

WIYN Spectroscopy

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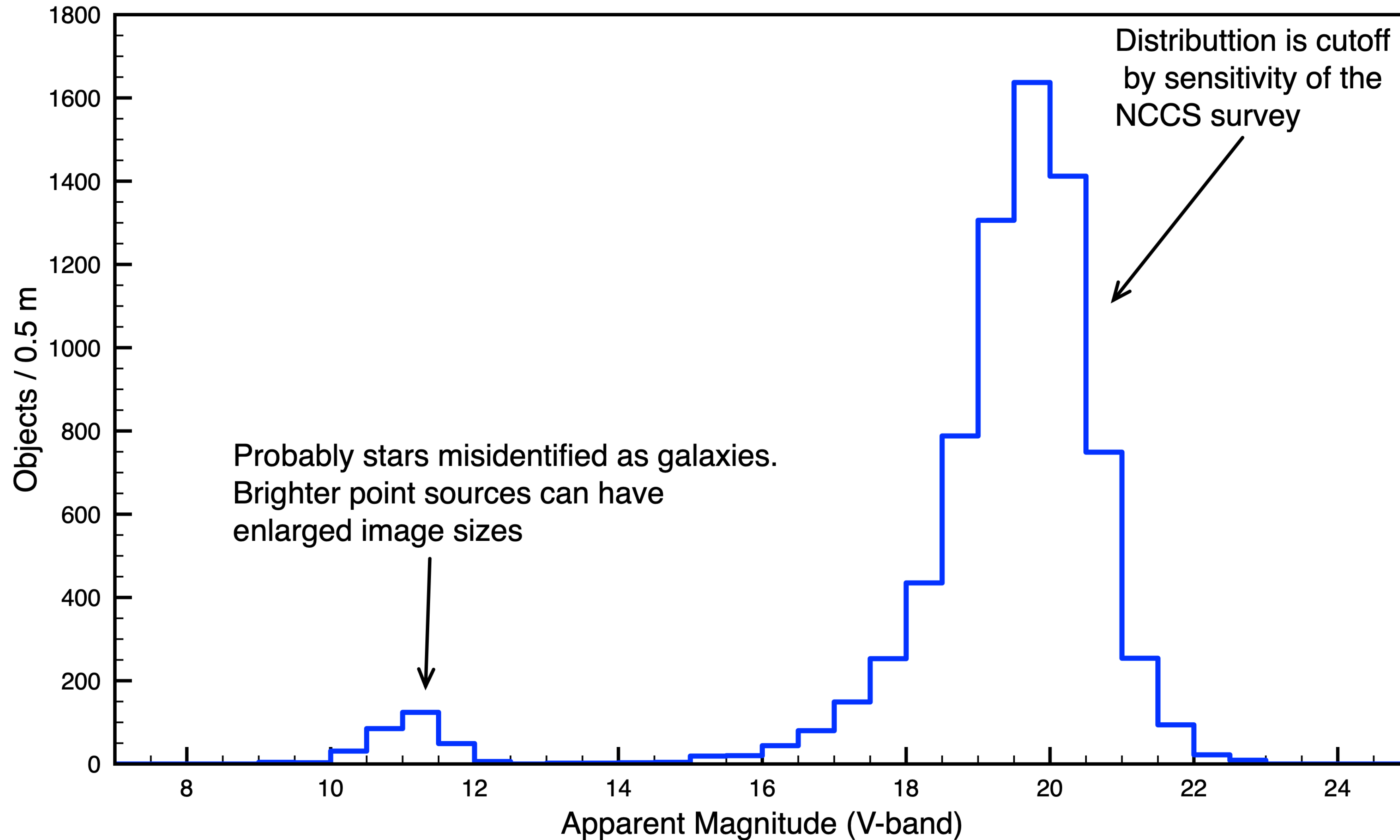


WIYN Spectroscopy

- Goal: Measure the redshift of all galaxies with $\text{dec} > 87$ deg and $z < 0.07$
- Technique: WIYN hydra, multi-object (~ 100) spectrograph
- Observing: Nov 21-22, 2020, Feb 1-2, 2021, Jun 11-12, 2021, Jun 15-16, 2021, Aug 1-2, 2021, Mar 7-9, 2022 (13 nights - mostly Tucker & students with some help from Marriner & Stebbins)
- Target selection: From NCCS Catalog (Tucker & students)
- Spectrum reduction: Special purpose code (Marriner)
- Spectrum analysis: Manual (Marriner)



