Analysis of the 2015 Philly Election and Increasing Third Party Potential

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Summary

The results of 2015 Philadelphia General Election fit the trend of the decline of the municipal Republicans and the increasing hegemony of the Democrats. If the trend continues, independents or third party candidates will soon be in competitive races against the Republicans for the two minority party at-large city council positions. I mapped the results for the four at-large independent candidates and created models that partially explain how their support varied by ward.

Methodology

I used Census 2010 data to calculate the percent of Black, White, Hispanic, and Asian residents in each ward by doing a spatial merge (requiring that the block centroid be fully within the ward polygon) using postgis.

I adjusted the vote percent for at-large candidates to reflect the fact that each voter has five votes and to facilitate comparisons to Kenney's vote share. In practice, the highest possible vote for an at-large candidate, unadjusted, would be 20% (or slightly higher due to people not casting five votes). So after adjusting (and multiplying it by 5), a candidate can get up to 100%. I think that the results of this adjustment are easier to understand than the general standard for reporting Philadelphia election results. Irregardless, it does not affect the statistical significance of any of the results - just the size of the coefficients.

For the maps, I decided to use a rough proportional method of categories. So I chose colors/categories so that each one is roughly 11% of the wards, while also rounding the percentages of the bounds to use fewer decimal places.

Data

For election results, I used the data from (http://www.philadelphiavotes.com/whowon/ from Nov 5, 2015). This includes 99.76% of the precincts.

For ward data, I got the shape file from OpenDataPhilly. Philadelphia has 66 wards which is enough cases to see major trends.
(Source: https://www.opendataphilly.org/dataset/political-wards/resource/9227bf38-00ab-4ef9-b546-0a0c8a5a1bb6)

For 2011, I got ward division data from OpenDataPhilly.

For candidate home address, I used philadelinquency.com (Office of Property Assessment database) and YellowPages.com.

Ward Map: https://www.seventy.org/uploads/files/92391023520441925-ward-and-division-map-philadelphia-may-2014.pdf

Variable Names
pasian: percent asian in a district or district-ward
pblack: percent black in a district or district-ward
phispanic: percent hispanic in a district or district-ward
pwhite: percent white in a district or district-ward

fKenney: percent vote for Kenney in a district
fGym: percent vote for Gym in a district
fCombs: percent vote for Combs in a district
fStaggs: percent vote for Staggs in a district
fStober: percent vote for Stober in a district
fArmstrong: percent vote for Armstrong in a district
fRahman: percent vote for Rahman in a district ward

stoberdist: distance between Stober's residence and the ward centroid

Ticket Splitting

To look at how many people ticket split (aka don't vote a straight ticket), I used the lowest vote totals as proxies. So the lowest Democrat got 113,561 votes for Judge of the Court of Common Pleas and the lowest Republican got 26,845 for Municipal Court. This should slightly over-estimate the number of straight ticket voters.

Mayoral Votes: 235,631
Straight Ticket Voters: 140,406

So it looks like approximately 48.2% of voters took Democrat straight ticket, and 11.3% Republican ticket. So 59.5% total straight tickets. In 2015, to win an at-large minority party seat you would need to get approximately 19% (to beat second placed Republican: Taubenberger). To do this you'd need to win 45.8% of the people who split their ticket.

But it is even worse than that, as many people didn't vote for all (or any) of the city council at-large spots. The vote total for all the at-large candidates was 899,592. If the average person voted 5 times, that would be 179,918 people voting. Of those, 140,406 voted straight ticket. So you have a remaining 39,512 people who split ticket (in practice this might be as many as 50,000 people if the average person only cast 4 votes). To beat the Republican at-large in 2011, so you would 34,200 votes or 86.6% of the split ticket voters (if they cast 5 votes each) or 68.4% (if the average split ticket voter cast 4 votes each).

Of course it isn't that bad, as a third party candidate encourages ticket splitting. So to get elected they must increase the number of ticket-splitters dramatically.

Correlations

		fKenney	fGym	fCombs	fStaggs	fStober	fArmstrong	pBlack	pWhite	pAsian	pHispanic
fKenney	Pearson Correlation	1	.938**	-.116	-.138	-.163	-.245*	.797**	-.866**	-.177	-.008
	Sig. (2-tailed)		.000	.352	.269	.192	.048	.000	.000	.154	.951
	N	66	66	66	66	66	66	66	66	66	66
fGym	Pearson Correlation	.938**	1	.116	.056	.079	-.043	.681**	-.757**	-.121	.007
	Sig. (2-tailed)	.000		.356	.655	.528	.734	.000	.000	.331	.957
	N	66	66	66	66	66	66	66	66	66	66
fCombs	Pearson Correlation	-.116	.116	1	.893**	.901**	.864**	-.363**	.440**	.297*	-.179
	Sig. (2-tailed)	.352	.356		.000	.000	.000	.003	.000	.015	.151
	N	66	66	66	66	66	66	66	66	66	66
fStaggs	Pearson Correlation	-.138	.056	.893**	1	.816**	.913**	-.414**	.451**	.376**	-.117
	Sig. (2-tailed)	.269	.655	.000		.000	.000	.001	.000	.002	.348
	N	66	66	66	66	66	66	66	66	66	66
fStober	Pearson Correlation	-.163	.079	.901**	.816**	1	.868**	-.460**	.531**	.372**	-.167
	Sig. (2-tailed)	.192	.528	.000	.000		.000	.000	.000	.002	.179
	N	66	66	66	66	66	66	66	66	66	66
fArmstrong	Pearson Correlation	-.245*	-.043	.864**	.913**	.868**	1	-.468**	.564**	.306*	-.183
	Sig. (2-tailed)	.048	.734	.000	.000	.000		.000	.000	.013	.142
	N	66	66	66	66	66	66	66	66	66	66
pBlack	Pearson Correlation	.797**	.681**	-.363**	-.414**	-.460**	-.468**	1	-.866**	-.446**	-.335**
	Sig. (2-tailed)	.000	.000	.003	.001	.000	.000		.000	.000	.006
	N	66	66	66	66	66	66	66	66	66	66
pWhite	Pearson Correlation	-.866**	-.757**	.440**	.451**	.531**	.564**	-.866**	1	.306*	-.146
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.012	.242
	N	66	66	66	66	66	66	66	66	66	66
pAsian	Pearson Correlation	-.177	-.121	.297*	.376**	.372**	.306*	-.446**	.306*	1	-.022
	Sig. (2-tailed)	.154	.331	.015	.002	.002	.013	.000	.012		.862
	N	66	66	66	66	66	66	66	66	66	66
pHispanic	Pearson Correlation	-.008	.007	-.179	-.117	-.167	-.183	-.335**	-.146	-.022	1
	Sig. (2-tailed)	.951	.957	.151	.348	.179	.142	.006	.242	.862	
	N	66	66	66	66	66	66	66	66	66	66

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Bivariate Correlations

It is safe to the correlations that are only significant at the 0.05 level, like the negative correlation (as it might be by pure chance as there are 45 bivariate correlations - so on average, if they were all completely unrelated to each other, 2.25 of them would be significant at the 0.05 level due to random chance).

Kenney has a strong positive correlation to Gym and Black, and a strong negative one to White.

Gym has a strong positive correlation to Kenney and Black, and a strong negative one to White (same pattern as Kenney).

Combs has a strong positive correlation to Staggs, Stober, and Armstrong. She has a weaker negative correlation to Black and a weaker positive correlation to White. She has a very marginal positive correlation to Asian.

Staggs has a strong positive correlation to Combs, Stober and Armstrong. He has a weaker negative correlation to Black, and a weaker positive correlation to White and Asian.

Stober has a strong positive correlation to Combs, Staggs and Armstrong. He has a weaker negative correlation to Black, and a weaker positive correlation to White and Asian.

Armstrong has a strong positive correlation to Combs, Staggs and Armstrong. She has a weaker negative correlation to Black, and a weaker positive correlation to White. She has a very marginal positive correlation to Asian.

Gym and Kenney have very similar correlations to the other variables.
Combs, Staggs, Stober and Armstrong have very similar correlations to the other variables.

Helen Gym - 79.6%

The most liberal Democrat running for the at-large spot (and more liberal than any of the council district reps). She came in first place probably because ticket-splitters were liberals (or radicals) who voted for Stober, Combs, Staggs or Armstrong. However, even if a ticket-splitter voted for two independent candidates (probably Stober and Combs), they still had three spots for the most liberal Democrats.

