



Office of Economic Policy
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**Non-compete Contracts: Economic Effects and Policy
Implications**

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Executive Summary

Non-compete agreements are contracts between workers and firms that delay employees' ability to work for competing firms. Employers use these agreements for a variety of reasons: they can protect trade secrets, reduce labor turnover, impose costs on competing firms, and improve employer leverage in future negotiations with workers. However, many of these benefits come at the expense of workers and the broader economy. Recent research suggests that a considerable number of American workers (18 percent of all workers, or nearly 30 million people) are covered by non-compete agreements.¹ The prevalence of such agreements raises important questions about how they affect worker welfare, job mobility, business dynamics, and economic growth more generally. This report presents insights from economic theory and evidence on the economic effects of non-compete agreements. It goes on to discuss policy implications, starting a discussion about how such agreements could be used in a way that balances the interests of firms with those of workers and society as a whole.

Non-compete agreements have social benefits in some situations.

- Non-competes are sometimes used to protect trade secrets, which can promote innovation.
- By reducing the probability of worker exit, non-competes may increase employers' incentives to provide costly training.
- Employers with especially high turnover costs could use non-competes to match with workers who have a low desire to switch jobs in the future.

But non-compete agreements can also impose large costs on workers.

- Worker bargaining power is reduced after a non-compete is signed, possibly leading to lower wages.
- Non-competes sometimes induce workers to leave their occupations entirely, foregoing accumulated training and experience in their fields.

¹ These and other similar numbers throughout the executive summary and report are from Starr, Bishara, and Prescott (2015) and private correspondence with the authors. Note that all figures are preliminary and may change slightly.

- Reduced job churn caused by non-competes is itself a concern for the U.S. economy. Job churn helps to raise labor productivity by achieving a better matching of workers and firms, and may facilitate the development of industrial clusters like Silicon Valley.

Moreover, there is reason to believe that many specific instances of non-compete agreements are less likely to produce social benefits.

- Non-competes are often used by employers in non-transparent ways:
 - Many workers do not realize when they accept a job that they have signed a non-compete, or they do not understand its implications.
 - Many workers are asked to sign a non-compete only after accepting a job offer. One lower-bound estimate is that 37 percent of workers are in this position.
 - Many firms ask workers to sign non-competes that are entirely or partly unenforceable in certain jurisdictions, suggesting that firms may be relying on a lack of worker knowledge. For instance, California workers are bound by non-competes at a rate slightly higher than the national average (19 percent), despite the fact that, with limited exceptions, non-competes are not enforced in that state.²
- Only 24 percent of workers report that they possess trade secrets. Moreover, less than half of workers who have non-competes also report possessing trade secrets, suggesting that trade secrets cannot explain the majority of non-compete activity.
- Non-competes are common among workers who report lower rates of trade secret possession: 15 percent of workers without a four-year college degree are subject to non-competes, and 14 percent of workers earning less than \$40,000 have non-competes. This is true even though workers without four-year degrees are half as likely to possess trade secrets as those with four-year degrees, and workers earning less than \$40,000 possess trade secrets at less than half the rate of their higher-earning counterparts.
- Available evidence suggests that workers with a low initial desire to switch jobs are *not* more likely to match with employers who require non-competes.
- In some cases, non-competes prevent workers from finding new employment even after being fired without cause; in such cases, it is difficult to believe that non-competes yield social benefits.

² Depending on the facts of the individual case, such non-competes may be enforced in other states.

States vary greatly in the manner and degree to which they will enforce non-competes.

- In some states, non-compete enforcement is determined by statute, while in others it is determined exclusively by case law.
- Some states refuse to enforce non-competes, or refuse to enforce non-competes that contain any unenforceable provisions (“red-pencil” doctrine), although a majority of states will modify overbroad non-compete contracts to render them enforceable (“blue-pencil” and “equitable reform” doctrines).

The analysis in this report suggests several broad recommendations that would minimize the harms associated with non-compete agreements.

- Increase transparency in the offering of non-competes.
- Encourage employers to use enforceable non-compete contracts.
- Require that firms provide “consideration” to workers bound by non-compete contracts in exchange for both signing and abiding by non-competes.

I. Non-competes and Their Justifications³

Non-compete contracts – agreements between workers and firms that restrict workers’ ability to take new employment – have a long history, but their scope, prevalence, and enforcement have varied widely across time and place. With the recent development of more comprehensive data on their usage, it has become more apparent that non-competes are an important labor market institution meriting careful study. Recent research shows that as many as 30 million workers are currently covered by non-compete agreements. While in some cases non-compete agreements can promote innovation, their misuse can benefit firms at the expense of workers and the broader economy. Details of non-competes and their enforcement have implications for worker bargaining power, job mobility, and economic growth. This report draws on insights from economic theory, as well as a rapidly growing body of empirical evidence, to help clarify thinking about non-competes and non-compete reform.

What are non-competes and who is bound by them?