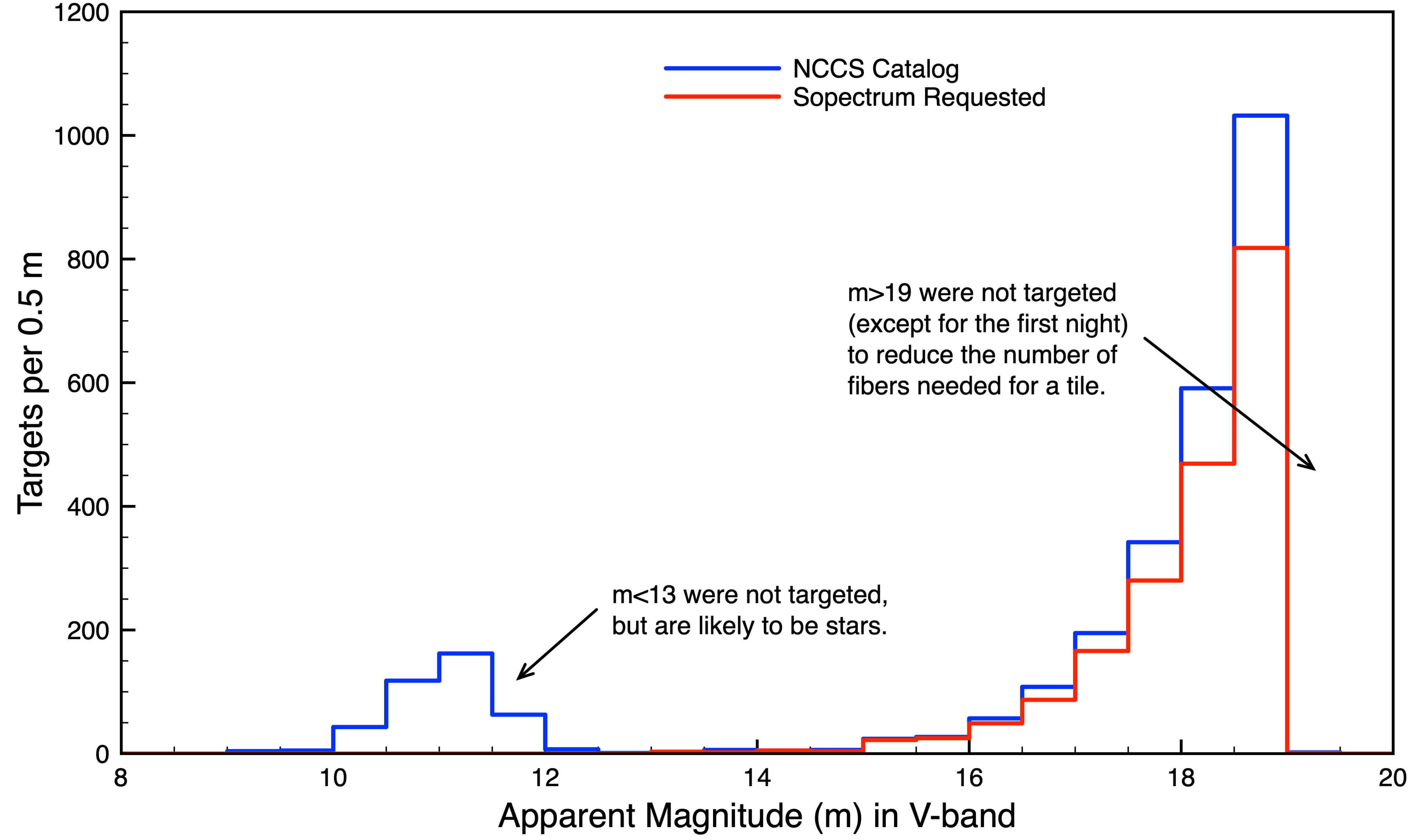
NCCS Catalog - a VRI survey



Dec > 87 degrees
pecc >= 2
status = 3



Target Magnitude Distribution





Some statistics

Targets are selected from the NCCS catalog with

$13 < m < 19$

(There are 403 targets with $m < 13$)

$\text{Dec} < 87.0$

$\text{pecc} > 2$

*Fiber requested in hydra file, but was not assigned on the telescope.

