SOXS Science Consortium Meeting

WG13

Survey results

M.T. Botticella & S. Benetti on behalf of WG13

Participants

WG2 Stellar variability, exoplanets and Young Stellar Objects

WG3 Transient X-ray binaries, magnetars, ultraluminous X-ray sources

WG4 Cataclysmic variables, novæ & white dwarfs

WG5 Supernovae Ia

WG6 Fast and extreme transients

Rapidly evolving and Super Luminous Supernovae

FBOT SBO very young Supernovae

WG7 Intermediate luminosity transients

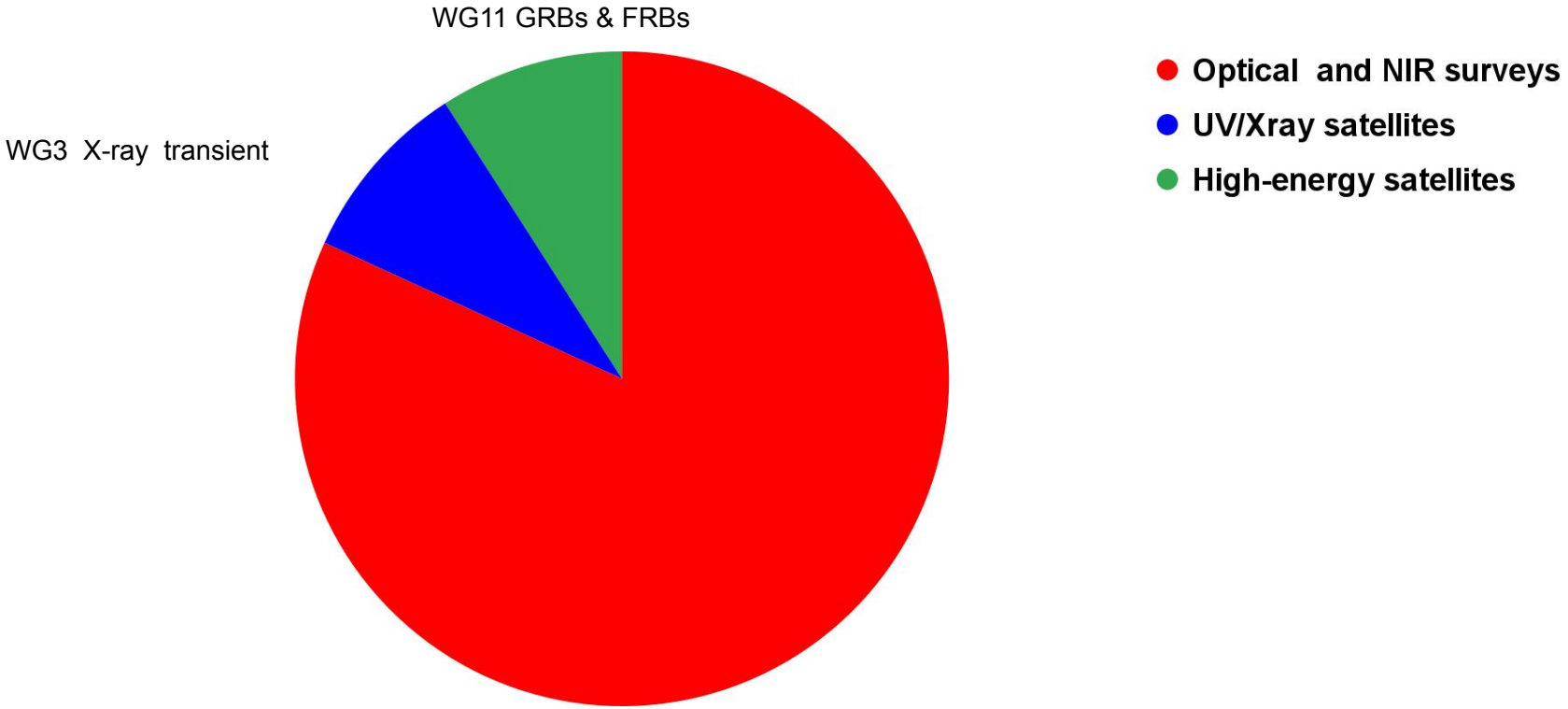
WG8 Core Collapse Supernovae

WG10 Tidal Disruption Events and nuclear transients

WG11 Gamma Ray bursts & Fast radio bursts

WG12 Gravitational wave and neutrino counterparts

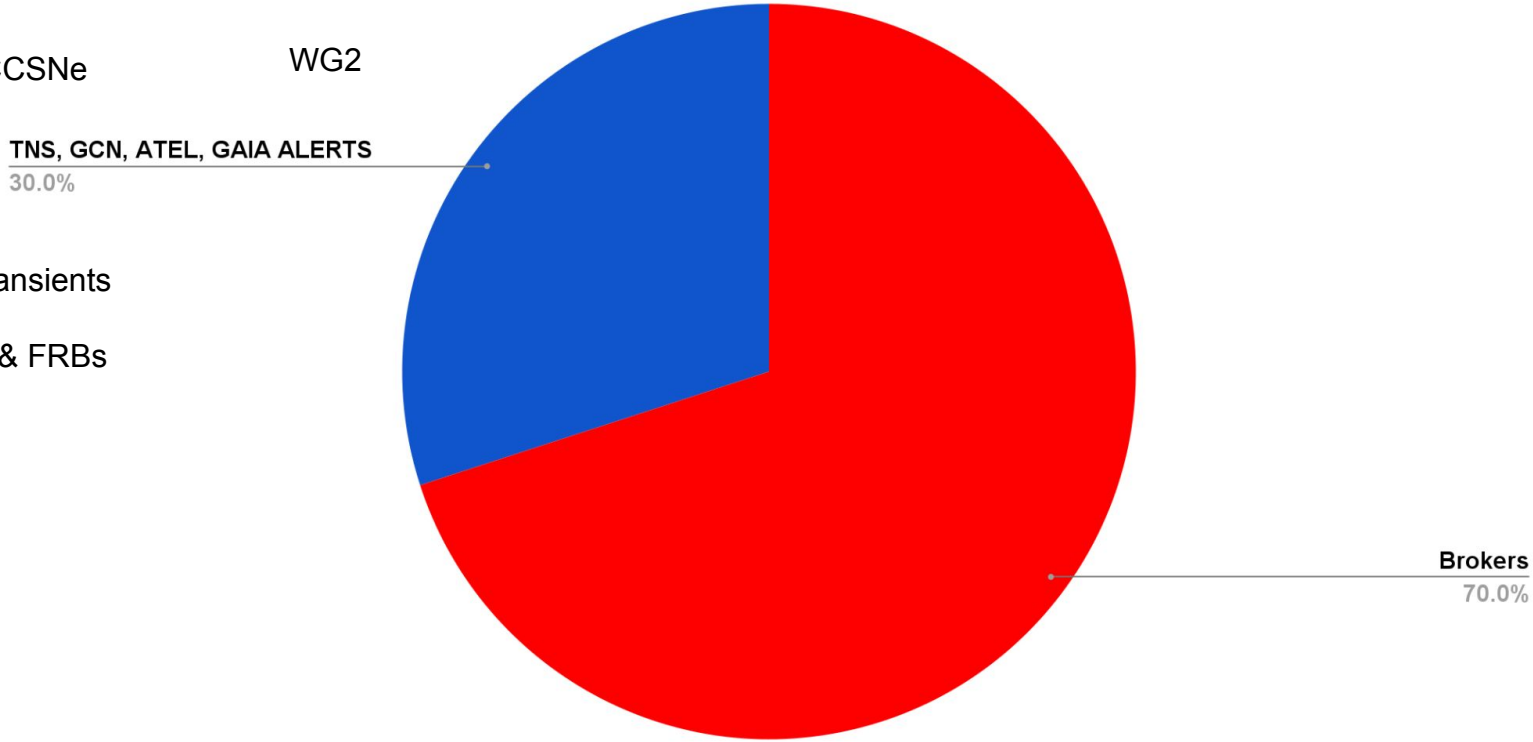
Which is the main source of your targets for classification ?



Do you use a broker/service to receive alerts?