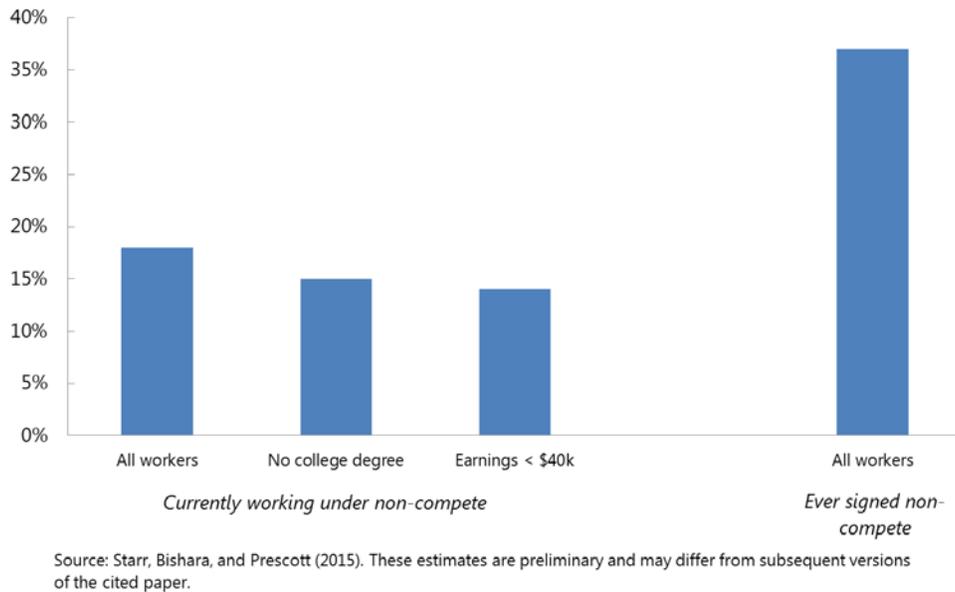
Many employers ask their employees to sign non-compete agreements. The details of these contracts vary greatly across firms and states, but they share a common purpose: restricting the ability of a worker to compete with his or her current employer for some specified period of time, often in a specified geographic area. Typically, this takes the form of a prohibition on taking employment at a rival firm, where “rival” may be interpreted quite broadly to include all firms within a given industry.

Non-compete agreements have become quite common among a variety of types of workers. As shown in the chart below, roughly 18 percent of workers currently report working under a non-compete agreement and about 37 percent of workers report having worked under one at some point during their career. Although such agreements are less common among less-educated workers and lower-income workers, the fractions of these workers operating under one are still substantial.⁴

³ This report benefited greatly from discussions with Professor Evan Starr, and we are grateful for his time and expertise. We also make extensive use of Starr, Bishara, and Prescott (2015). However, the views expressed here are not necessarily those of Starr and his coauthors, nor are they implicated in any errors.

⁴ See Starr, Bishara, and Prescott (2015).

Percentage of Workers with Non-compete Agreements, by Group



How are non-competes typically justified?

The conventional picture of a workplace characterized by non-compete agreements is one that features trade secrets, including sophisticated technical information and business practices that firms have a strong interest in protecting. By preventing a worker from taking such secrets to a firm’s competitors, the non-compete essentially solves a “hold-up” problem: *ex ante*, both worker and firm have an interest in sharing vital information, as this raises the worker’s productivity. But *ex post*, the worker has an incentive to threaten the firm with divulgence of the information, raising his or her compensation by some amount equal to or less than the firm’s valuation of the information. Predicting this state of affairs, the firm is unwilling to share the information in the first place unless it has some legal recourse like a non-compete contract.

Occasionally, client relationships are included along with trade secrets in this explanation (and are sometimes treated similarly as a matter of state law). However, it is not clear that relationships with clients constitute a socially valuable investment analogous to trade secrets.⁵ For this reason, trade secrets will be the focus of discussion in this report.

⁵ For instance, a trade secret involving intellectual property may be the product of expensive investments. If the investment had not been made, none of the benefits of the property would have been realized. By contrast, the

While non-competes help solve the trade secrets “hold-up” problem, they are not the only tool at employers’ disposal. States generally have laws prohibiting theft or disclosure of trade secrets. In addition, employers can use compensation schemes that discourage turnover for workers with trade secret access (e.g., employers may provide additional compensation contingent on the worker remaining at the firm).⁶ We provide further evidence regarding trade secrets later in the report.

What are other possible explanations?

What might explain the existence of non-competes among workers who are not plausibly affected by the sort of trade secrets discussed previously? A number of explanations have been suggested. One possibility (*training*) – which may coexist with either of the next two explanations – is that firms and workers use non-competes to encourage more investment in workers. In general, firms are reluctant to pay for training that improves a worker’s “general” skills and makes her more valuable to it and other firms alike. Economists usually think of general training as occurring when workers accept wage cuts to compensate their employer for its expenses in providing the training.⁷ For various practical reasons, however, workers may be unwilling to pay for training.⁸ Non-competes offer an alternative: firms get an assurance that workers are unlikely to leave for some period of time, allowing the firm to capture more of the increased productivity from costly training it provides, and workers receive more training than they otherwise would.