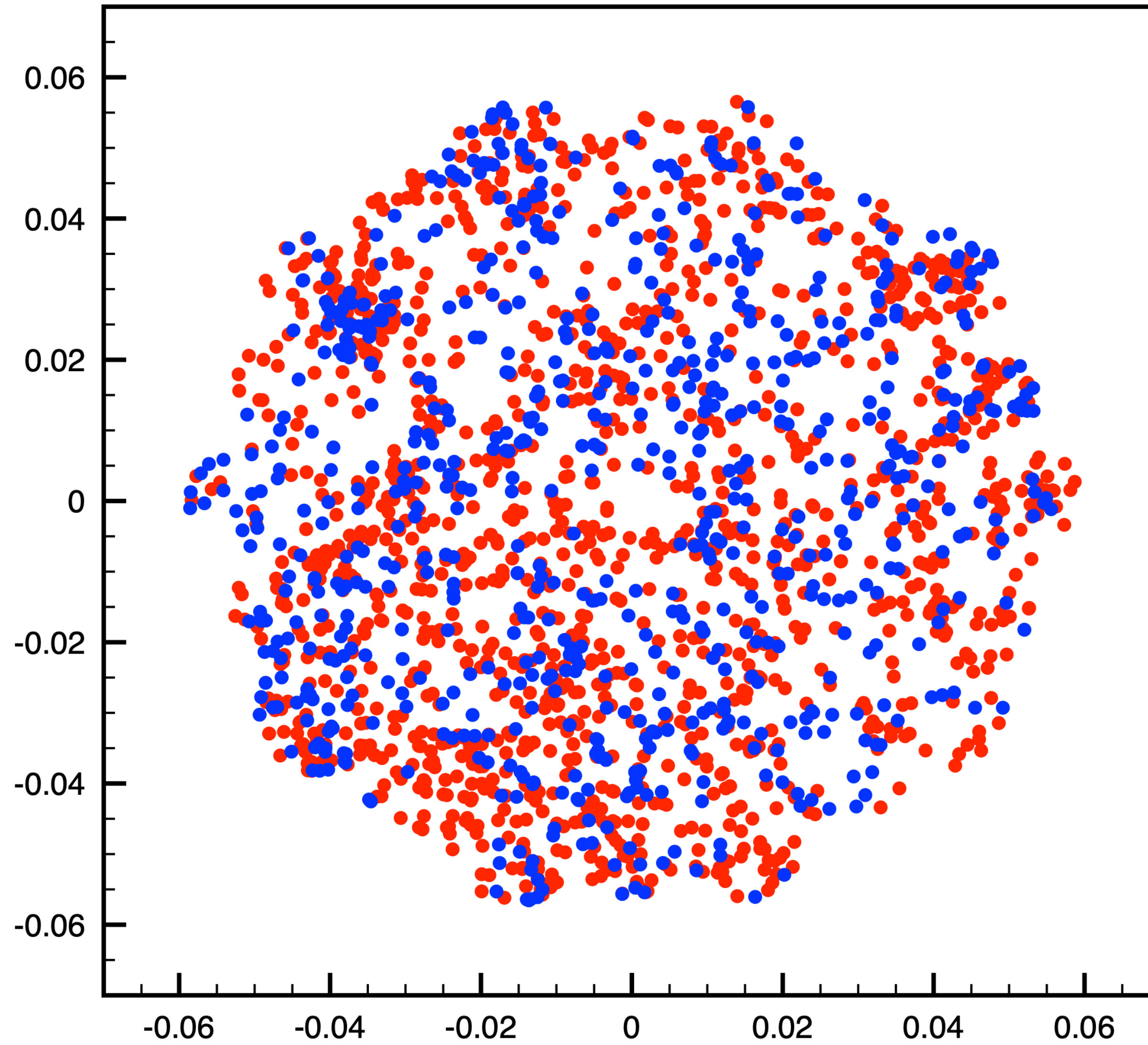
**Aperture 21 is listed as working in the hydra configuration file, but acts like a broken fiber.

Targets	2102
Never targeted	172
Targets with $m < 13$	403
Targets w/ spectra (attempts)	1930
Targets with 2 spectra	105
Targets with 3 spectra	7
Fiber placement error*	49
Aperture 21 loss**	42
Targets w/ analyzable spectra	1839
Targets with $Q \geq 1$ redshifts	724
Targets with no redshifts	1115



Map of Targets

Blue=Redshift Determined
Red=Redshift not Determined





Tiles with 4 or more targets not attempted

Tile	Untargeted	m<17	Q<0	Q=0
tile15h36m+87d18m	37	2	0	0
tile00h00m+90d00m	23	1	0	0
tile00h00m+87d06m	12	0	2	0
tile00h00m+89d12m	8	1	0	0
tile16h48m+88d42m	6	1	0	1
tile21h36m+87d06m	6	0	0	0
tile18h00m+87d18m	5	0	0	2
tile15h36m+88d00m	5	0	0	2
tile09h36m+88d30m	4	0	0	0