WG8 CCSNe

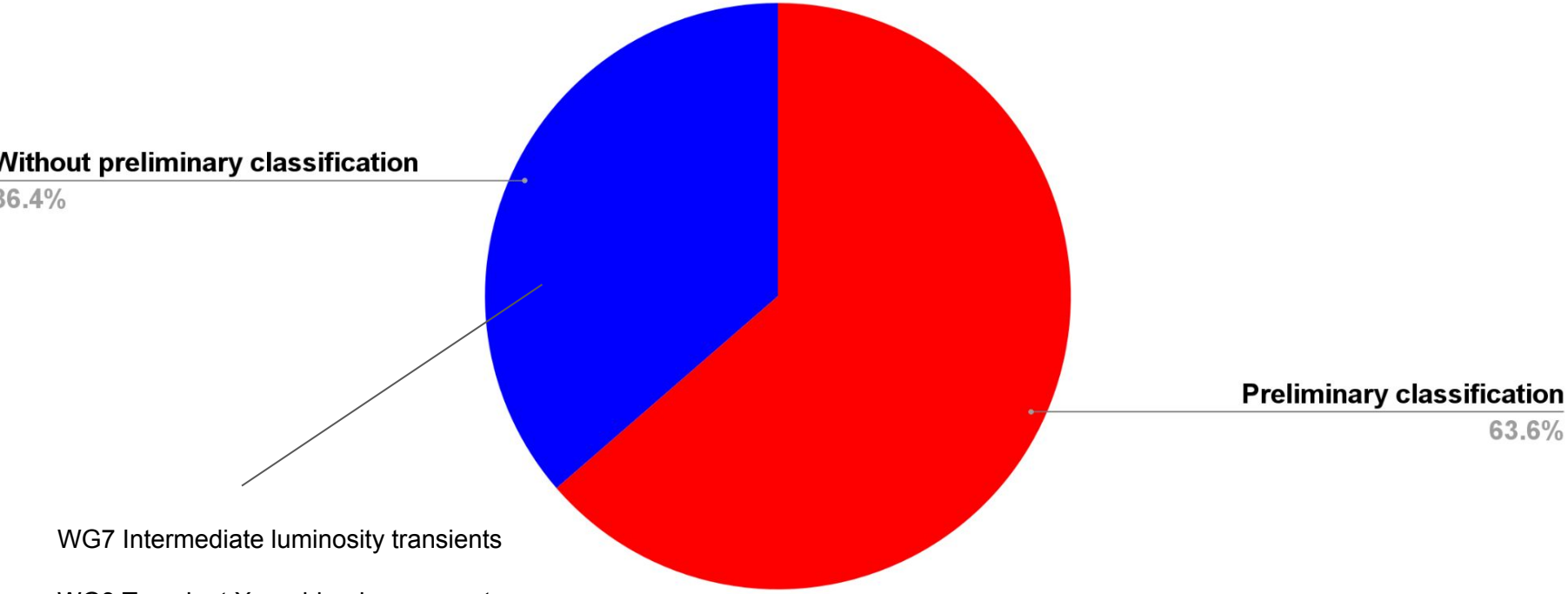
WG2



WG3 X-ray transients

WG11 GRBs & FRBs

Do you have a preliminary photometric classification?



WG7 Intermediate luminosity transients

WG3 Transient X-ray binaries, magnetars, ultraluminous X-ray sources

WG11 GRBs & FRBs

Priority criteria for classification targets

WG2 - Stellar variability, exoplanets and Young Stellar Objects

1) Significant and rapid brightness enhancement in the light curve (2 mag in the optical, dmag/dt of milli-mag/day);

2) Object classified as YSO (Gaia distance, location on a star forming region, SED and colors typical of a YSO);

3) Historical lightcurve from optical to WISE

WG3 - Transient X-ray binaries, magnetars, ultraluminous X-ray sources

Targets will be chosen based on scientific considerations (to be discussed)

WG4 - Cataclysmic variables, novæ & white dwarfs

The brightest have the highest priorities

WG5 - Supernovae Ia

Infant discovery

nearby (less equal 50 Mpc)

peculiarities, e.g., early excess

Priority criteria for classification targets

WG6 - Fast and extreme transients

For rapidly evolving transients: Young age (<1-2d), rapid rate of brightness change, blue color, brightness (if R<20 observe anyway);

For SLSNe: small host, long rise time, known absolute magnitude above -20.

WG7- Intermediate luminosity transients

Absolute magnitude (targets with M < -14.5)

light curve properties

available pre-discovery archival data

WG8 - Core Collapse SNe

Host galaxy redshifts (for a volume limited survey)

Priority criteria for classification targets

WG10 - Tidal Disruption Events and nuclear transients

Nuclear

blue color

E+A host

TBD

WG11 - Gamma Ray bursts & Fast radio bursts

A source which falls within the GRB error circle provided by satellites (radius from a few arcsec to a few arcmin)

WG12 - Gravitational wave and neutrino counterparts

Extreme and/or young.

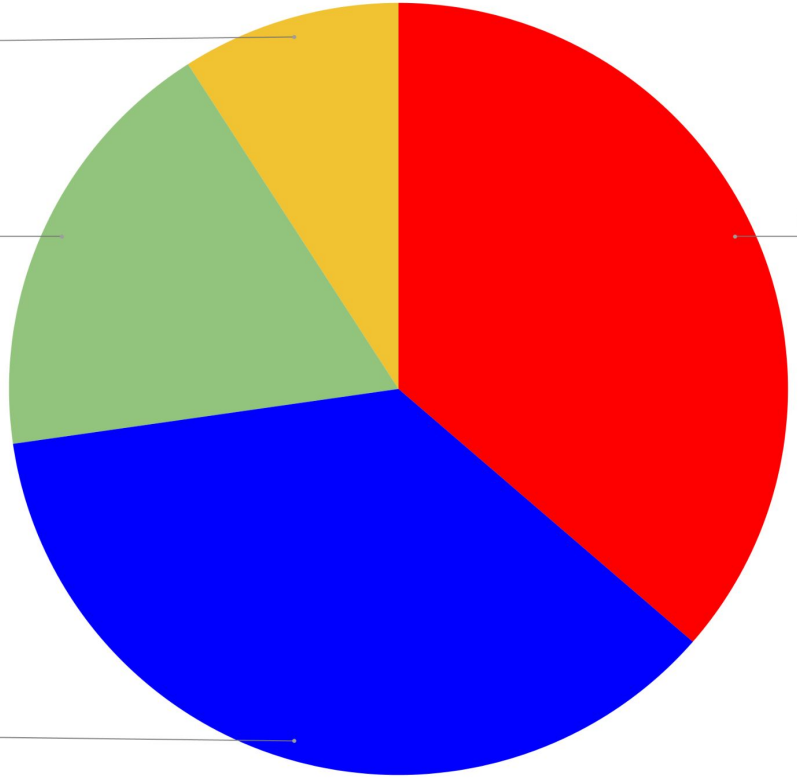
Luminosity (faint and bright)

lightcurve duration (fast or very slow)

