Chesapeake Bay Program
A Watershed Partnership

2019 Milestone Land Use

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AGWG Call

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2019 Milestone Land Use

Updated Data

Population Estimates (from 2016 ed. to 2018 ed.)

Population Projections (VA, NY, DE, MWCOG, and BMC)

Protected Lands (from 2016 ed. to 2018 ed.)

Sewer Service Areas (51 counties/cities)

MS4 Boundaries (VA only)

2017 Ag Census

LUWG Majority Recommendation (approved by WQGIT):

Update MS4s, Sewer Service Areas, 2025 Population Projections, and 2014 - 2017 Population Estimates

- **Adjust 2025 population projections for all counties using population estimates.**
- **Postpone any updates to the land use until the summer of 2021 in preparation for the 2021-23 Milestones**

Population Projection Adjustments:

County Average = -1.3% (min= -8.2%; max= +5.0%)

Counties with large populations growing slower than expected:

- **Spotsylvania, VA**
- **Indiana, PA**
- **Cambria, PA**

Counties with large populations growing faster than expected:

- **Alexandria, VA**
- **Arlington, VA**
- **Frederick, VA**

Adjusting our compass bearings for 2025 with updated data

Change in acres, systems, and population (2019 Milestone vs WIP land use for the year 2025)

Jurisdiction	Impervious	Pervious-Dev	Natural	Agriculture	Other	Systems	PopulationOnSeptic	PopulationOnSewer
DC	55	51	(70)	-	(36)	-	-	45,260
DE	(446)	(603)	(8,231)	11,758	(2,478)	(1,373)	385	2,342
MD	1,363	1,320	8,687	7,930	(19,300)	(16,119)	(4,762)	64,675
NY	3,564	6,852	51,846	(44,944)	(17,318)	(3,143)	1,227	(52,660)
PA	8,753	(23,299)	(6,043)	13,299	7,290	(17,059)	(2,083)	23,371
VA	7,943	49,348	(13,710)	(45,457)	1,877	(17,162)	6,941	186,927
WV	5,534	(4,595)	(6,505)	6,312	(747)	3,235	7,695	(3,289)
Total	26,767	29,074	25,973	(51,102)	(30,712)	(51,622)	9,403	266,625

Change as a percentage (2019 Milestone vs WIP land use for the year 2025)

Jurisdiction	Impervious	Pervious-Dev	Natural	Agriculture	Other	Systems	PopulationOnSeptic	PopulationOnSewer
DC	0.3%	0.4%	-1.3%	0.0%	-1.9%	0.0%	0.0%	5.8%
DE	-2.5%	-1.3%	-4.3%	6.5%	-14.8%	-6.3%	0.7%	3.7%
MD	0.3%	0.2%	0.3%	0.6%	-7.1%	-3.8%	-0.5%	1.2%
NY	2.7%	3.1%	2.0%	-4.9%	-15.1%	-3.1%	0.5%	-13.0%
PA	1.6%	-2.0%	-0.1%	0.4%	1.3%	-3.7%	-0.2%	0.8%
VA	1.1%	3.9%	-0.1%	-2.0%	0.7%	-3.7%	0.6%	3.0%
WV	13.0%	-3.3%	-0.4%	1.6%	-1.8%	5.7%	5.8%	-2.0%
Total	1.4%	0.8%	0.1%	-0.6%	-2.4%	-3.4%	0.3%	1.7%

