a Day in Grams ETOH (and 10 g drinks)

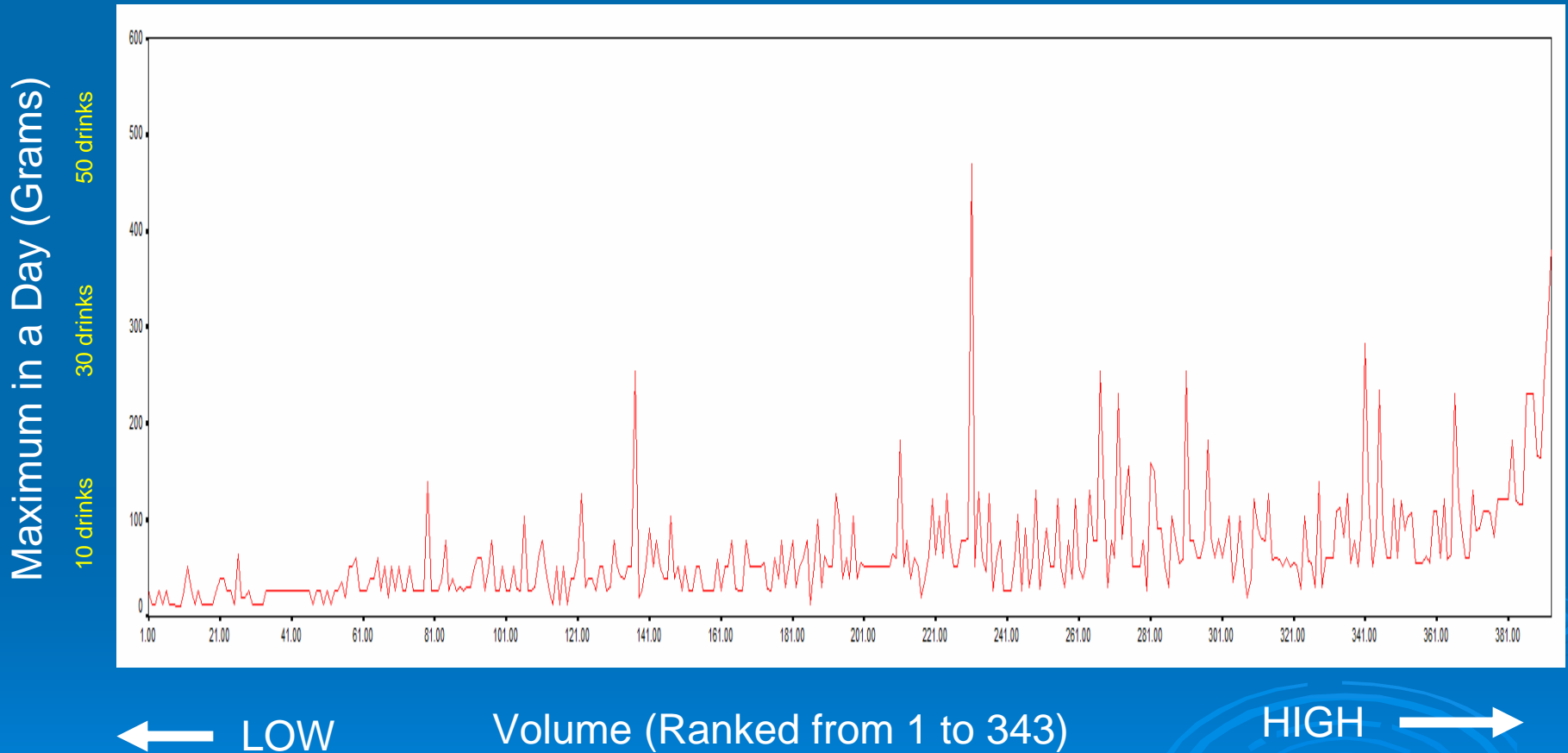
## Mean Intake at each Fractional GF level for 354 drinkers in Rural Goa