How would you like to assign priorities to classification targets?

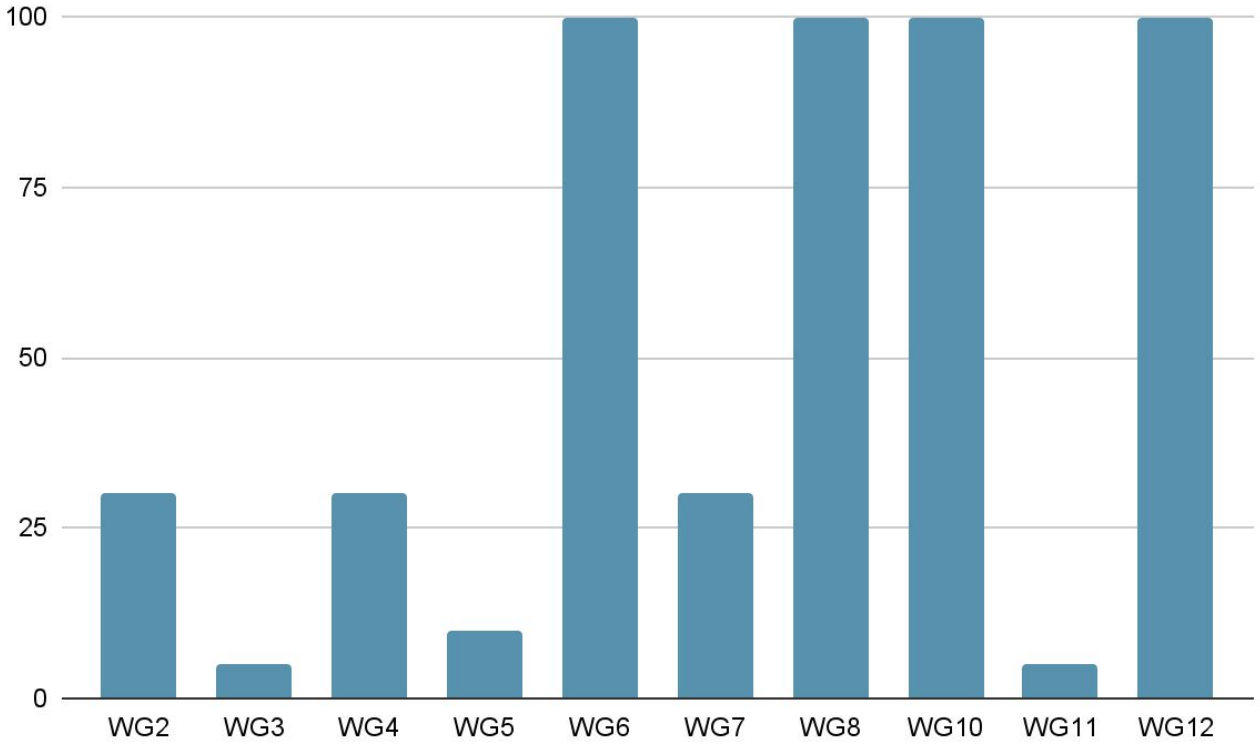
WG 11 GRBs & FRBs
from GCN info

WG5 SNe Ia
WG6 Fast and
extreme transients