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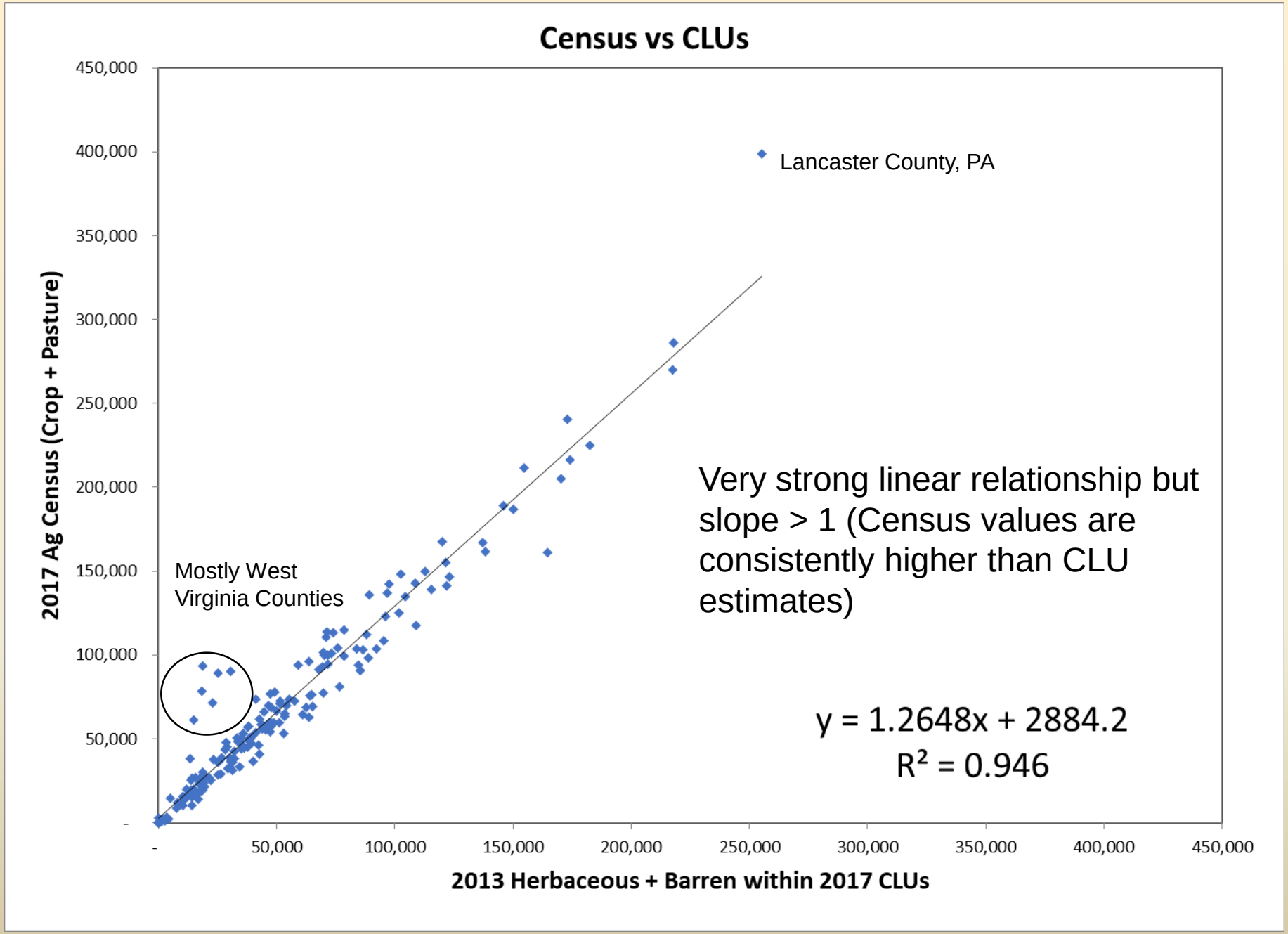
- revised as per LUWG and WQGIT review and suggestions
- Subject to minor changes in final 2019 CAST
- from LoadSources_2013_2025_v3.xlsx


Census vs CLUs
2017 Ag Census (Crop + Pasture)
2013 Herbaceous + Barren within 2017 CLUs
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
50,000
100,000
150,000
200,000
250,000
300,000
350,000
400,000
450,000
Lancaster County, PA
Mostly West Virginia Counties
Very strong linear relationship but slope > 1 (Census values are consistently higher than CLU estimates)
y = 1.2648x + 2884.2
R² = 0.946