# Maximum for Rural Male Drinkers Ordered by Average 12-Month Volume



# Maximum for Urban Male Drinkers Ordered by Average 12-Month Volume



# F-GF Measure Results for Goan Rural and Urban Males

Among **All** Male Drinkers (n=743)

Drinking Level	Mean (SD) Quantity (Grams)	Percent Capped ( $\geq 365$ days) at level	Quantity Range (Min, Max) in Grams	Capped Mean (SD) Frequency	Uncapped Mean (SD) Frequency	Mean % of Total Frequency (Capped)	Mean % of Total Volume (Capped)
Max	65.8 (56.9)	5.2%	(10,510)	41.7 (86.5)	41.7 (86.5)	50.4%	56.1%
$\frac{3}{4}$ Max	49.4 (42.6)	2.2%	(8, 383)	16.4 (55.9)	18.9 (61.5)	11.8%	12.1%
$\frac{1}{2}$ Max	32.9 (28.4)	5.3%	(5, 255)	38.0 (85.6)	40.6 (90.1)	27.6%	24.4%
$\frac{1}{4}$ Max	16.5 (14.2)	2.2%	(3, 128)	12.9 (49.2)	16.6 (56.4)	10.2%	7.4%

## The QF and Beverage Specific Measures

- The **QF** asks **F**requency of any alcohol consumption, last 12 months (like frequency categories of the GF). Then, Usual **Q**uantity on a drinking day as a single open-ended question (combined beverage types). Disadvantages: No measure of variation in drinking, heavy drinking, or type/s of beverage.
- In the **BevS**, assesses each beverage type separately—frequency of drinking occasions over the past month using categories *roughly* similar to the GF. Then, for each beverage, asks the proportion of the time drinking 5+, 3-4, and 1-2 standard drinks. Disadvantages: Provides no direct measure of heavy drinking (amount in a day), quantity levels are truncated at 5+, Frequency categories for each beverage type start at 3x a day (90 drinking events per month) which might lead to over estimation of frequency/volume (remedy – cap at 1/day=30). In Goa, asked only for those who reported drinking  $\geq$  monthly.