Legend:

| < 50 | 50-70 | 70-80 | 80-85 | 85-87.5 | 87.5-90 | 90-91.25 | 91.25-92.5 | 92.5+ |
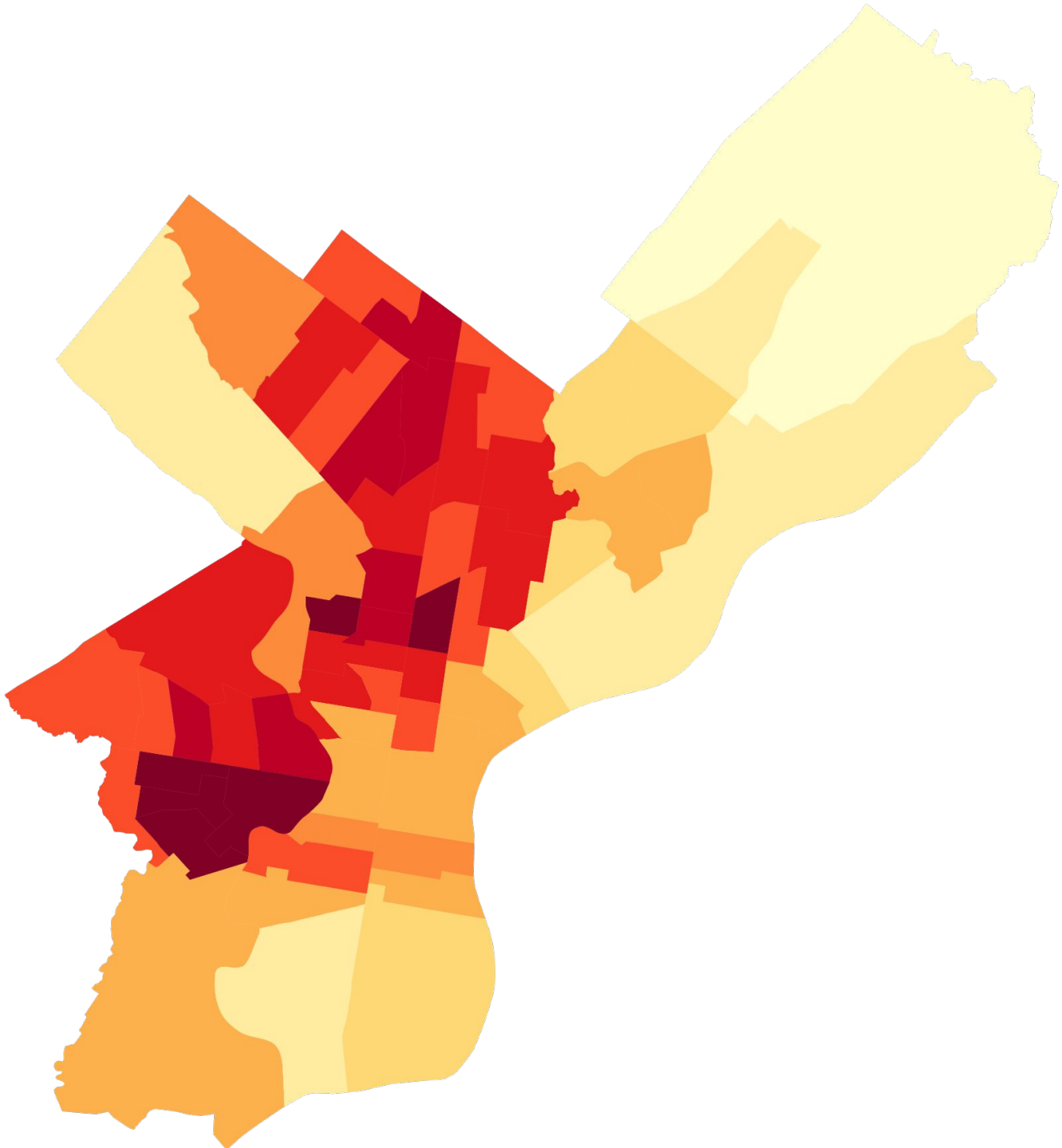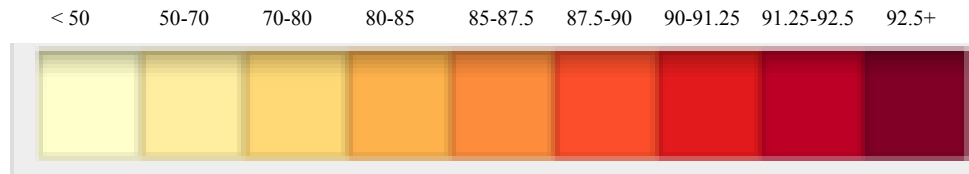
Helen Gym vs Kenney Vote and Percent White

Adjusted R^2: 0.888 (approximately the percent of variance that the model explains - so 88.8% which is very high)

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-66.054	11.751		-5.621	.000
fKenney	1.647	.121	1.132	13.621	.000
pWhite	.114	.042	.224	2.697	.009

a. Dependent Variable: fGym

As a Democrat, her support was strongly correlated with the Kenney vote (increasing by 1.64% for every 1% Kenney got – due to Kenney winning a majority of the votes in Republican wards - his lowest support was 63%, whereas Gym's lowest was 38%). Surprisingly Gym support was not correlated with the percent Asian. There was a more modest positive correlation with percent White (Gym gained 0.11% for every 1% of white population)
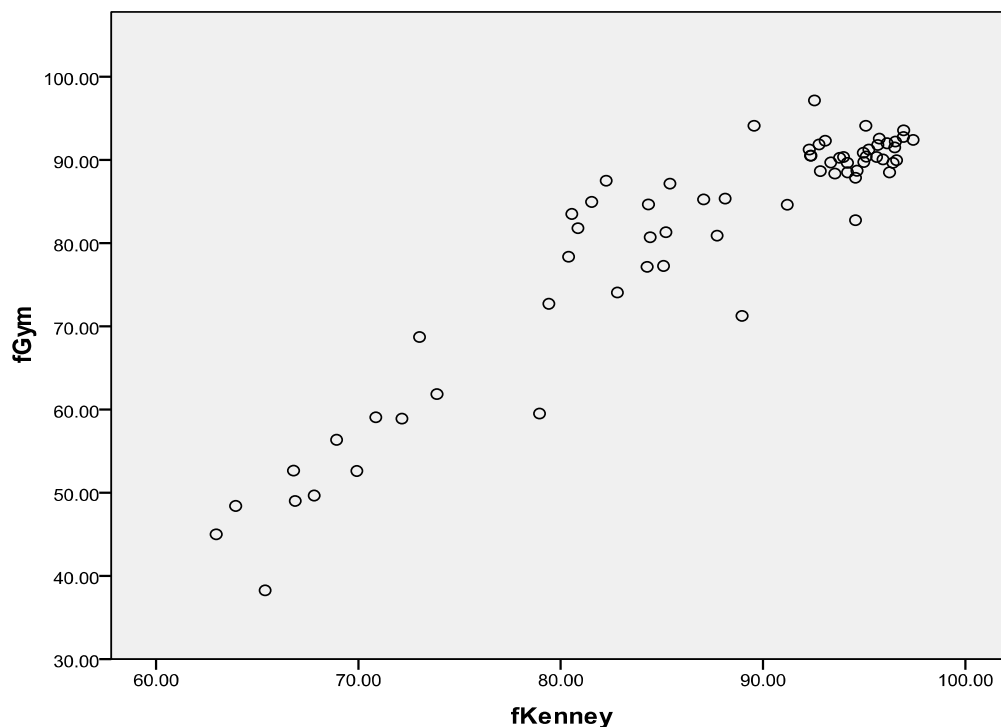
This shows the correlation between Gym and White.
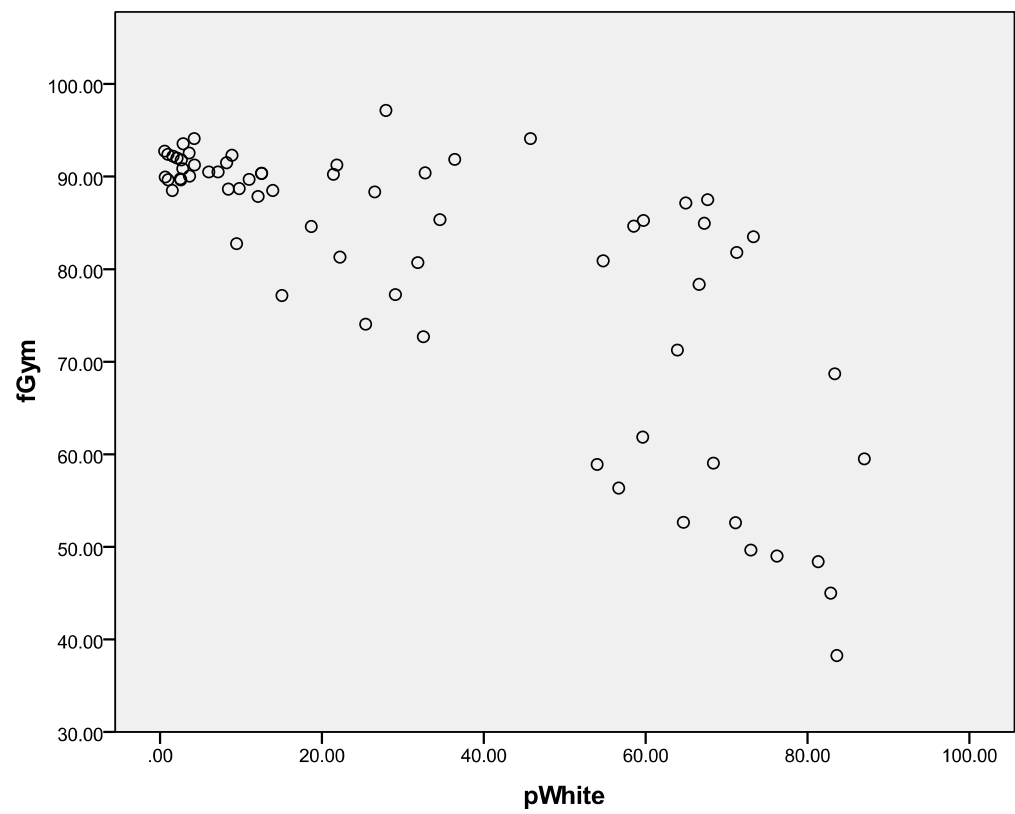
Kristin Combs - 6.2%

She ran the strongest Green Party campaign for an at-large seat in Philadelphia history. She was endorsed by the PFT's Caucus of Working Educators (and more notably: AFSCME DC 33). Previously in 2011 Cheri Honkala got 6.6% running for the Greens as Sheriff (in a 3-way race including Republicans and Democrats) - which is approximately equal to Comb's total (6.2% when adjusted).