Another possibility (*screening*) is that non-competes are an attempt by firms to preferentially hire workers with a low likelihood of departure. Underlying this alternative is the assumption that firms face substantial costs for hiring and separating with workers.⁹ Moreover, it is not obvious to firms which workers are most likely to exit, and workers cannot credibly assert their probability of leaving (i.e., all workers will pretend to have a very low probability, as this raises their perceived value to the firm). By making non-competes a condition of employment, firms

client, and their need for a good or service, presumably exist independently of any investment made by the employer.

⁶ See Salop and Salop (1976) for one discussion of such a mechanism.

⁷ See Becker (1962).

⁸ For instance, workers may be credit-constrained and unable to finance the training, or workers may have difficulty observing the quality of the training, rendering them less willing to pay for it.

⁹ See Hamermesh (1995).

reduce the value of the job to those workers who know they are likely to depart. For those workers who do not expect to leave imminently, the non-compete is less of an imposition. Note that in order for this explanation to be correct, prospective workers must understand the non-compete and its implications.

A final explanation (henceforth referred to as *lack of salience*) is that workers do not pay attention to non-compete contracts and do not realize how much bargaining power and future employment flexibility they are foregoing. Only later, when workers consider exiting a firm, do they become aware of the existence and/or implications of the non-compete agreement.¹⁰ Other workers may be aware of the non-compete, but only after it is presented to them once they have accepted a position or started working, and not at the time the job offer was originally extended. According to this explanation, only employers benefit from the non-compete, as they obtain increased bargaining power in future wage negotiations, reduced turnover costs, and possible impairment of rivals' ability to hire.

How do the different non-compete explanations affect the optimal policy response?

The explanations for non-compete agreements described above have different implications for the desirability of such agreements. Thinking through these implications helps to shed light on the appropriate policy response. The first three explanations – trade secrets, training, and screening – suggest that non-competes can be socially desirable. The last explanation, lack of salience, suggests that non-competes are socially harmful.

The conventional explanation for non-compete agreements involving protection of trade secrets is a potentially strong justification for such agreements where it genuinely applies, and where other devices for protection of employers (like trade secrets law) are not effective. As previously discussed, non-competes can encourage additional economic activity and broader information sharing when trade secrets are significant.

The training and screening explanations for non-compete agreements also suggest social benefits. If worker training is sufficiently enhanced by the availability of non-competes, or if

¹⁰ Research in other contexts has found a large role for salience considerations. See Kahneman (2003) for a discussion of salience as it relates to behavioral economics, and Feldman, Katuscak, and Kawano (2016) for an example from the tax literature.

firms with unusually high separation costs are able to match more appropriately with workers, both worker and firm are better off. Balanced against these benefits are the social costs associated with diminished mobility.

The final explanation for non-compete agreements – lack of salience – implies that non-competes are merely a costly transfer from workers to firms, made possible by workers’ lack of awareness. According to this explanation, non-competes lead to diminished worker mobility and a loss of human capital, with no corresponding benefit to society. When workers are legally prevented from accepting competitors’ offers, those workers have less leverage in wage negotiations and fewer opportunities to develop their careers outside of their current firm. By contrast, the firms using non-competes benefit through reduced turnover costs, increased bargaining power, and denial of valuable employees to competitors.

Constructing ideal policy for non-competes requires determining which explanation is most relevant for a particular type of worker (i.e., for low-skill service workers vs. high-skill IT workers), and balancing the trade-offs between non-competes’ benefits and their undesirable consequences. For instance, low-wage workers may be particularly poorly served by non-competes due to the lower likelihood that trade secrets are relevant.

However, it is not always easy to distinguish among the different explanations for non-competes, and several possible reforms are beneficial regardless of the underlying explanation. For example, measures to improve the salience and transparency of non-competes and non-compete enforceability are broadly useful and will help to minimize the worst effects of non-competes.

In Section V, some directions for policy reform are described and their reasoning briefly explained.

II. What Can We Say About the Justifications?

Research on non-competes is still at an early stage. However, a recent paper provides comprehensive data on workers with non-competes, answering many of the most important questions about these workers.¹¹ In addition to collecting information on the characteristics of workers who sign non-competes, this research also examines the extent to which workers with non-competes actually interact with clients, have access to client-specific information, and work with trade secrets.¹² This section summarizes the literature examining the different rationales for non-compete agreements.