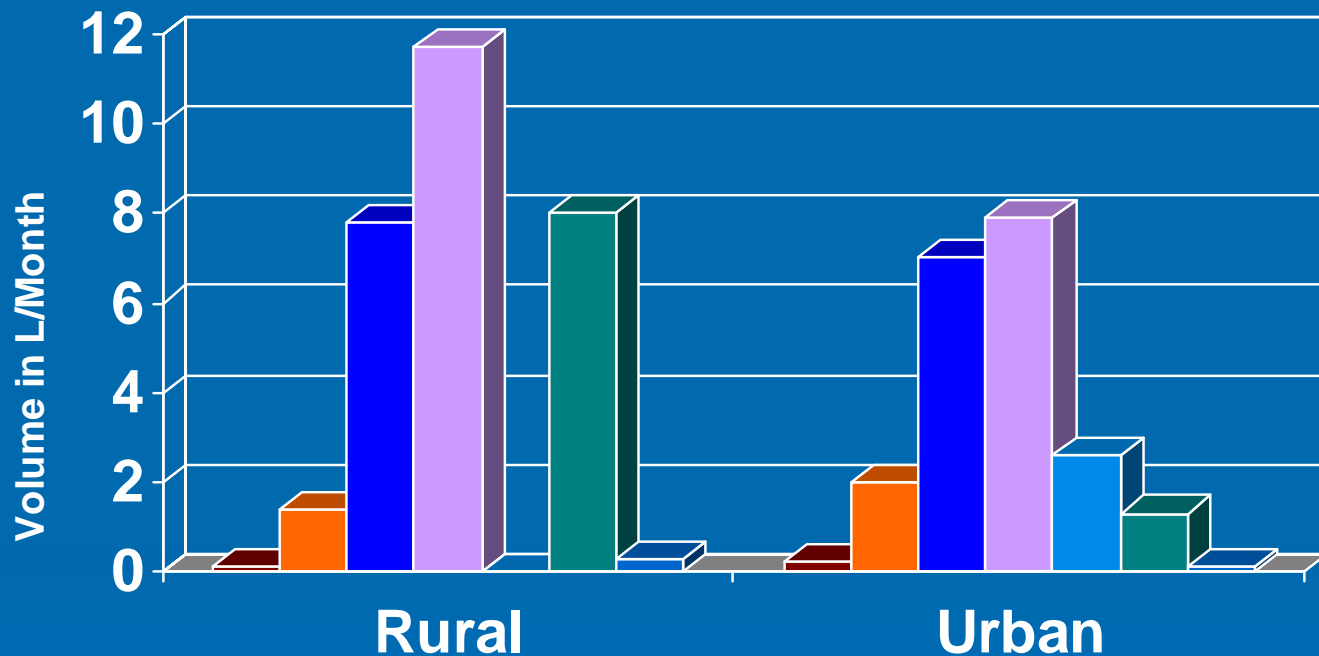
# Beverage Specific Results for Goa

Among **All Male Drinkers** reporting **Drinking at least Monthly** (n=549)

Beverage Type	Number Reporting any Consumption	Monthly Mean (SD) Volume in grams	Mean Monthly Frequency (Uncap, Cap)	Mean Monthly Volume in Liters ETOH
Wine	103	11.7 (37.5)	0.5, 0.6	0.2
Beer	419	119.2 (202.6)	3.9, 3.7	1.8
Spirits (IMFL or imported)	284	480.2 (714.6)	9.6, 8.9	7.3