Legend:

| <1	1-2	2-3	3-4	4-5	5-8	8-12	12-17	17+
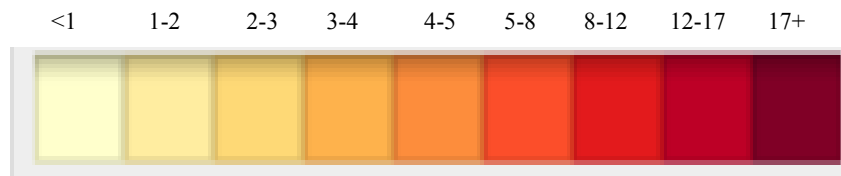
Combs's best wards were 46 (20.6%) and 27 (20%).
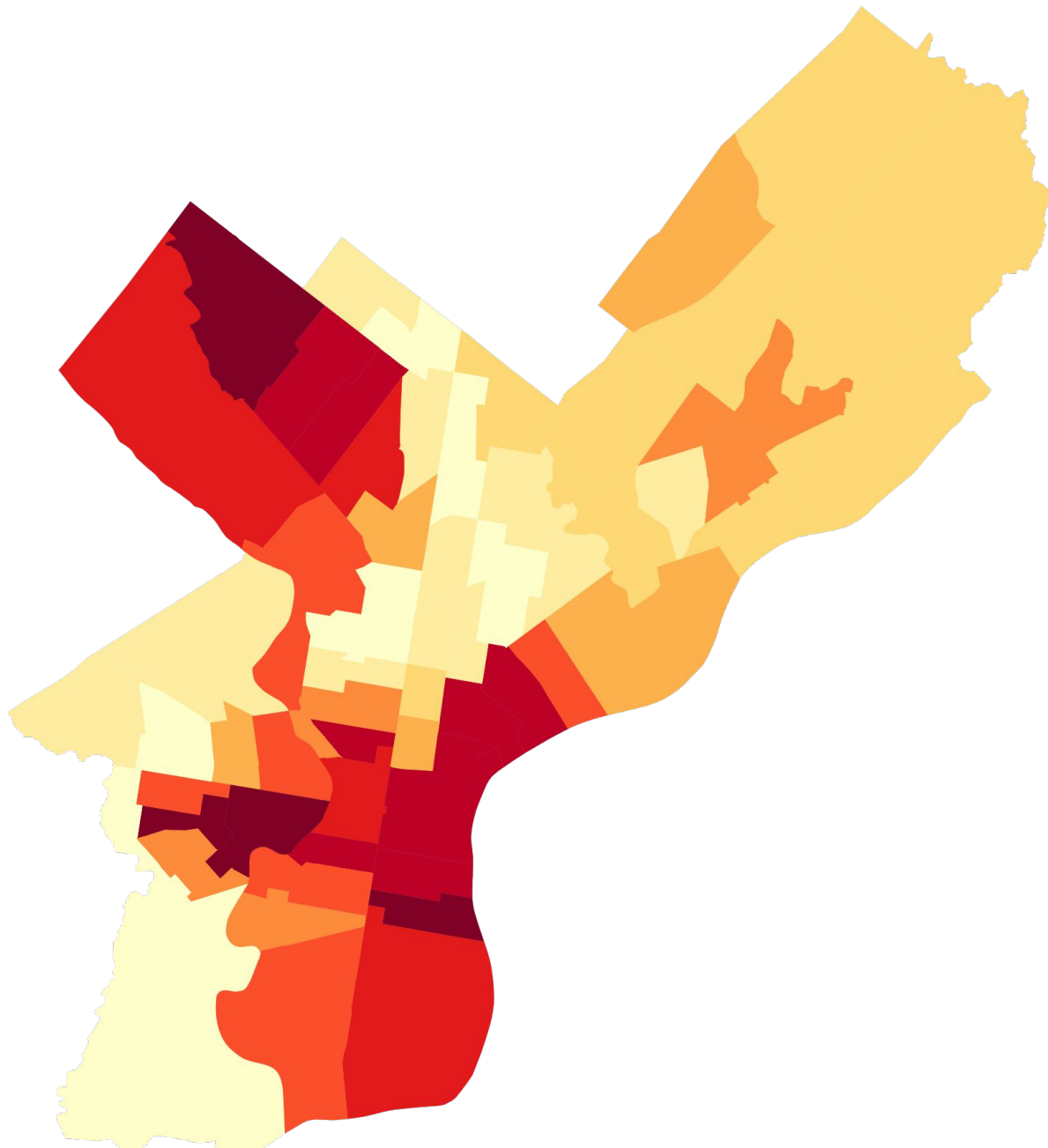
Kristin Combs vs Kenney Vote and Percent White

Adjusted R^2: 0.458

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-54.162	9.840		-5.504	.000
fKenney	.588	.101	1.062	5.801	.000
pWhite	.264	.036	1.360	7.430	.000