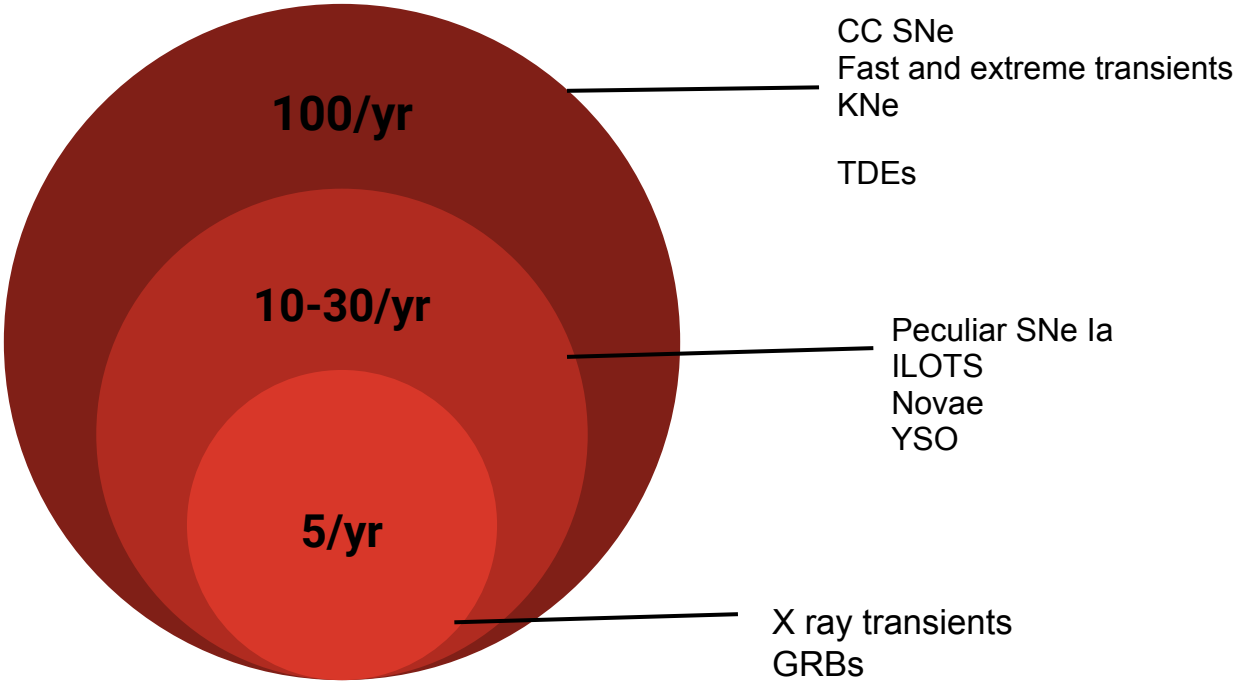


WG 3 X-ray transients
WG8 CC SNe
WG10 TDE

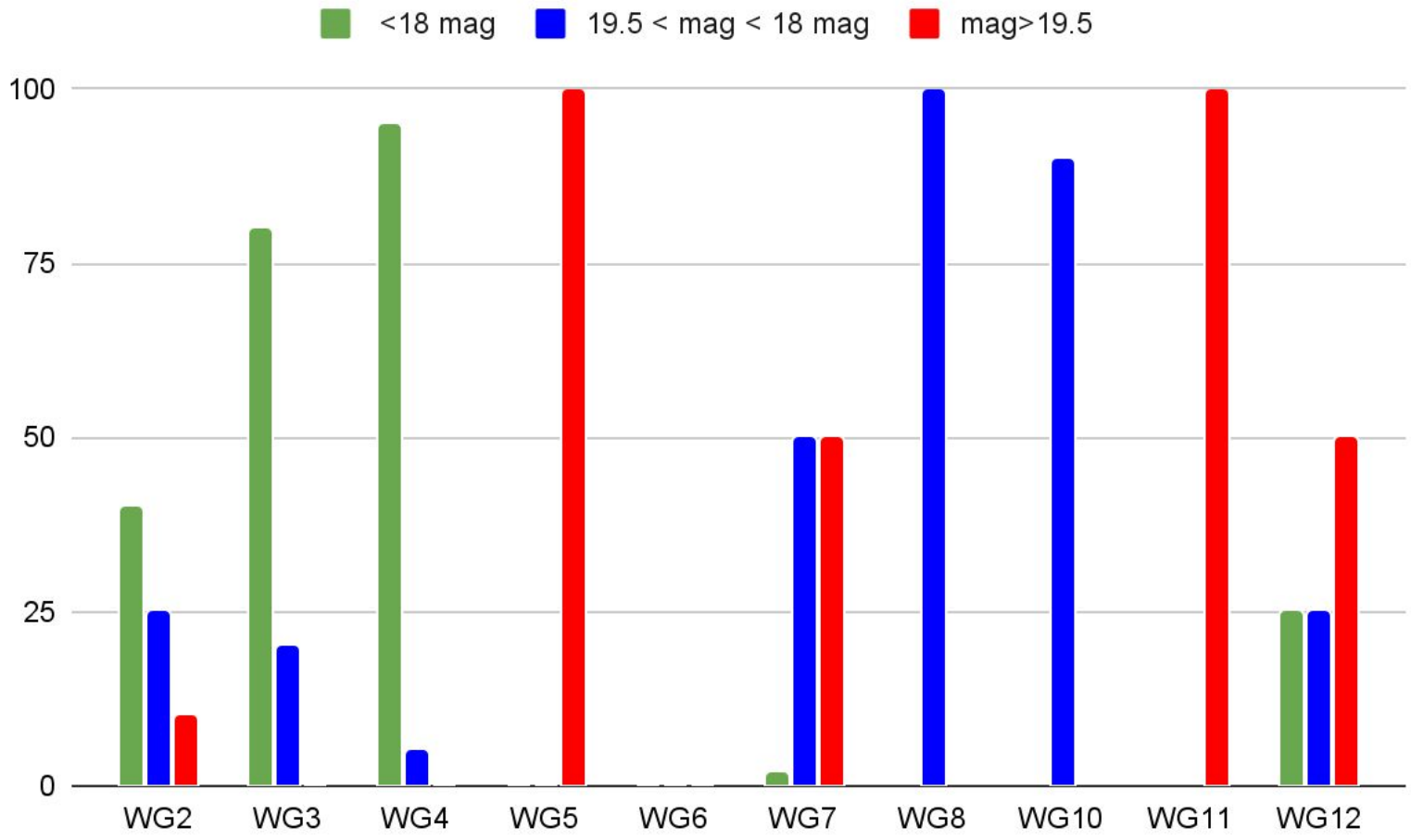
How many targets per year you expect to select for classification?