Protecting trade secrets. If protection of trade secrets were the main explanation for non-compete agreements, then one would expect such agreements to be highly concentrated among workers with advanced education and occupations likely to feature trade secrets.^{13,14} However, the fraction of workers without a four-year college degree reporting a current non-compete agreement is about 15 percent, only slightly below the 18 percent share for all workers.¹⁵ While engineering and computer/mathematical occupations have the highest non-compete prevalence at slightly more than one-third, occupations like personal services and installation and repair also include many workers with non-competes, at about 18 percent. When entry-level workers at fast food restaurants are asked to sign two-year non-competes, it becomes less plausible that trade secrets are always the primary motivation for such agreements.¹⁶

Unsurprisingly, workers who reported access to trade secrets were much more likely to be bound by a non-compete, with about a 25 percentage point higher probability than those who report no interaction with clients, no access to client-specific information, and no possession of trade secrets. The link between client access and non-competes is not as strong: those who report such

¹¹ See Starr, Bishara, and Prescott (2015).

¹² As the authors' data is collected through an online survey, achieving a representative sample may be challenging. The authors note, however, that more traditional survey designs face similar difficulties.

¹³ Note that not all trade secrets are equivalent from an economic perspective. Though the legal definition of trade secrets embraces a wide variety of private information (e.g., fast-food recipes), some of these examples may not involve a substantial "hold-up" problem of the kind described above.

¹⁴ See Starr, Bishara, and Prescott (2015) for evidence that occupations and income groups differ substantially in the degree to which they involve trade secrets.

¹⁵ See Starr, Bishara, and Prescott (2015).

¹⁶ See <http://www.forbes.com/sites/clareoconnor/2014/10/15/does-jimmy-johns-non-compete-clause-for-sandwich-makers-have-legal-legs/>.

access (but no trade secrets) have about a 7 percentage point higher probability of a non-compete. However, less than half of all workers with non-competes report possessing trade secrets. Together, these findings suggest that the trade secrets explanation is likely part, but not all, of the story of non-competes.

Encouraging training. Non-compete enforcement is associated with more worker training. Evan Starr finds that a “one standard deviation increase in a state’s overall enforceability level increases the probability that the average high litigation occupation receives firm-sponsored training by 2.4% relative to low litigation occupations.”¹⁷ Interestingly, this work finds that when states require firms to offer substantial “consideration” along with a non-compete (e.g., promotions, training, and higher wages), both training and wage outcomes for workers are improved.

Facilitating screening. Starr, Bishara, and Prescott have developed data that are directly relevant to the question of screening by asking their survey respondents how long they expected to work for their current employer, then comparing the responses of workers who have and have not signed non-competes. Interestingly, after controlling for various demographic and economic variables, there is no relationship between expected tenure and likelihood of having signed a non-compete. This result suggests that screening is not an important part of the non-compete story.

Exploiting lack of salience. Several pieces of evidence suggest that employers are relying on workers’ incomplete understanding of non-compete agreements. First, employers often require that workers sign non-compete agreements even in states that refuse to enforce them. For example, in California, which (with limited exceptions) does not enforce non-compete agreements, the fraction of workers currently under a non-compete is 19 percent, which is slightly higher than the national average.

Second, a separate survey, exclusively focused on members of the Institute of Electrical and Electronics Engineers, reports that “...barely 3 in 10 workers reported that they were told about the non-compete in their job offer. In nearly 70% of cases, the worker was asked to sign the

¹⁷ See Starr (2015), page 3. “Enforceability level” is defined by Starr to capture all the dimensions of non-compete enforcement, and “high-litigation” refers to occupations characterized by more legal action related to non-compete contracts.

non-compete after accepting the offer – and, consequently, after having turned down (all) other offers. Nearly half the time, the non-compete was not presented to employees until or after the first day at work.”¹⁸ This evidence is especially powerful insofar as it applies to highly-educated, high-wage workers who might be considered more likely to understand the process surrounding non-competes. Even in cases where the conventional explanation of trade secrets has a surface plausibility, firms often delay the presentation of non-competes. This behavior would not be necessary if non-competes were a mutually-beneficial arrangement.

Finally, Starr, Bishara, and Prescott (2015) find that only 10 percent of workers with non-competes report bargaining over their non-compete, with 38 percent of the non-bargainers not realizing that they could even negotiate.¹⁹ Moreover, workers appear confused as to whether non-competes are even enforceable in their states. In preliminary work by Starr and coauthors, workers are shown to be frequently incorrect or unsure as to whether their non-competes are actually enforceable. Again, this is not consistent with a “perfect information” setting in which workers knowingly accepted the limitations imposed by non-competes.

¹⁸ See Marx and Fleming (2012), page 49.

¹⁹ See Starr, Bishara, and Prescott (2015).

III. The Details of Non-compete Enforcement

Non-compete enforcement differs significantly across states. Some relevant terms of art are defined below.

Non-compete contract: A contract that delays or in some other way restricts a worker's ability to compete with a previous employer. Typically this entails restrictions on future employment.

Consideration: A benefit received by a signatory to a contract. Generally, both parties must receive consideration in order for a contract to be valid. Consideration commonly includes property or promises of specific actions. In the case of a non-compete, consideration may sometimes refer to wage increases, promotions, or continued employment (sometimes including hiring).