a. Dependent Variable: fCombs

Combs support was correlated with Kenney and percent white. For each percent of Kenney support, she got 0.59% more. And for each percent of white, her vote increased by 0.26%
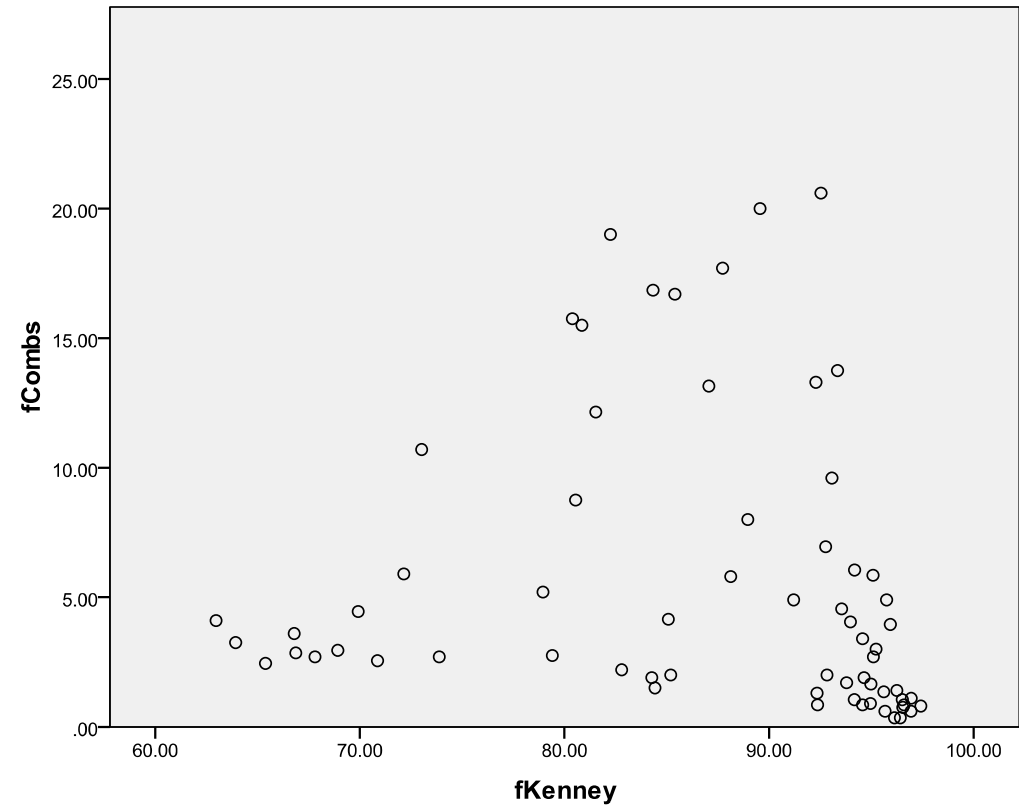
This shows the weak relation between Combs support and Kenney. Notably when Kenney gets very high support, Combs support falls to low levels.
(In fact a regression on Kenney, Kenney*Kenney, and White - shows that there is a positive relationship with Kenney and a negative one with Kenney squared. Adjusted R^2 is 0.507)
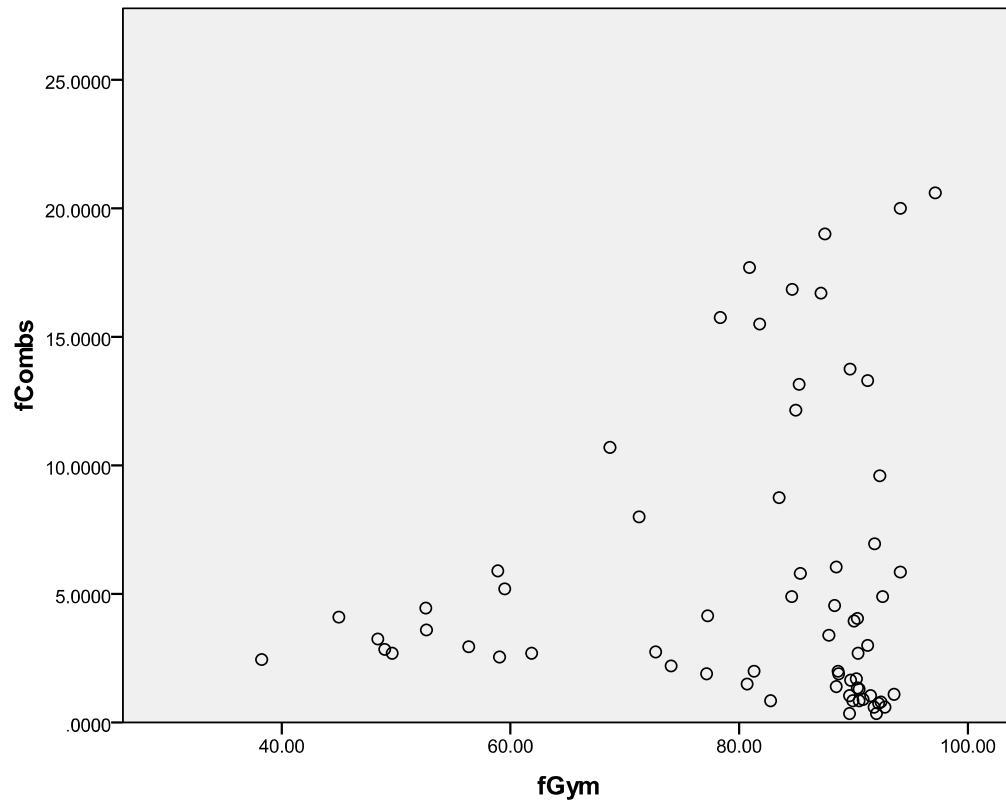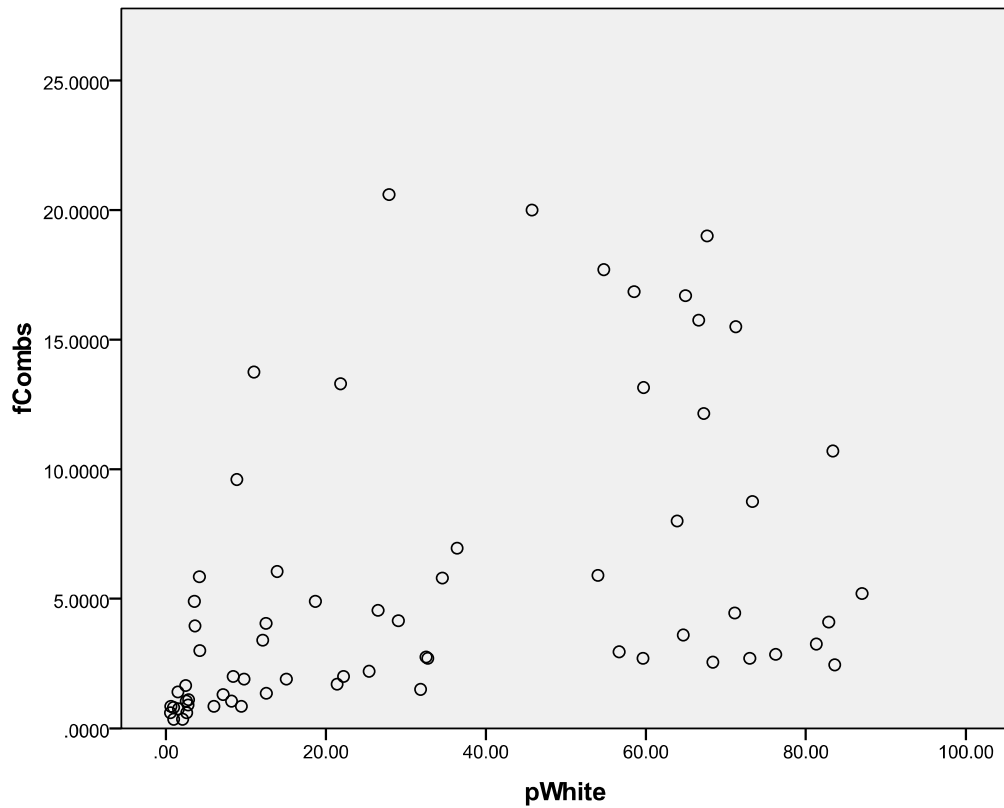
Combs vs Gym and White
Adj R^2=0.653

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-34.524	4.024		-8.581	.000
	pWhite	.239	.022	1.233	11.025	.000
	fGym	.399	.043	1.048	9.374	.000

a. Dependent Variable: fCombs

Combs correlation with Gym is stronger than Kenney. There is a correlation between Combs and Gym support up to where Gym gets 90% of the vote. However it breaks down at high levels of Gym vote. Notably there is a large number of wards that had 90-95% Gym support, but very low levels of Combs support (see the dots in the bottom-right of the chart).

Secondly take a look at Comb support versus White.

This shows that there are a large number of wards with very few white people that had low Combs support. I think these are the same wards as those appearing in the bottom-left of the previous chart. So what happens is once you start controlling for race, the Gym variable becomes more significant (and vice-versa).

Combs vs Stober Vote and Staggs Vote
Adj R^2: 0.882

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.120	.359		.335	.738
	fStober	.326	.047	.515	6.993	.000
	fStaggs	1.861	.290	.473	6.415	.000

a. Dependent Variable: fCombs

When you add Stober and Staggs to the model, all the race variables, Gym and Kenney become insignificant. Combs support was strongly correlated with that of both Stober (liberals) and Staggs (radicals). For each Stober percent, she increased by 0.33% and for each Staggs percent by 1.9%. As Staggs received fewer votes than Stober, the impact of each factor is roughly equal.

Stober, Staggs, and Combs vote is so strongly correlated that it is hard to pick apart. The weakest correlation is between Stober and Staggs (as one might expect). But the difference is not statistically significant and the correlation (0.816) is still very strong.

The problem with this model is that while we have explained Combs vote, we have not identified any underlying causal factors. Things like race and income are causal factors, but vote for another candidate is not. If Candidate A's support can be explained by Candidate B. And Candidate B's support depends on Candidate A - then we have circular reasoning. We need to identify an external causal factor like race, income, ideology, or another one.

John Staggs - 1.6%

The Socialist Workers have run several candidates for civic elections - typically doing poorly. Staggs had run several times. As a Socialist Worker, he is likely to attract support from the most radical voters. In 2015 he got 1.6% (adjusted).


Legend:

| < 0.25 | 0.25-0.5 | 0.5-0.75 | 0.75-1 | 1-1.25 | 1.25-2 | 2-3 | 3-4.25 | 4.25+ |
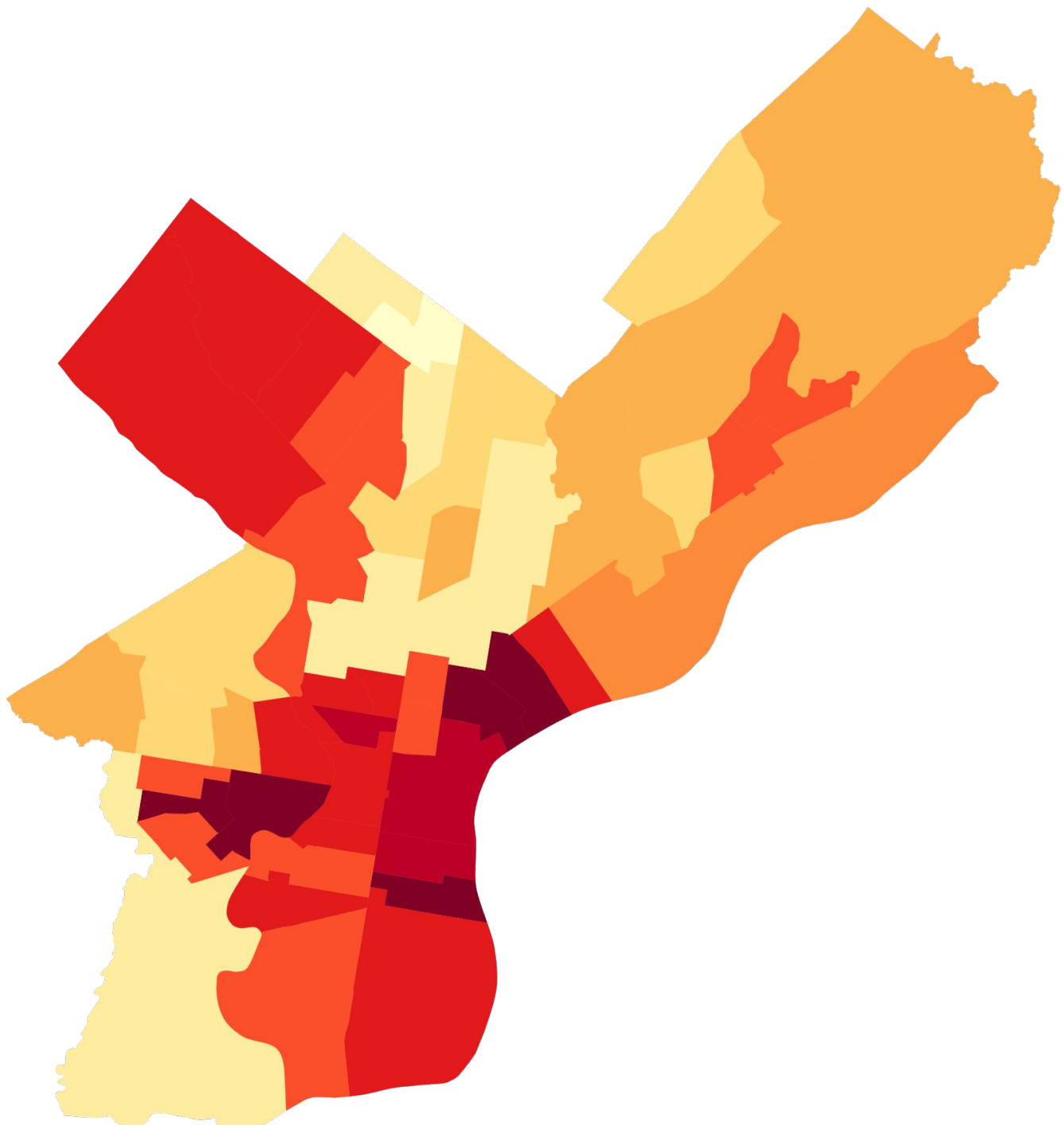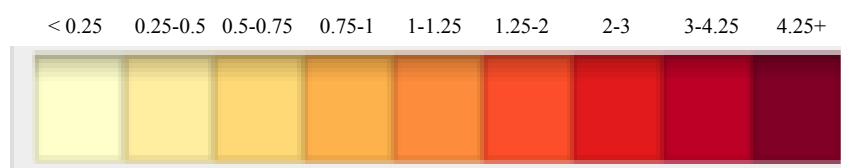
Stagggs's best wards were 31 (6.3%), 27 (5.7%), 46 (5.6%).