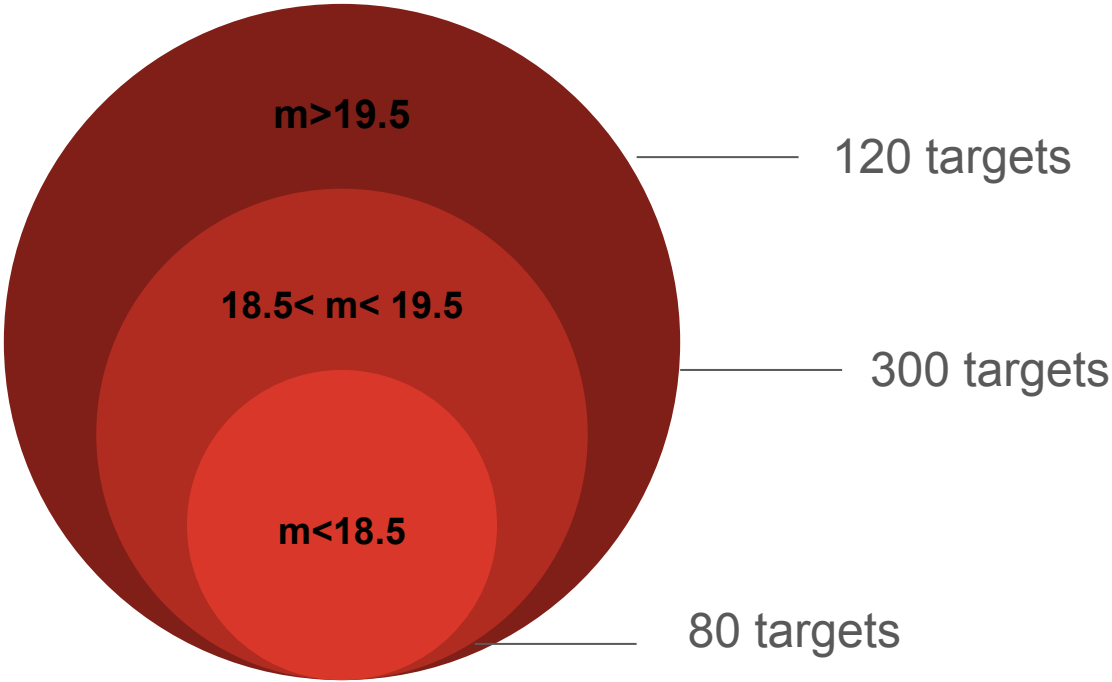


Total >500 class/yr without WG9 and legacy surveys !!


100/yr
10-30/yr
5/yr
CC SNe
Fast and extreme transients
KNe
TDEs
Peculiar SNe Ia
ILOTS
Novae
YSO
X ray transients
GRBs