Targets with $m < 17$ but no spectra

Tile	Untargeted	$m < 17$	$Q < 0$	$Q = 0$
tile21h36m+87d48m	3	1	0	0
tile14h24m+87d48m	2	0	2	0
tile01h12m+87d18m	1	0	1	0
tile03h36m+87d18m	1	0	1	1
tile01h12m+88d00m	0	0	1	0



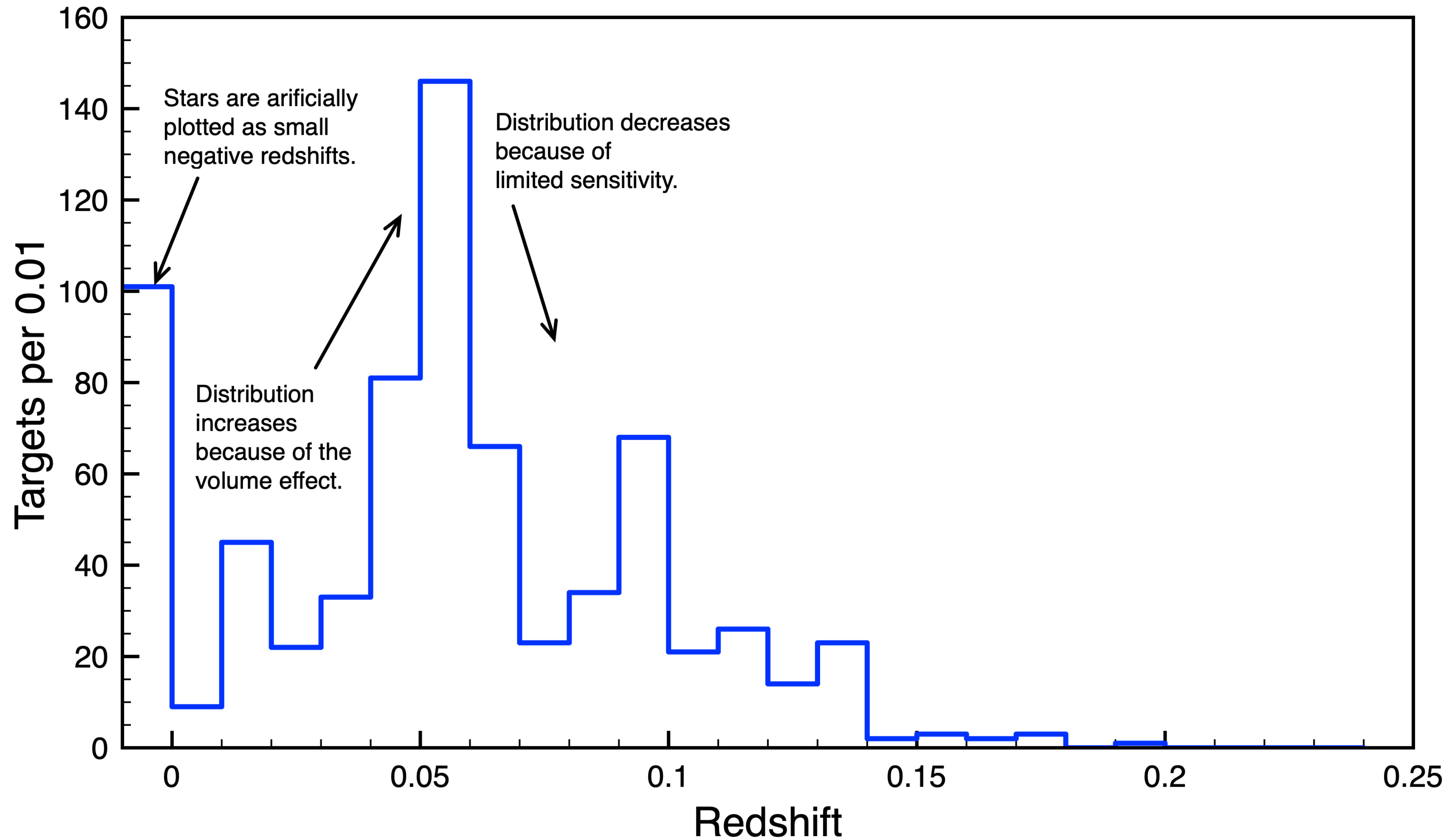
Targets with $m < 17$ spectra but no redshift