Staggs vs Kenney and White

Adj R^2: 0.443 (very similar to Combs)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12.939	2.532		-5.111	.000
	fKenney	.142	.026	1.014	5.469	.000
	pWhite	.066	.009	1.330	7.170	.000

a. Dependent Variable: fStaggs

This model produces similar results to the Combs model (as you might expect given the very strong correlation between Combs and Staggs). Staggs gains 0.14% for each Kenney percent, and 0.066% for each percent White (lower than Combs - because Staggs total support was much lower).
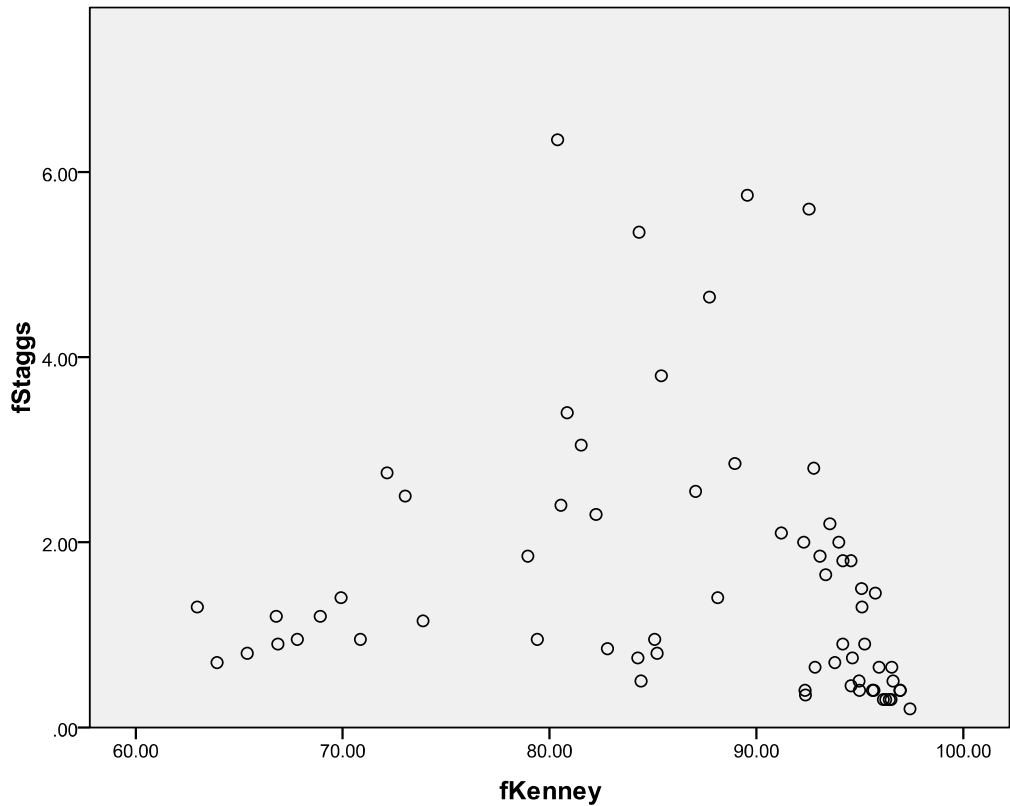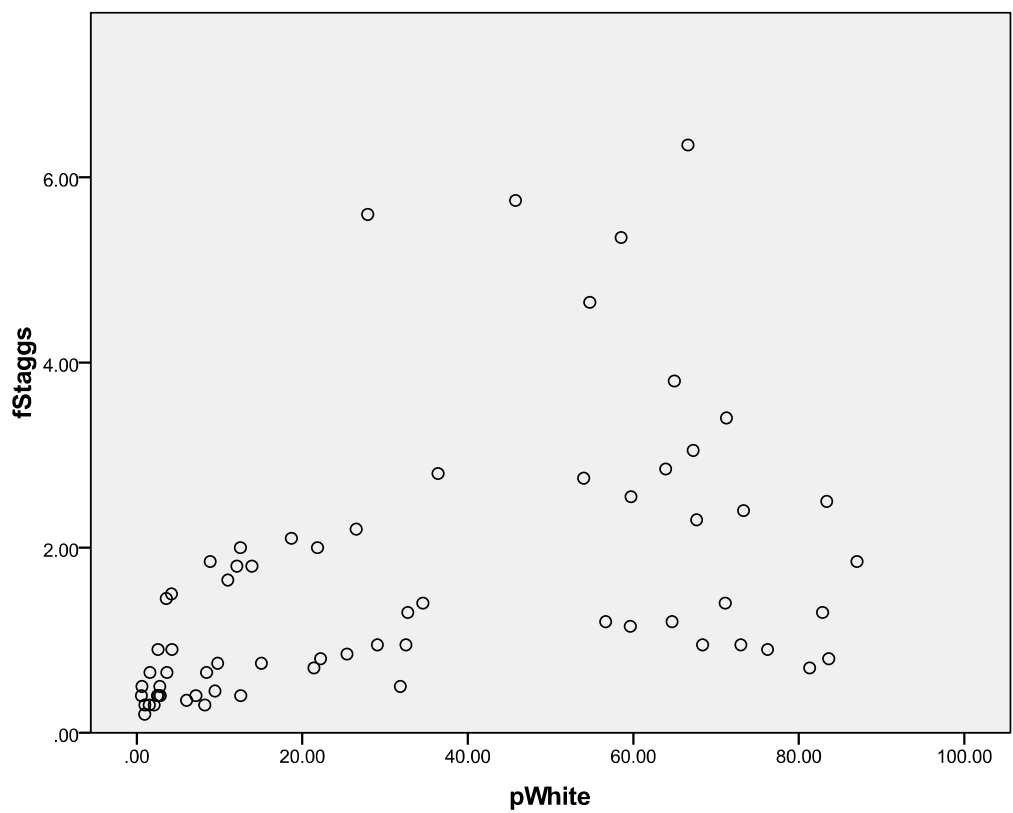
Staggs vs Gym and White
Adj R^2: 0.559