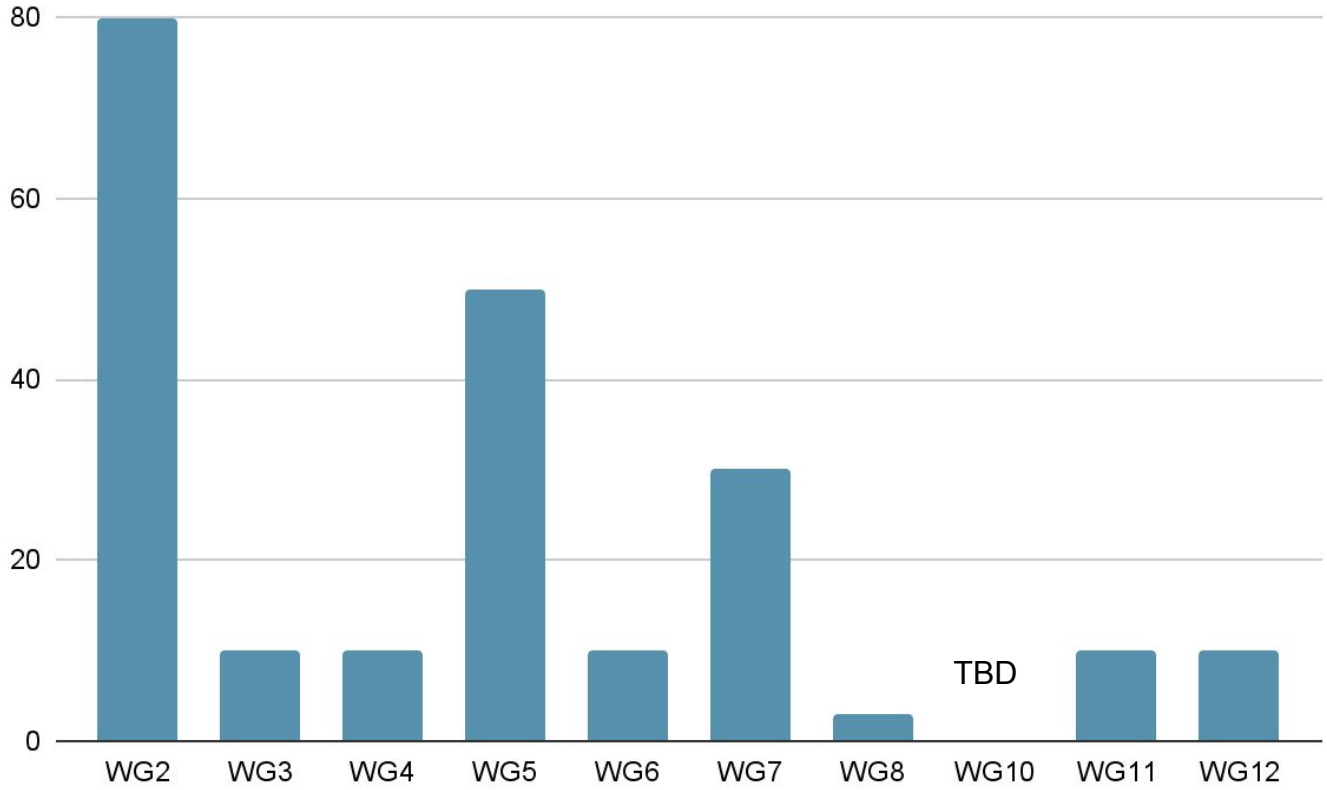
Expected fraction of targets in different magnitude ranges