Caju Feni	196	658.0 (865.4)	13.7, 11.8	9.9
Coconut Feni	14	143.5 (603.4)	3.4, 1.8	2.2
Urrack	195	335.2 (795.2)	7.3, 5.9	5.1
Mixed Drinks	45	8.1 (10.9)	0.5, 0.5	0.6

# Beverage Specific Results for Goa by Rural/Urban Strata

Male Drinkers who Drink at least Monthly (n=549)



Wine

Beer

Spirits

Caju Feni

Coconut F.

Urrak

Mixed Drinks

## Comparison of QF, F-GF, & BevS Volumes and Frequencies

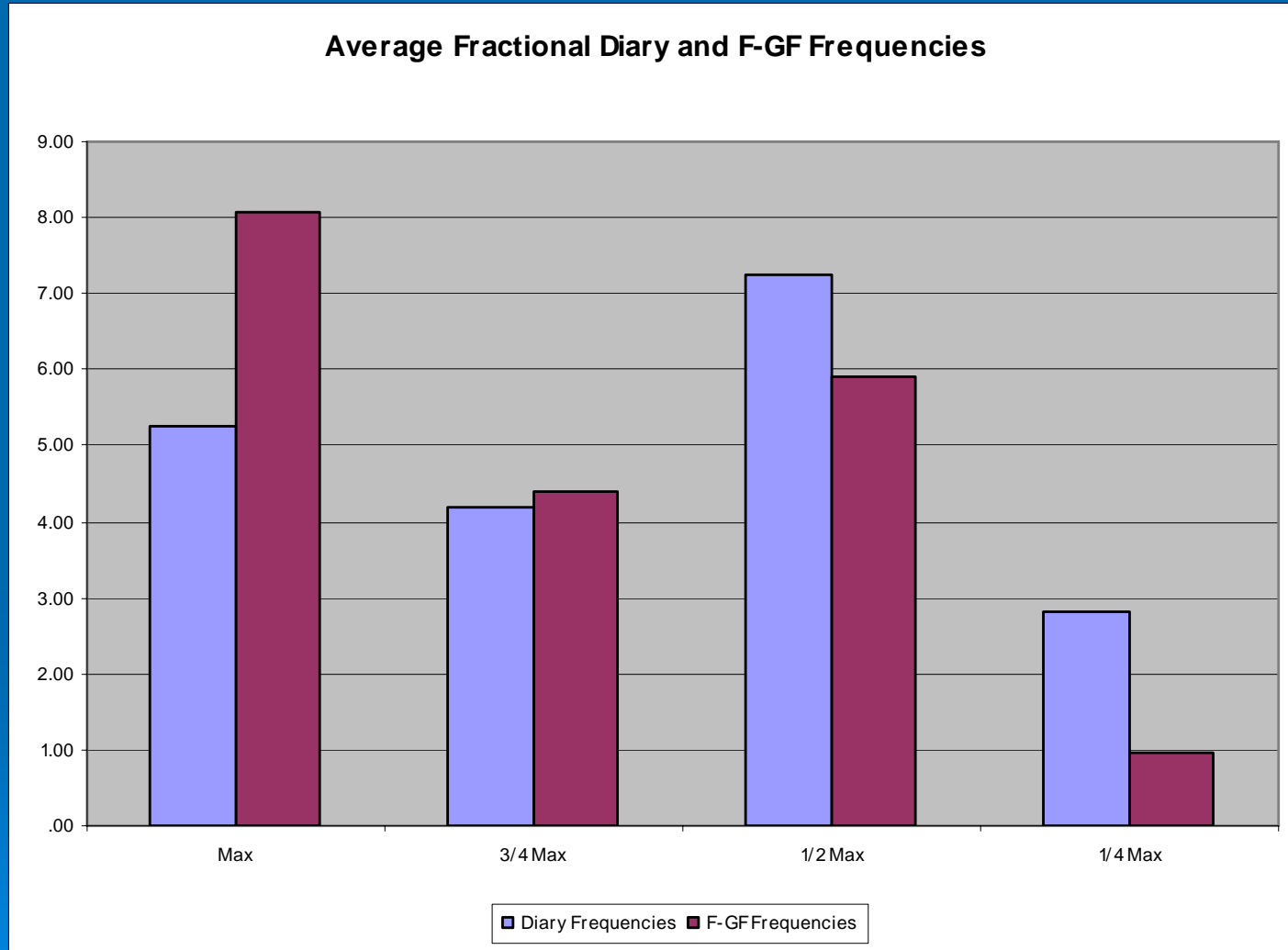
(All Males n=743)