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-7.523	1.150		-6.539	.000
	pWhite	.057	.006	1.154	9.163	.000
	fGym	.090	.012	.929	7.377	.000

a. Dependent Variable: fStaggs

This model with Gym does a better explanation of explaining Staggs vote than using Kenney. However it is weaker than the Combs model using Gym and White (which makes sense as Staggs is farther ideologically from Gym than Combs is).
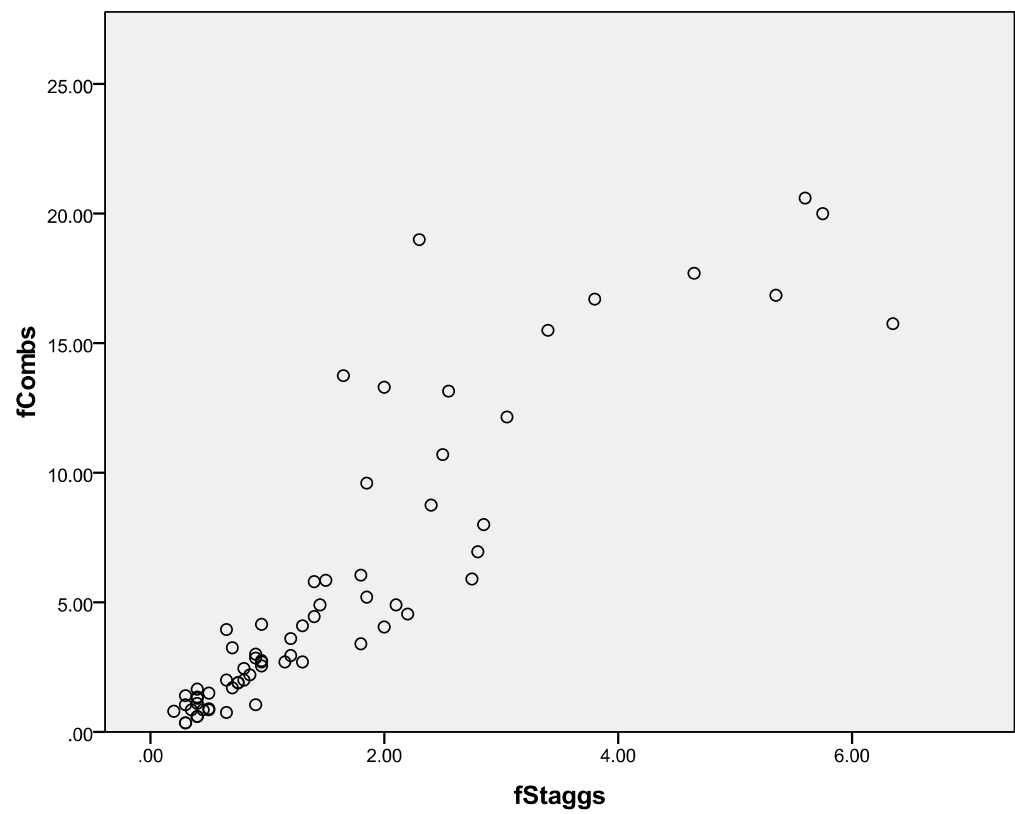
Staggs vs Combs
Adj R^2: 0.794

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.336	.113		2.981	.004
	fCombs	.227	.014	.893	15.851	.000

a. Dependent Variable: fStaggs

Interestingly, a regression of Staggs on Combs and Stober causes Stober to not be statistically significant - probably due to a mixture of multicollinearity (Staggs, Combs, Stober, and Armstrong are all strongly correlated) and possibly Stober and Staggs having a greater political difference.

After inserting Combs into the model, race, Kenney, and Gym are all insignificant.

Combs vs Staggs - Chart

Stobbs vs Armstrong, Combs, and Stober

Adj R^2: 0.880

Coefficients^a

| Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.409	.138		-2.951	.004
	fArmstrong	2.691	.390	.645	6.896	.000
	fCombs	.141	.027	.555	5.186	.000
	fStober	-.039	.017	-.244	-2.249	.028

a. Dependent Variable: fStaggs

Stobbs has a strong positive correlation with Armstrong and Combs. But surprisingly a weak negative one with Stober (after controlling for Armstrong and Combs). Though it might make sense due to the difference in their ideology.

Andrew Stober - 9%

Stober is the founder of the IndieGo bike share program and a liberal. Stober was endorsed by Nutter, the PFT, FOP, and other Democrats. Stober had the best showing of any of the independent at-large candidates with 9% (adjusted).

Legend:

| < 1 | 1-2 | 2-3 | 3-4 | 4-5 | 5-7.5 | 7.5-20 | 20-25 | 25+ |
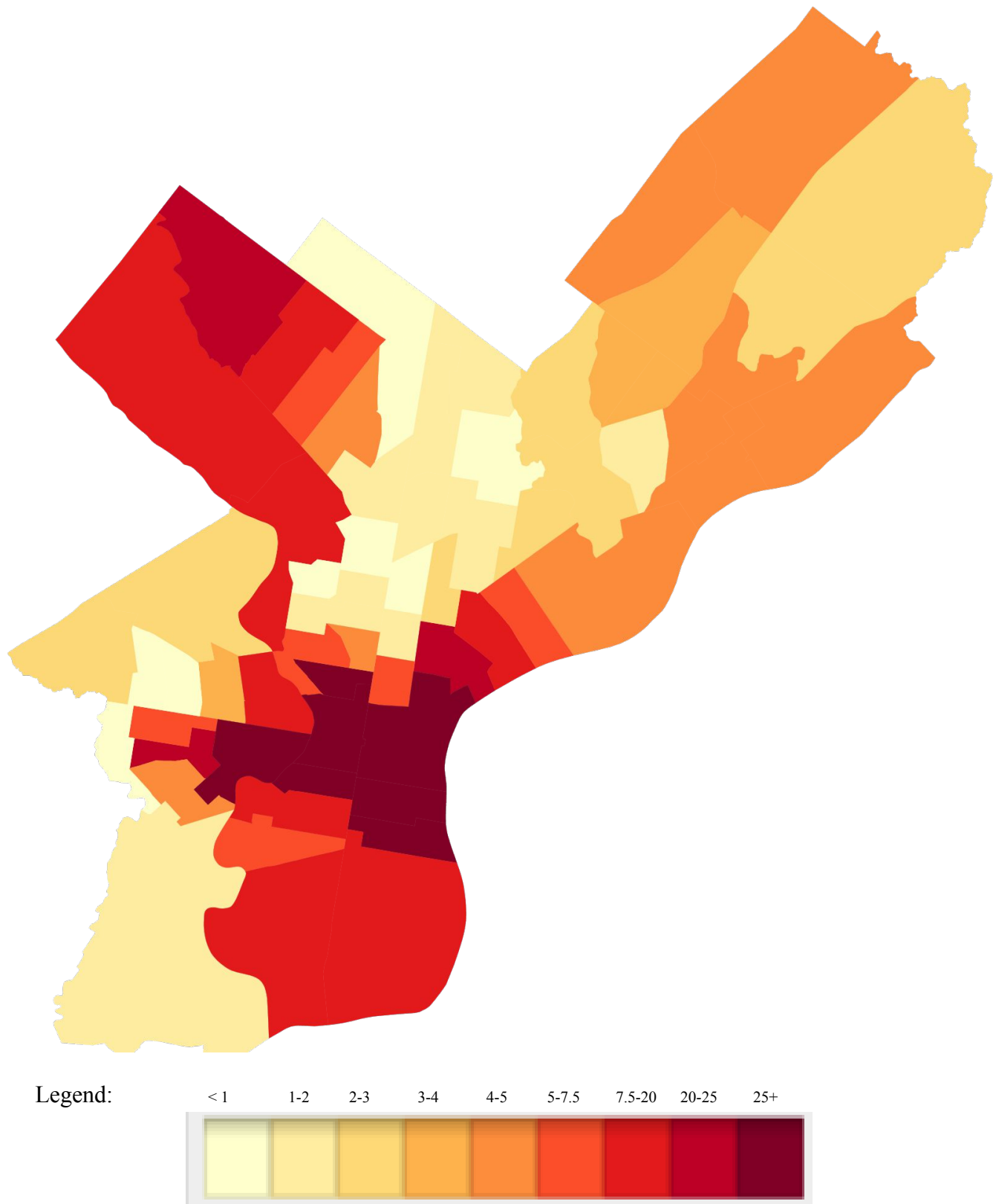
Stobers best wards were 2 (31.6%), 1 (30%), and 30 (28.5%)
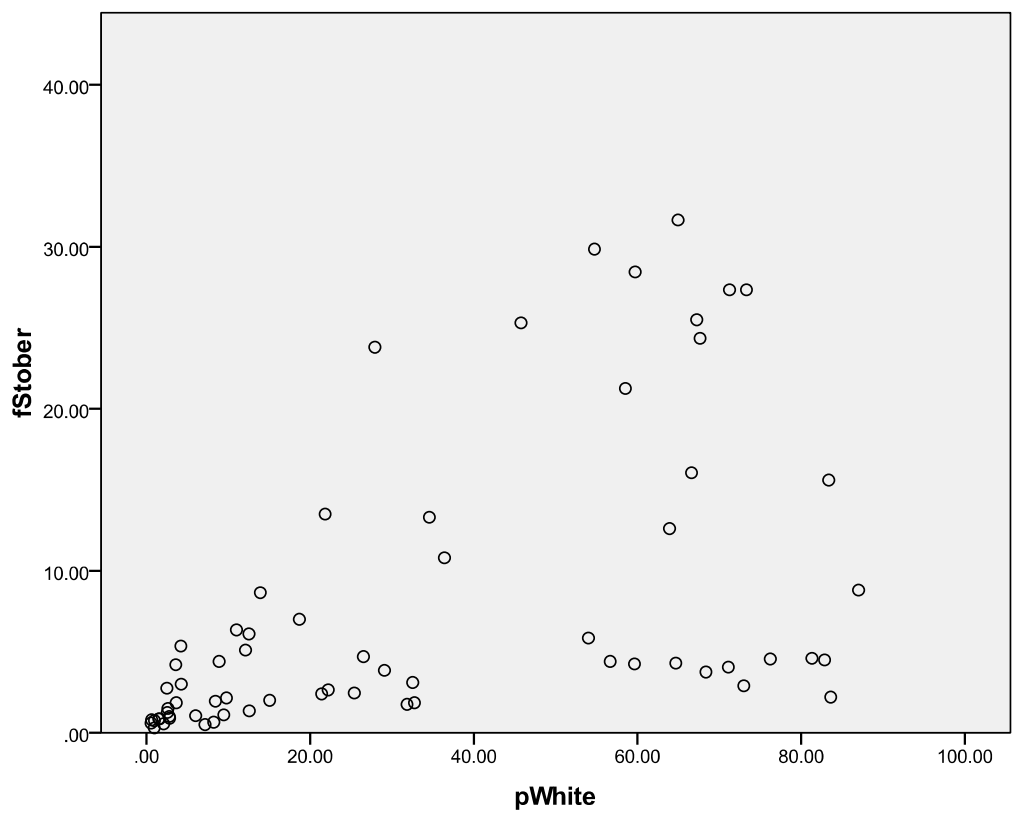
Stober vs Combs, Distance, White, and Gym
Adj R^2: 0.908

Stober had a strong correlation with Combs, and a weaker negative correlation with distance between his residence and the ward (so closer was better). By contrast Staggs, Combs, and Armstrong did not have any significant correlation between vote support and distance from their residence.