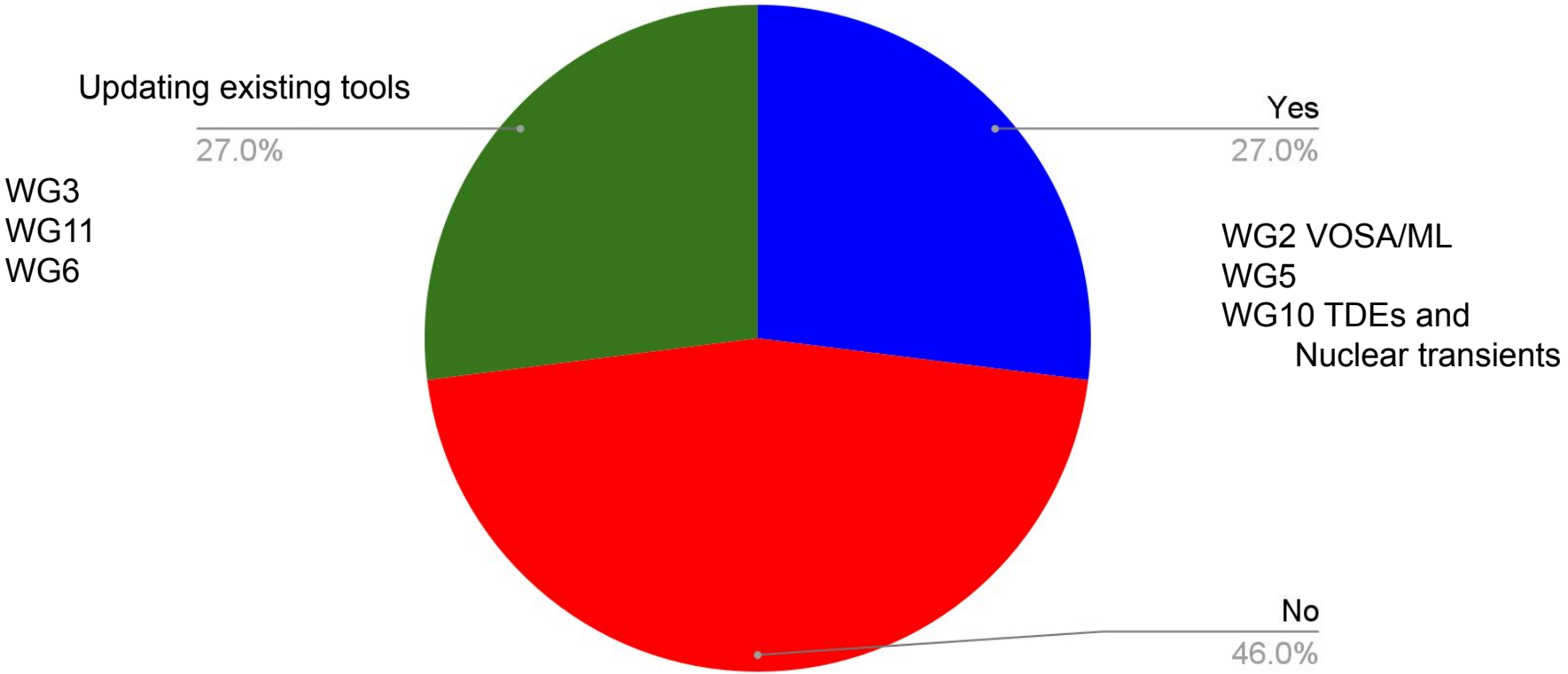
Average ~ 19 mag

Required S/N for classification spectra



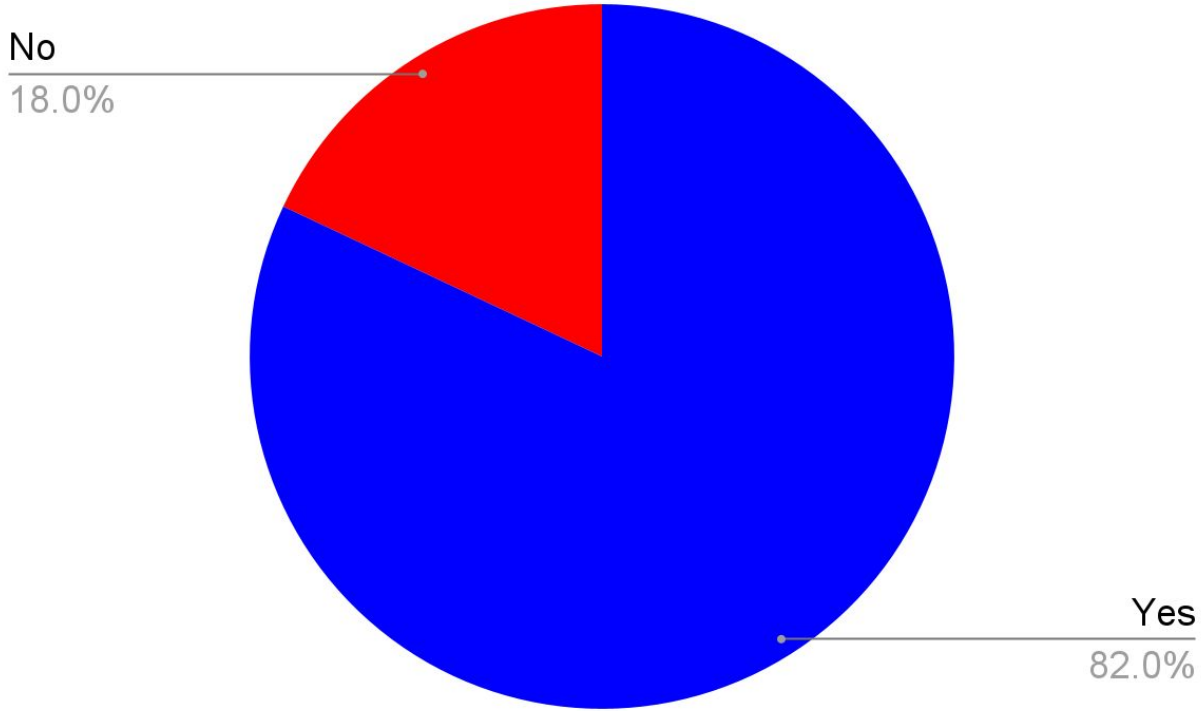
Average S/N ~ 15

Do you need specific or new classification tools ?



Do you have "template spectra" for the classification?

WG3
WG11



Request of additional information in the SOXS Marshal

Info on transient

Spectroscopic classification
Re-classification for very young transients (with only Blue continuum) and for transitional transients
Follow-up spectra

Orbital parameters (to be discussed WG3)
Position within gravitational wave skymaps, Fermi GBM skymaps (WG12)

Lightcurve, merged from available optical data
Multiwavelength observations (high-energy, NIR, Radio) and multimessenger detections (high-energy neutrinos)

Info on host galaxy

host galaxy and reddening information
Redshift from archival data, redshift from SOXS spectrum
angular separation of the transient from the host, nuclear offset (+ error)
clear indication of the slit position and angle wrt the host galaxy

Archival data

links to archival survey data (UV, optical and NIR)
cross-match with AGN catalogs and archival X-ray and radio surveys