Drinking Measure	Volume Range L (Min, Max)	Mean (SD) 12-Month Volume in Liters ETOH	12 Month Frequency of Drinking
QF	(.05, 471.99)	9.81 (26.97)	125.7 days
F-GF (capped)	(.02, 157.69)	8.58 (16.27)	109.1 days
F-GF (uncap.)	(.02, 267.85)	9.19 (18.49)	117.3 days

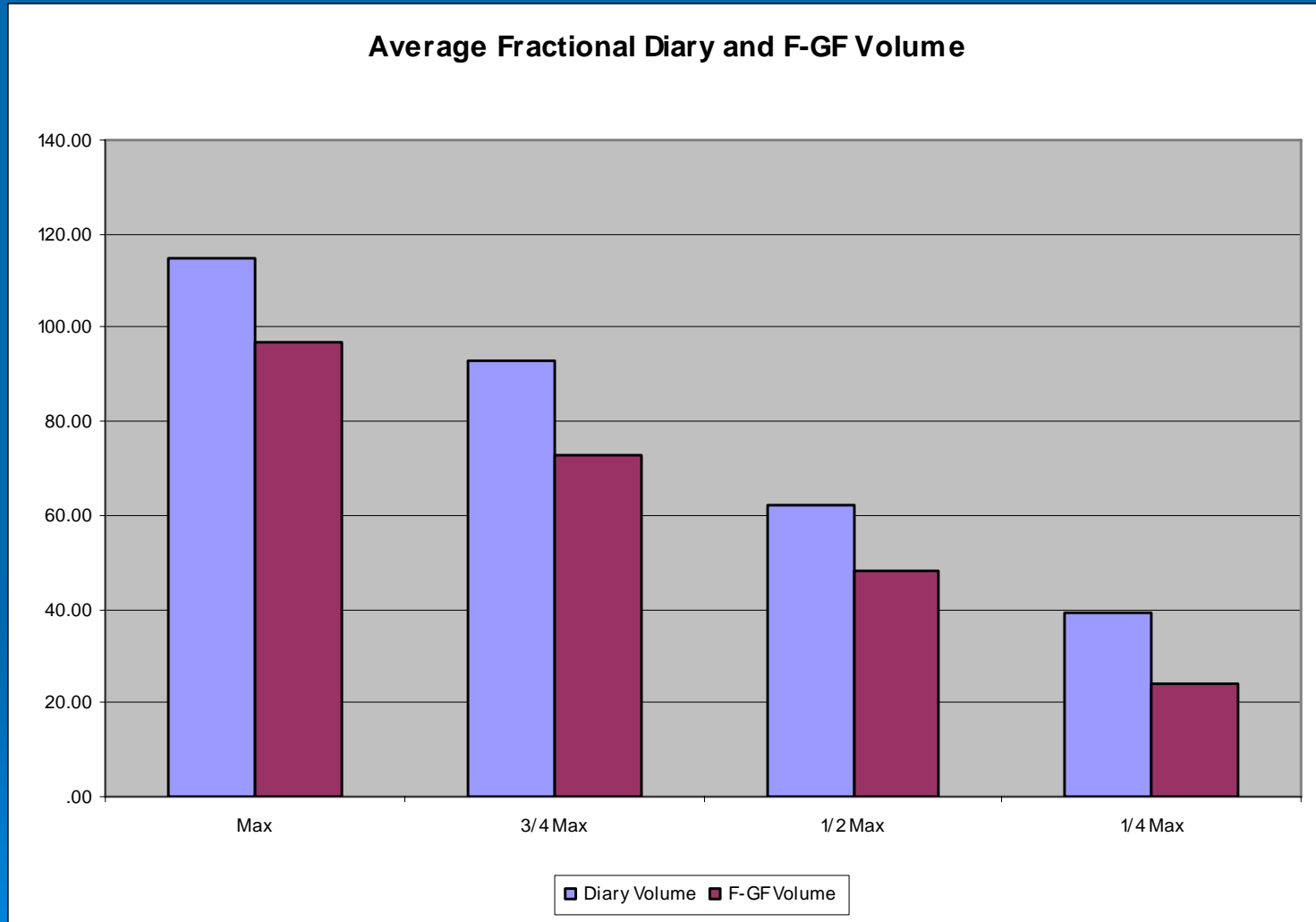
Among those **Male Drinkers** reporting **Drinking at least Monthly** (n=542)

Drinking Measure	Volume Range L (Min, Max)	Mean (SD) 12-month Volume in Liters ETOH	12 Month Frequency of Drinking (Capped/Uncapped)
QF	(.15, 471.99)	13.3 (30.8)	169.4 days
F-GF (capped)	(.15, 157.69)	11.7 (18.1)	146.9 days
F-GF (uncap.)	(.15, 267.85)	12.5 (20.7)	158.1 days
Bev Specific	(.15, 106.20)	10.8 (15.5)	167.5 / 187.8 days