Protectable interests: These are the aspects of an employer-employee relationship that provide the legal motivation for a non-compete agreement. They vary state to state, but frequently include trade secrets, confidential information, goodwill, and/or client relationships. Some states additionally provide protection for special training.

Red-pencil doctrine: Doctrine prevailing in some states requiring that courts must declare an entire non-compete contract void if one or more of its provisions are found to be defective under state law or precedent.

Blue-pencil doctrine: Doctrine prevailing in some states requiring that courts delete provisions of a non-compete contract that render it overbroad or otherwise defective, retaining the enforceable subset of the contract.

Equitable reform, aka Reformation: Doctrine prevailing in some states requiring that courts may rewrite a non-compete contract so as to render it non-defective. Unlike blue-pencil doctrine, this may entail insertions of new text.

Currently, nearly all states will enforce non-compete agreements to some extent. Within those states, non-compete enforcement may be restricted in a variety of ways that vary from state to state. See [Beck Reed Riden LLP](#) for a summary of state rules.²⁰

Judicial modification of non-competes. Rather than declaring specific contracts completely enforceable or unenforceable, courts in certain states may alter the contracts themselves. In those states, judges may declare portions of a contract void but other parts to be valid under what is called “blue pencil doctrine.”

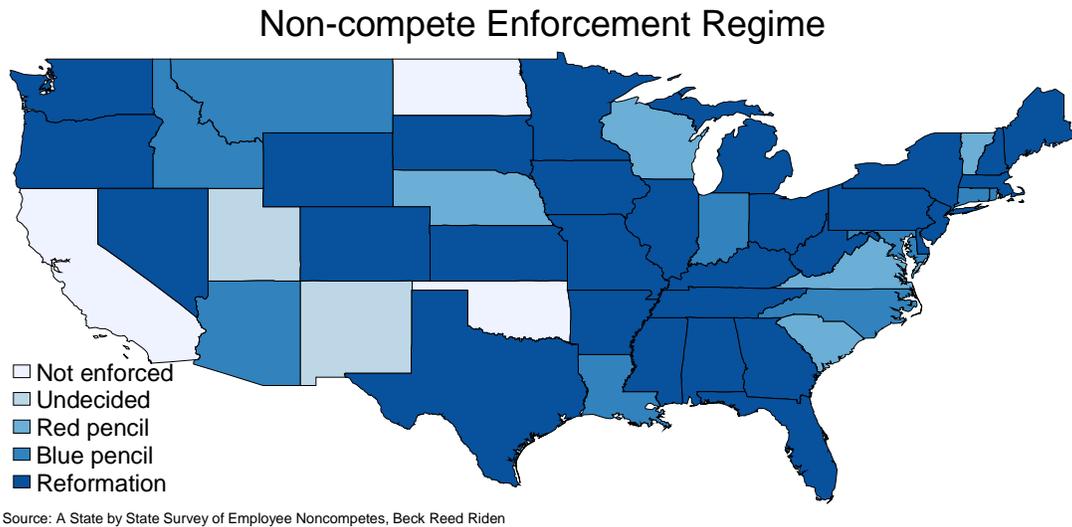
The following stylized example may help to explain how this doctrine might work. Suppose that a contract states that “The employee agrees not to work for any business competitive with the employer for one year in the following counties: Leelanau, Benzie, and Manistee.” Purely hypothetically, a judge might find the inclusion of Benzie to be overbroad, and could determine that the non-compete is valid once Benzie County is removed. However, as blue-pencil doctrine does not allow a court to add terms to a contract, the contract could not be revised to add “agrees not to work *in an administrative capacity*”, were the court to hold that this qualifier was necessary to prevent the contract from being overbroad.

In other states, an “equitable reform” or “reformation” doctrine allows judges to amend the language in question to generate an enforceable contract consistent with the original intent of the existing contract.²¹ This allows more flexibility than the blue pencil rule and increases the likelihood of a non-compete being upheld in some form, all else equal. It may also encourage firms to take risks in the writing of contracts, including provisions likely to be struck down. If workers do not have a good sense of which parts of a contract are enforceable, then these untenable provisions may still affect their behavior. On the opposite end of the spectrum, some states simply do not allow any judicial modification of contracts, but instead hold that any unenforceable provisions render the entire contract unenforceable. This is sometimes known as “red-pencil” doctrine.

²⁰ Other summaries of non-compete law exist and are in some cases slightly inconsistent with the Beck Reed Riden table we use; see “[Summary of Covenants Not to Compete: A Global Perspective](#)” by Fenwick and West LLP, for one alternative.

²¹ In some cases, this doctrine is (confusingly) also referred to as “blue-pencil.”

The figure below illustrates findings by one survey of the use of each rule by state.²² See Appendix B for additional figures illustrating the survey’s findings regarding other important dimensions of non-compete enforcement, including treatment of trade secrets, enforceability in case of firing without cause, and whether “continued employment” counts as worker consideration in exchange for a non-compete.