Stober has a stronger correlation with Gym than Kenney (if you replace Gym with Kenney in this four variable model - Kenney is not significant) - which makes sense given their political positions. It is also interesting that this is the only final model in which race still plays a factor.
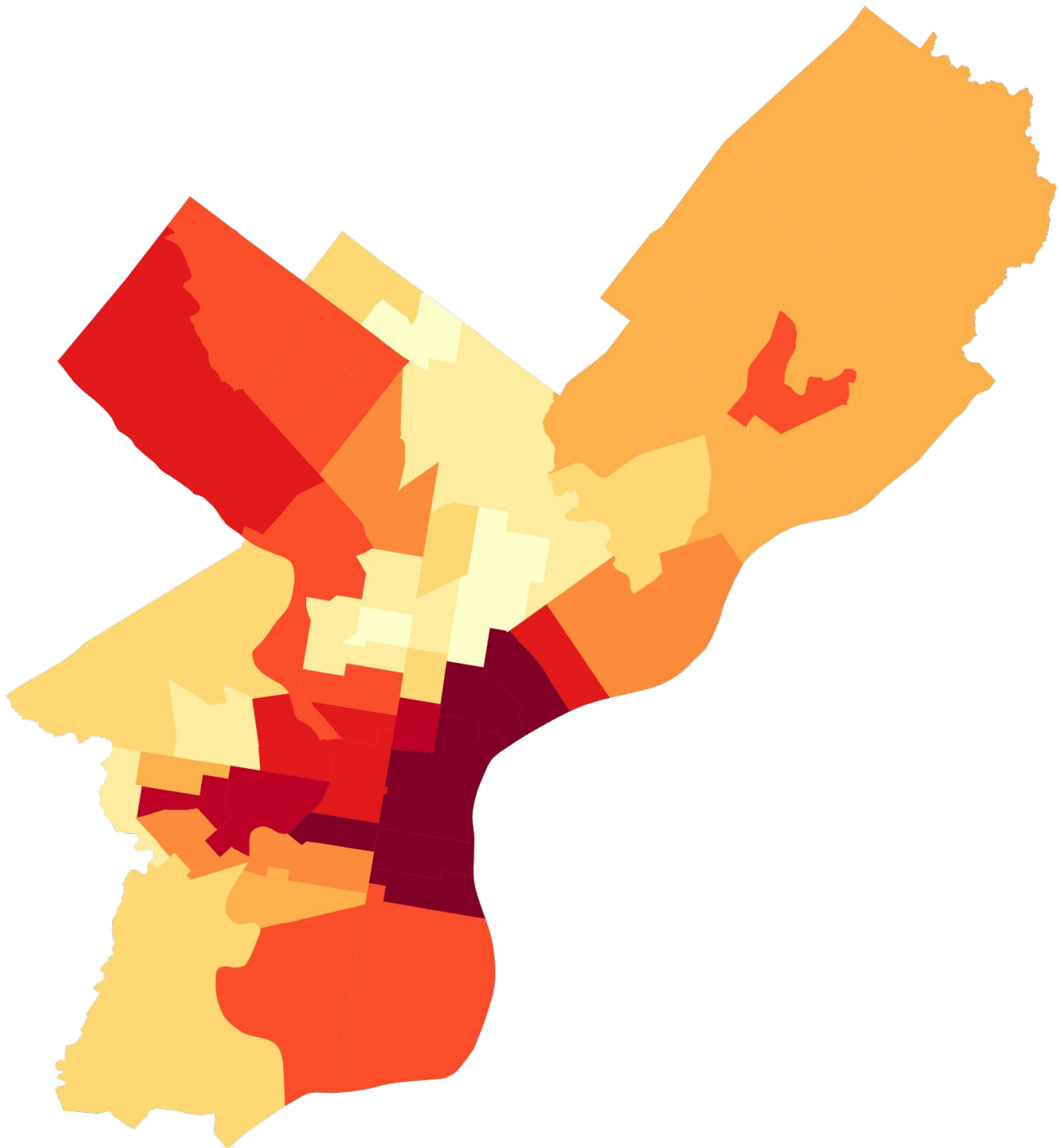
Coefficients[a]

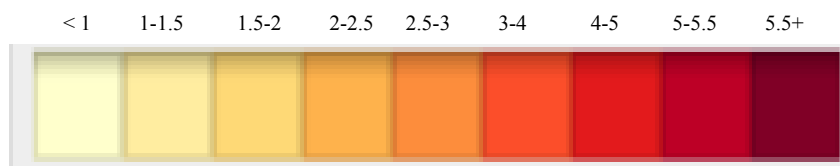| Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-21.500	6.494		-3.311	.002
	fCombs	.796	.103	.504	7.739	.000
	stoberdist	-28.033	9.421	-.167	-2.975	.004
	pWhite	.206	.032	.672	6.388	.000
	fGym	.252	.066	.420	3.800	.000

a. Dependent Variable: fStober
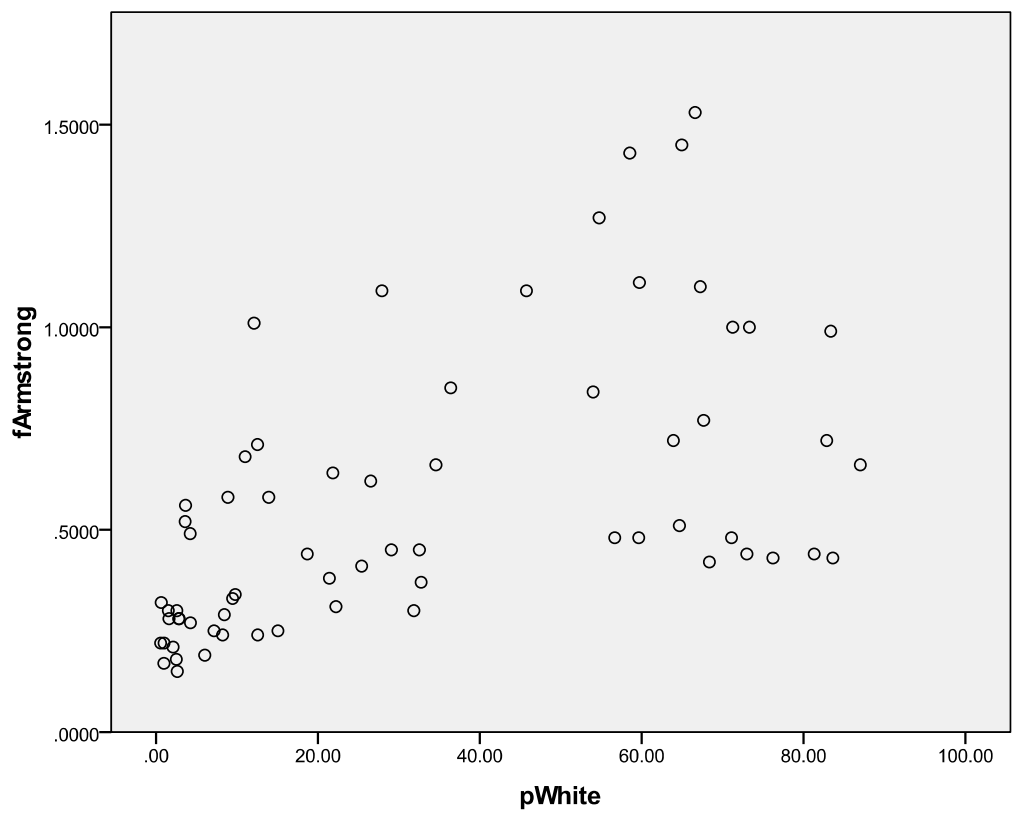
Sheila Armstrong - 3%

Armstrong ran as an independent progressive. She is involved in POWER (a progressive network of congregations, mosques, and synagogues). She had the least variation in support by ward of the at-large independents. In 2015, she got 3% (adjusted).

Legend:

| < 1 | 1-1.5 | 1.5-2 | 2-2.5 | 2.5-3 | 3-4 | 4-5 | 5-5.5 | 5.5+ |

Armstrong's best wards were 31 (7.6%), 2 (7.2%) and 18 (7.1%).