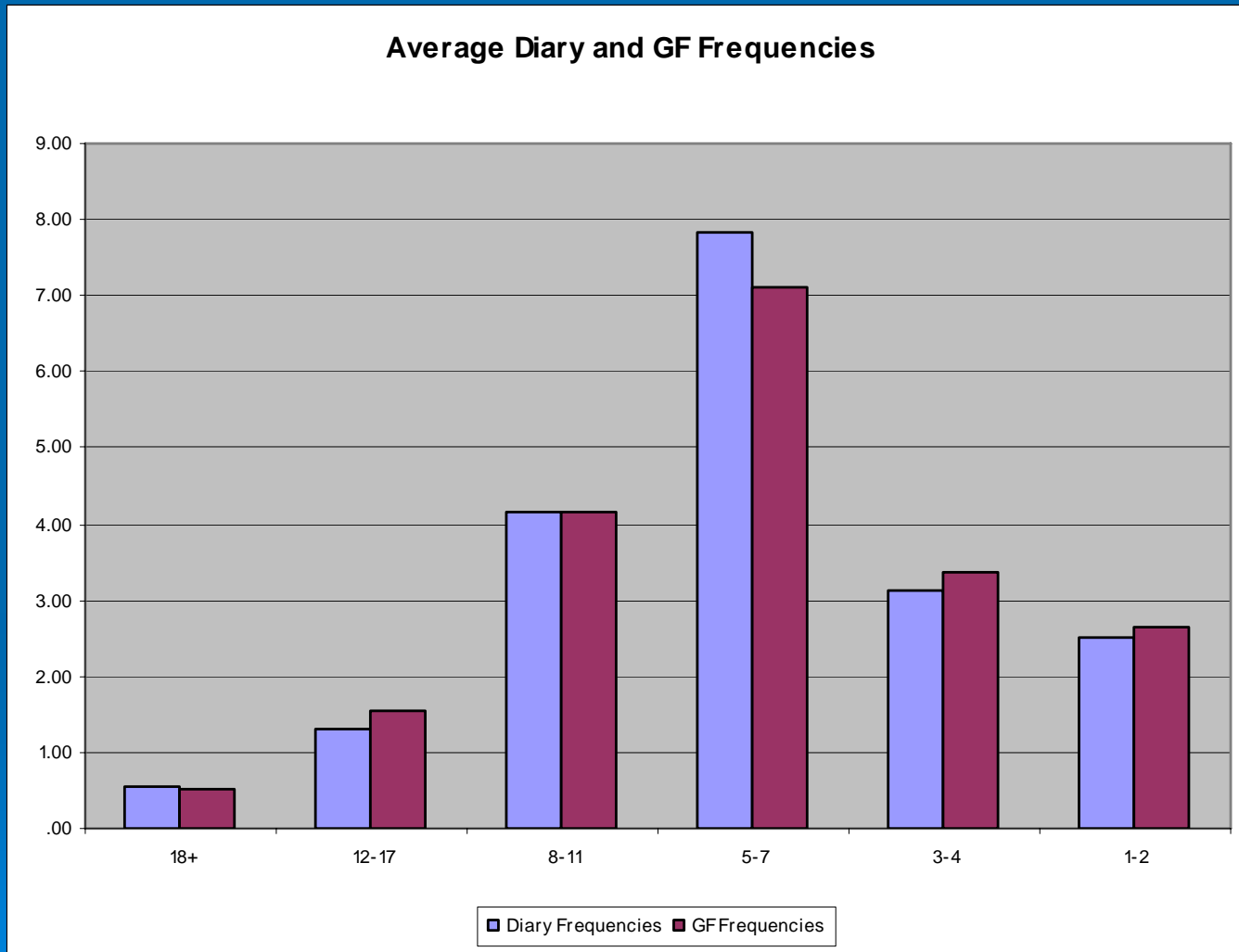
# Comparison between Diary (partitioned as in F-GF) and F-GF Data