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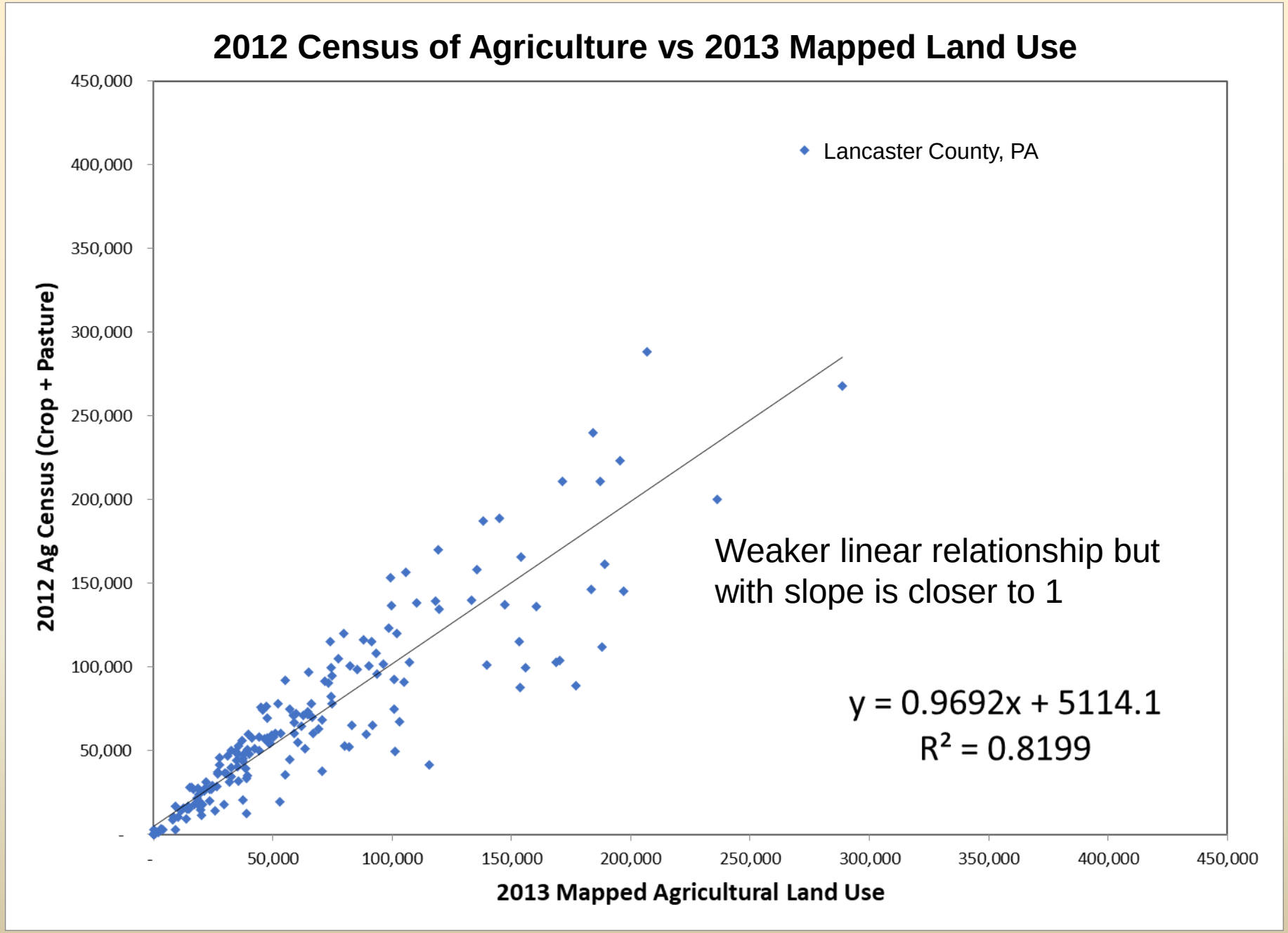
2012 Census of Agriculture vs 2013 Mapped Land Use
Lancaster County, PA
Weaker linear relationship but with slope is closer to 1
y = 0.9692x + 5114.1
R² = 0.8199
2012 Ag Census (Crop + Pasture)
2013 Mapped Agricultural Land Use
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
-
50,000
100,000
150,000
200,000
250,000
300,000
350,000
400,000
450,000

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Phase 6 True-up Methodology

Rationale:

No land use dataset is perfectly accurate, however, all pre-Phase 6 Watershed model versions assumed that the Census of Agriculture's surveyed acreages were 100% accurate.

The creation of the 1-meter resolution Phase 6 land use challenged this assumption. Therefore, the CBP Partners decided to "true-up" all 39 land uses at the LRSEG scale based on their relative error rates* weighted by their relative extents.

Purpose:

CBP "true-up" methodology reconciles and balances the errors in the Census of Agriculture and mapped land uses.