Quits vs. Layoffs. The paradigmatic case of non-compete enforcement is one in which an employee quits and is prevented from working for a competitor. However, even fired workers are often bound by non-compete contracts. One survey reports that, as of 2015, non-competes were enforceable against employees discharged without cause in about half of states.²³

Recent changes in non-compete enforcement. Several states have recently altered their approaches to non-compete enforcement. Notably, Georgia amended its constitution in 2011 to allow for increased enforcement of non-compete agreements.²⁴ Other states have altered their statutes to extend or limit the reaches of non-competes, as with a recent statute in Alabama that more explicitly explains what is and is not a valid protectable interest. Like Alabama, Oregon passed a statute that more clearly defines the bounds of a non-compete. As of 2016, new non-competes in Oregon will be limited to a maximum of 18-month duration. New Mexico also

²² Alaska and Hawaii, not shown, are both “reformation” states.

²³ See Beck Reed Riden LLP (2015).

²⁴ See <http://www.lexology.com/library/detail.aspx?g=aadbea62-9a31-4ae3-92dd-8198906c37f6>.

more clearly defined the bounds of non-competes, restricting their enforceability for certain health care practitioners. In Hawaii, non-competes have been prohibited for tech workers.²⁵

In other states, legislators have recently proposed significant changes. A bill similar to that passed in Hawaii was introduced, but not enacted, in Missouri. In New Jersey and Maryland, bills were proposed that would render non-competes unenforceable for any workers eligible to receive unemployment compensation. State legislators in Massachusetts, Michigan, and Washington have proposed that non-competes be made largely unenforceable in their states. Finally, Senators Franken and Murphy have proposed that firms be prohibited from entering into non-compete agreements with workers making less than \$15 per hour.²⁶

Appendix A provides a brief summary of the development of non-compete law over the long run.

²⁵ See <https://legiscan.com/AL/bill/HB352/2015>, <http://gov.oregonlive.com/bill/2015/HB3236/>, <http://www.nmlegis.gov/lcs/legislation.aspx?chamber=S&legtype=B&legno=325&year=15>, and http://www.capitol.hawaii.gov/session2015/bills/HB1090_CD1_.HTM, for Alabama, Oregon, New Mexico, and Hawaii law, respectively.

²⁶ Private correspondence with Evan Starr. See <http://house.mo.gov/billtracking/bills151/billpdf/intro/HB0597I.PDF>, http://www.njleg.state.nj.us/2012/Bills/A4000/3970_II.HTM, http://mgaleg.maryland.gov/2013RS/fnotes/bil_0001/sb0051.pdf, <https://malegislature.gov/Bills/189/House/H1701>, [http://www.legislature.mi.gov/\(S\(eemdorjddzeyki1vwou5lszu\)\)/mileg.aspx?page=GetObject&objectName=2015-HB-4198](http://www.legislature.mi.gov/(S(eemdorjddzeyki1vwou5lszu))/mileg.aspx?page=GetObject&objectName=2015-HB-4198), <http://app.leg.wa.gov/billinfo/summary.aspx?year=2015&bill=2931>, for Missouri, New Jersey, Maryland, Massachusetts, Michigan, and Washington, respectively. See <http://www.franken.senate.gov/files/documents/150604MOVEsummary.pdf> for the proposed federal bill.

IV. Effects of Non-compete Enforcement

The effects of non-compete enforcement on mobility. According to authors of a recent study, the state of Michigan inadvertently “legalized” non-competes in 1985.²⁷ This presented a rarely available opportunity to study the effect of non-compete enforcement. Typically, it is difficult to rule out the possibility that changes in law reflect changes in current or expected economic circumstances. Thus, a simple comparison of economic outcomes before and after a state legalizes non-competes will include the effects of both these changes in circumstances and non-compete enforcement itself, making it difficult to separately estimate the latter effect. But in the case of Michigan, with its allegedly accidental and unanticipated change in the enforceability of non-competes, researchers can more reliably interpret changes in outcomes (e.g., labor mobility) as being caused by non-compete enforcement.

Marx, Strumsky, and Fleming exploit this natural experiment, showing that worker job mobility fell by 8 percent when non-competes were made enforceable, with the effect even larger for workers with more narrowly-focused human capital. However, other authors dispute these findings, arguing that the inadvertent legalization was not retroactive and that some states were inappropriately labeled as “non-enforcing.”²⁸ In separate work, Marx finds that workers who do switch jobs are more likely to leave their industry if they are covered by a non-compete, with the attendant “reduced compensation, atrophy of their skills, and estrangement from their professional networks” that would be expected to occur.²⁹

The effects of non-compete enforcement on wages. The literature on the effect of non-competes on wages is small, consisting largely of case studies, surveys of specific professions (e.g., electrical engineers), theoretical papers, and a recent analysis based on a broad online survey.³⁰ We therefore combine information from previous literature on enforceability and non-compete prevalence with standard labor market data, generating suggestive evidence on the wage impacts

²⁷ See Marx and Fleming (2012) for details.

²⁸ See Sichelman and Barnett (2015).