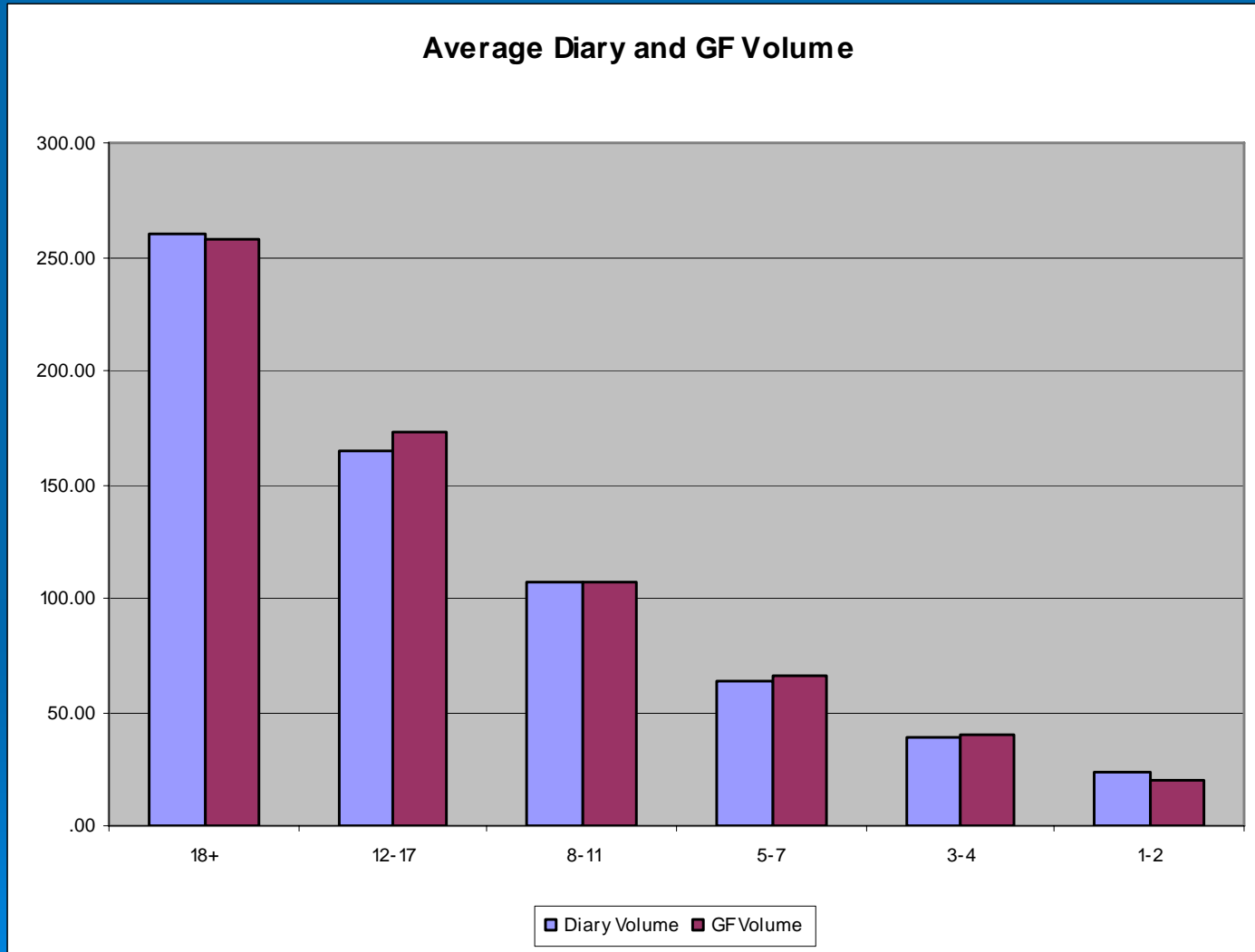
# Comparison between Diary (partitioned as in F-GF) and F-GF Data



# Comparison between Diary and F-GF – Both in Drink-based Levels



# Comparison between Diary and F-GF – Both in Drink-based Levels



## Comparison of Measures and F-GF with Diaries

Overall, approximately 56% of the total volume came from drinking at the maximum quantity on about half the drinking days (averaging 60 g ethanol or 5 US standard drinks, with 15% having > 120 g and 5% > 180 g in a day).

Mean 12-month volumes for males drinking at least monthly (n=542) ranged from 13.3 (QF) to 10.8 (Bev-S) Liters ethanol with F-GF intermediate.

For Hazardous drinkers, QF and F-GF assessed volumes in drinks/day were slightly (but not significantly) lower and higher than diary-based volume (i.e., differing less than half a 12 oz bottle of beer), and were correlated .67 and .57, respectively.

## Agreement of Measures with Diaries - Summary

The GF yielded the largest proportion of drinking days (6.2% more) followed by Diary and QF usual frequency (1.6% less).

The F-GF yielded a maximum quantity differing little and not significantly (2.5 grams lower) from the Diary maximum but variability was great and the correlation only modest (.54).

When converted to gram equivalents, excellent group agreement between F-GF and Diaries, serving to provide preliminary validation for F-GF.

## Conclusions

The F-GF is clearly more efficient for assessing drinking pattern than intensive daily diary assessment. Summary measures for use in India are feasible if they carefully assess local beverage types and drink ethanol content. They are reasonably valid and so recommended for assessing alcohol intake patterns and identifying hazardous drinking associated with various problems in epidemiological and clinical studies.

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