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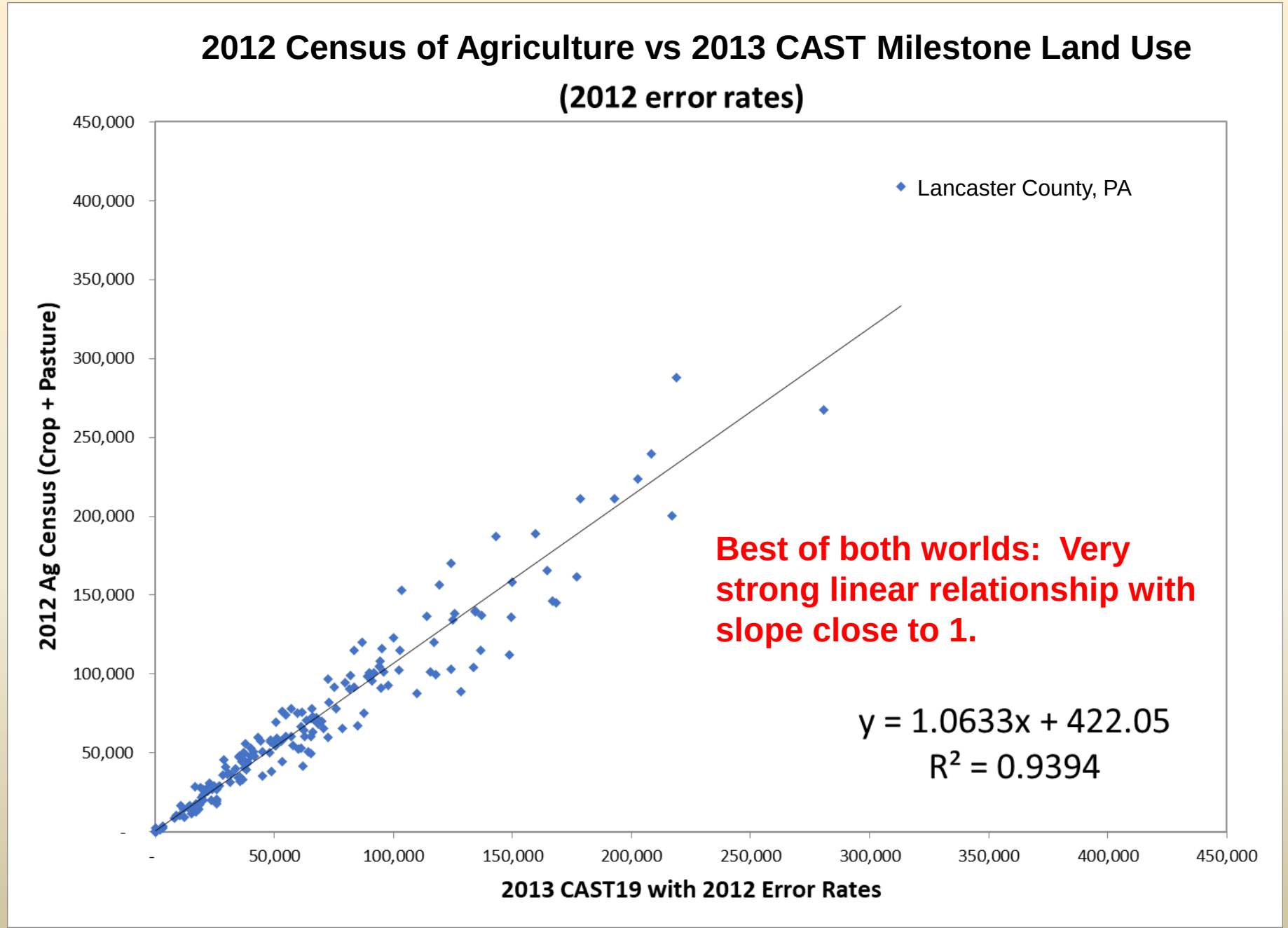
* Relative error rates are derived from published errors in the 1-meter land cover products and published county-level reporting errors for "land in farms" in the Census of Agriculture

Balancing the Errors in the Census and Mapped Land Uses (True-up Method)



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Conclusions:

- True-up methodology is consistent from 1995 to 2025.

- True-up methodology achieves desired results: producing a strong one-to-one linear relationship with Census and better agreement with high-resolution mapped land uses.

- True-up methodology follows Partnership-established protocols and decisions about introducing new data and methods.

Note:

- Improvements to future versions of the land use will further minimize discrepancies between the Census of Agriculture and CBP high-resolution land use datasets.
    - include more ancillary data on mining, natural gas extraction, 2017 Common Land Units
    - improve QAQC of local land use and zoning data