Armstrong vs Gym and White
Adj R^2: 0.651

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-1.598	.245		-6.514	.000
fGym	.021	.003	.898	8.014	.000
pWhite	.015	.001	1.243	11.096	.000

a. Dependent Variable: fArmstrong

Armstrong's vote was strongly correlated to Gym and White. This is interesting Armstrong was the only black independent at-large candidate (the other three were white).

Armstrong vs White, Staggs and Stober
Adj R^2: 0.885

Coefficients[a]

| Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.193	.024		7.960	.000
pWhite	.002	.001	.128	2.583	.012
fStaggs	.145	.017	.606	8.340	.000
fStober	.012	.003	.305	3.990	.000

a. Dependent Variable: fArmstrong

I'm not sure why Armstrong's vote is most strongly correlated with Staggs.

Republican Decline

Republican vote for at-large and mayor is down considerably in 2015 compared to 2011 (and the lowest mayoral result since the party started running candidates in 1856 - http://www.phila.gov/PHILS/Mayorlst.htm). If this trend continues, it will be easier for third party and independent candidates to win the minority at-large city council seats (and the minority commissioner seat). I would expect this trend to slow down, but there aren't many signs of it doing so.
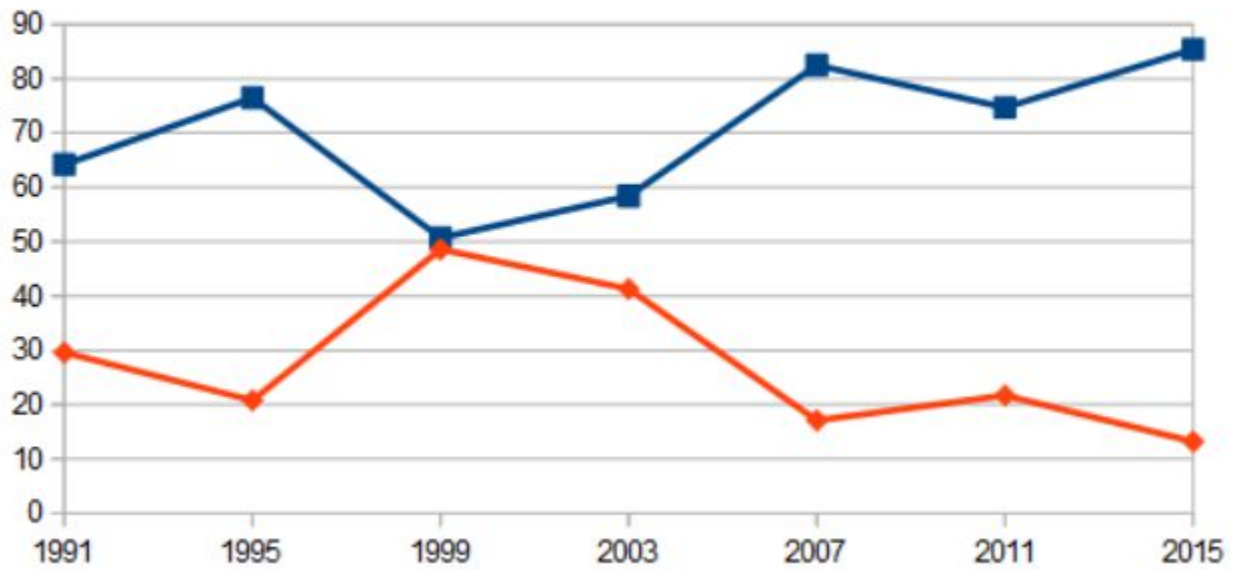
This decline is most noticeable in the at-large seat vote.

Republican Vote for At-Large Seats
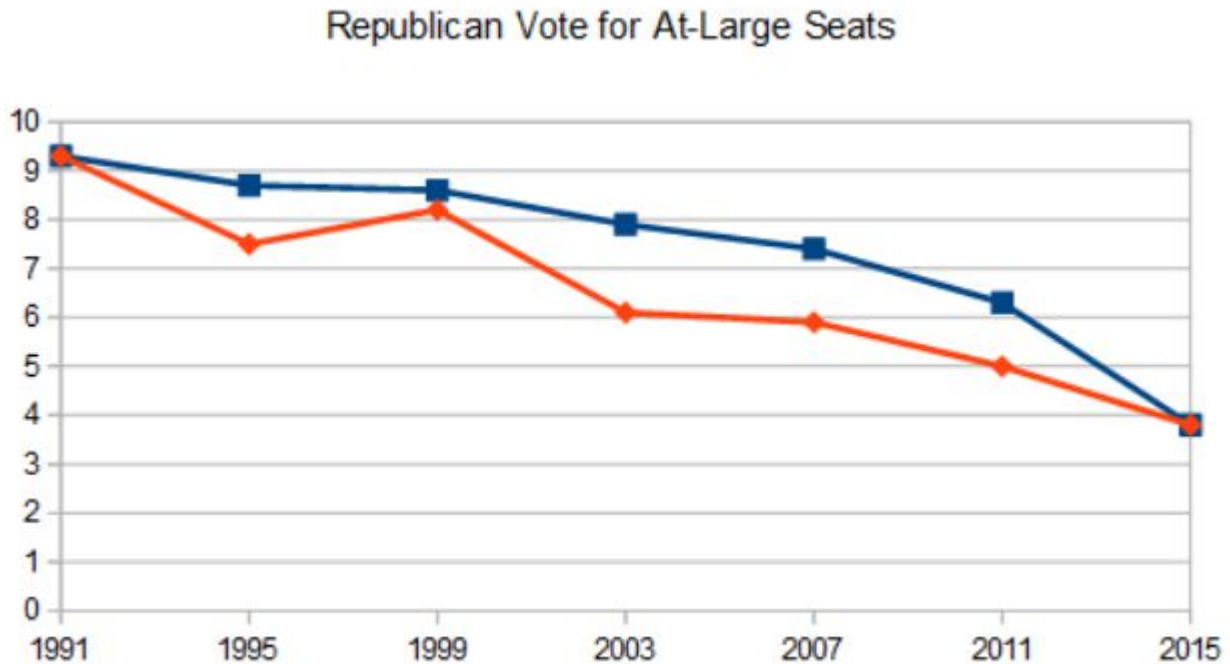
(Source: http://www.ourcampaigns.com/ContainerDetail.html?ContainerID=54353)
Note: this is percent of the total votes (which is the standard used for reporting Philly election results). If normalized, the vote percent is five times greater.
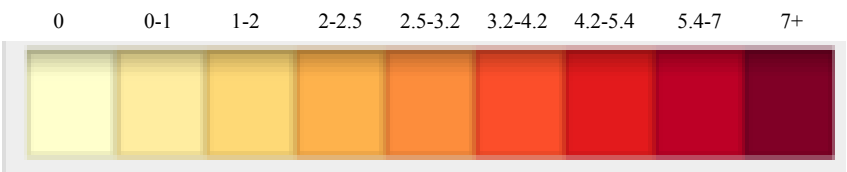
Mayoral Vote by Party

(Mayor: http://www.ourcampaigns.com/ContainerHistory.html?ContainerID=2842)
The increase in Democratic vote for mayor is not as strong as the at-large city council increase, but the trend is still clear.

Wali Rahman (aka Diop Olugbala), 2011, Mayor

(You can zoom the document to view at higher resolution)

Legend:

0	0-1	1-2	2-2.5	2.5-3.2	3.2-4.2	4.2-5.4	5.4-7	7+

He ran as a Uhuru activist and leader for mayor in 2011 and got 3.5%.

Rahman vs Nutter, Black, and Asian
Unlike my 2015 models, this uses ward-district level analysis (which increases the number of cases by 20 and thus increases the likelihood of minor causes being statistically significant).

Adj R^2: 0.303 (lowest of all models)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.584	.429		6.029	.000
	fnutter	-.021	.006	-.084	-3.273	.001
	pblack	.055	.002	.624	22.803	.000
	pasian	.032	.009	.077	3.495	.000

a. Dependent Variable: frahman

The largest factor in Rahman's vote was percent of Blacks in a district. His vote increased by 0.055% for each percent Black in the ward district. The percent of Asians in a district was a minor positive factor. By contrast, percent Hispanic was not significant. Nutter's vote support was a minor negative factor.

Conclusion

I'm unsure what the impact of the candidates race and that of the voters is on whether they will vote for a third party. In 2015, wards with a larger white population voted more for third party candidates (three white and one black). But in 2011, Rahman received much stronger support from black wards. It could be that Armstrong drew upon support from the inter-racial POWER network and was able to bridge the racial divide, whereas the other four candidates failed to do this.

I'm unsure what the future holds for third party candidates in Philadelphia. There is a long tradition of third party Philadelphia candidates, but I do not know the last time anyone has been successful. It is safe to say that if Philadelphia becomes a one-party town due to the Republican decline, that as has happened in countless cases (both US and non-US), there is a strong probability that a new second party will emerge. But if the Republicans were to strengthen it would be much harder for a third party to establish itself in Philadelphia as there are very few examples of US political systems that have more than two parties with elected representation (Vermont's Progressive Party being one of the few examples).

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