²⁹ See Marx, Strumsky, and Fleming (2009) and Marx (2011).

³⁰ See various papers by Marx, Marx and Fleming (2012), Meccheri (2009), and Starr, Bishara, and Prescott (2015), respectively. We are not aware of any panel data with individual responses to questions about non-competes, and existing work typically does not present population-wide inferences about the wage effects of non-compete enforcement.

of non-compete enforcement.³¹ Interestingly, we find stricter non-compete enforcement to be associated with both lower wage growth and lower initial wages.³²

The first column of Table 1 shows the percentage change in wages from a one-unit increase in a non-compete enforceability index, holding constant a number of worker characteristics.³³ It suggests that a standard deviation in non-compete enforcement reduces wages by about 1.4 percent. Recent work by Starr and coauthors finds broadly similar results to those presented here.³⁴

It is possible to refine this approach by focusing more narrowly on populations likely to be affected by non-competes. Workers with bachelor's degrees are more than 50 percent more likely to be bound by non-competes than those without, suggesting that one might better approximate the “eligible” subgroup by restricting the sample to workers with bachelor's degrees. This is shown in Table 1, column 2. Note that the magnitude of the wage effect of non-compete enforcement increases for this subgroup, as expected. A slightly more nuanced approach makes use of the occupational breakdown provided in recent work. Rather than omitting non-college workers, we instead reweight the sample to be more representative of workers with non-competes. For example, this will imply placing a higher weight on workers in the architecture and engineering occupations than in the personal services occupations. Table 1, column 3 shows results from this reweighted approach. The magnitude of the wage impact is again above that of column 1, but not dramatically so.³⁵

³¹ We use the 2014 merged outgoing rotation groups of the Current Population Survey (CPS), which provide a cross section of population-representative workers. Merged with this data is the Starr-Bishara index of non-compete enforceability by state (generously provided by Evan Starr), as well as the fraction of workers with non-competes by major occupation from Starr, Bishara, and Prescott (2015).

³² Here again, the particular proposed explanation for non-competes is important. For instance, if *screening* is the dominant explanation, and workers are fully informed about non-competes, we would expect stricter enforcement to cause an initial wage premium but slower subsequent wage growth. Workers would only be willing to sign the non-compete if they were compensated at the time of signing. If, on the other hand, *salience* is the dominant explanation, we would expect no initial premium and slower wage growth, as workers are prevented from taking advantage of outside opportunities or using outside opportunities as leverage for wage growth at the current firm.

³³ These controls consist of education, age, gender, marital status, occupation, industry, public sector status, and union status.

³⁴ See forthcoming work by Balasubramanian, Chang, Sakakibara, Sivadasan, and Starr, as well as Starr, Ganco, and Campbell.

³⁵ This is perhaps to be expected given the fact that non-competes are used quite broadly. While non-competes are more common in particular occupations (e.g., management, computer and mathematical, and architectural and engineering occupations), they are also found in a wide variety of unexpected occupations and education levels.

Table 1. Wage effect of one standard deviation of noncompete enforcement

	Original sample	College-only	Occupation-reweighted
Enforcement	-1.38%	-1.86%	-1.52%
	(-13.55)	(9.73)	(12.49)
N	163,252	57,156	163,252
R ²	0.43	0.25	0.43

Source: 2014 Current Population Survey, Starr et al. (2015), private correspondence with Starr, and Treasury calculations. All estimates are conditional on education, marital status, union status, sex, major occupation and industry, public sector status, and a quadratic in age. T-statistics are in parentheses.

Much of the research on non-competes has focused on their relationship with on-the-job training. Non-competes and non-compete enforceability may affect the rate at which wages grow with employee tenure and experience. We therefore examine the association of non-compete enforceability with age-wage profiles, i.e., the rate at which wages increase with age.

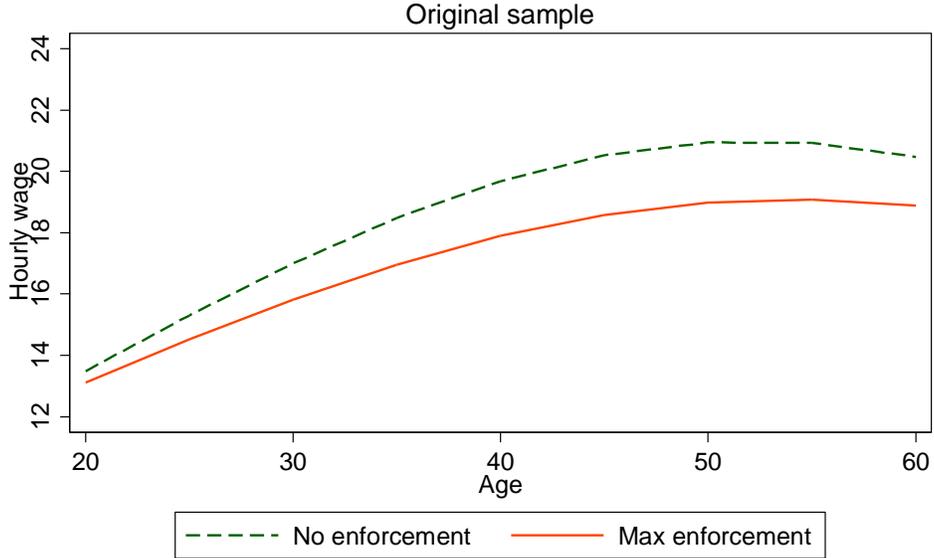
Figures 1 and 2 below are plots of age-wage profiles in a minimally-enforcing state and a maximally-enforcing state, for original and occupation-reweighted samples, respectively. As workers age, the effect of tightened non-compete enforcement appears to rise: using the original sample, the effect of maximal enforcement, relative to minimal enforcement, is 5 percent at age 25 and 10 percent at age 50. As with the previous results, the occupation-reweighted projections show a somewhat larger difference between wages in minimally- and maximally-enforcing states.