Tile	Untargeted	$m < 17$	$Q < 0$	$Q = 0$
tile21h36m+88d42m	3	0	0	4
tile02h24m+87d06m	3	0	0	3
tile07h12m+87d06m	3	0	0	2
tile13h12m+87d18m	3	0	0	2
tile07h12m+87d48m	3	0	0	2
tile16h48m+87d06m	0	0	0	2
tile20h24m+87d18m	0	0	0	2
tile04h48m+87d06m	0	0	0	2

***Plus 16 tiles with a single $m < 17$, $Q = 0$**

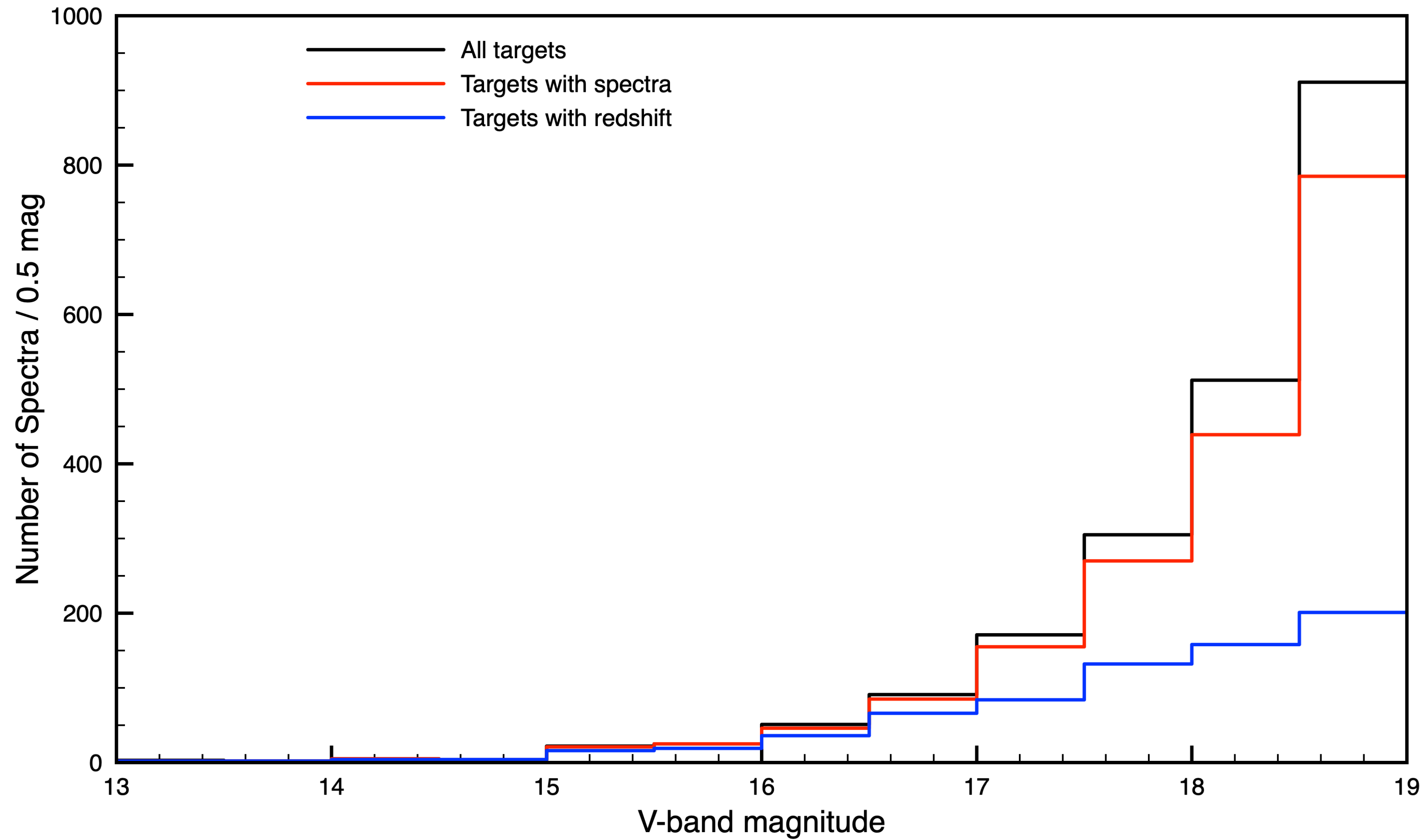


Redshift Distribution





Spectrum Magnitude Distribution





Quality Distribution

Quality	Description (Misidentification
0*	No redshift
1	Possible redshift (50%)
2	Good guess (75%)
3	Good redshift (10%)
4	Solid redshift (1%)
5	Secure redshift (0%)

Featureless spectrum & low magnitude	340
Quality not given. Zero assumed	158