Are these results surprising? If non-competes existed exclusively to promote training, one would expect states with stronger enforcement to see faster wage growth over the life cycle. If, on the other hand, non-competes are the product of a lack of salience for workers, one would instead expect to see the pattern shown in Figures 1 and 2.³⁶ As workers progress through their careers, switching jobs is more difficult in states that stringently enforce non-competes. Given that job

³⁶ When interpreting any of the results just described, it should be remembered that we are not exploiting variation over time in non-compete enforcement; rather, the wage estimates are derived from variation across states. Even after controlling for available worker-level variables, states may differ in ways that are both relevant to wage growth and non-compete enforcement. As such, the results shown here should be seen as merely suggestive.

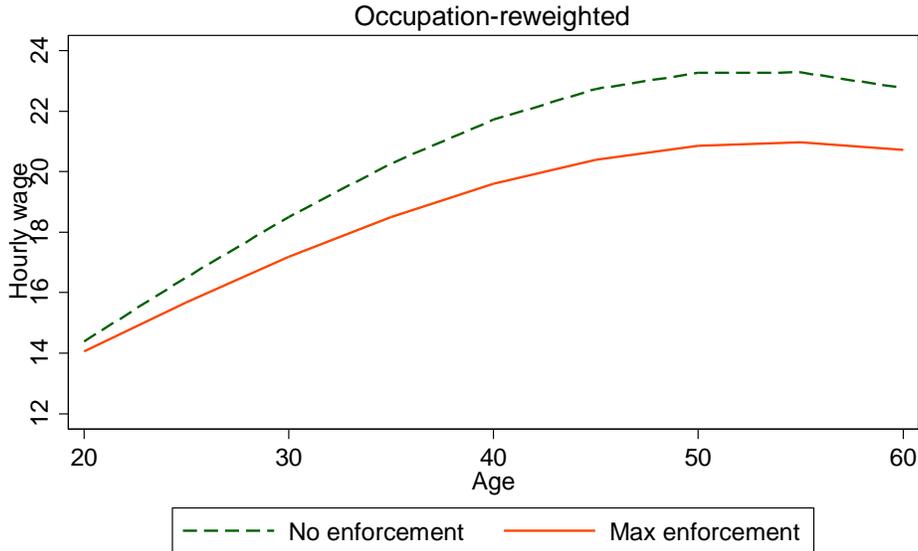
switching is generally associated with substantial wage increases, this increased difficulty of switching would reduce wage growth over time.³⁷

Figure 1. Age-Wage Profile by State Enforcement Regime



Source: 2014 Current Population Survey, Starr et al. (2015), and Treasury calculations. All variables, with the exception of enforcement index and age, are held constant at their means.

Figure 2. Age-Wage Profile by State Enforcement Regime



Source: 2014 Current Population Survey, Starr et al. (2015), and Treasury calculations. All variables, with the exception of enforcement index and age, are held constant at their means.

³⁷ See Topel and Ward (1992).

Non-compete enforcement and aggregate impacts. Thus far, we have discussed the effects of non-competes on individual workers. But non-compete enforcement may matter for cities, states, and regions in ways that cannot be fully understood at the individual level. Whether non-competes are beneficial or harmful for a single worker and a single firm, there are potential spillovers across workers and firms, particularly related to information.

In urban economics, regions are subject to so-called “agglomeration effects.” For instance, high-tech firms do not locate randomly, but tend to cluster in places like Silicon Valley. This clustering is due to a number of factors that include the availability of a large, deep pool of workers with relevant skills, a more competitive market of suppliers, and information spillovers across workers and firms. This last factor is important in connection with non-competes. When firms in a given industry are clustered, it becomes easier for their workers to share expertise and discoveries. While not always in the interest of a particular firm, this sharing can redound to the advantage of the larger economy, making the cluster an attractive destination for firms.

One important facilitator of this sharing is, unsurprisingly, the movement of workers across firms within industry. Employee departures impose costs on their firms, but yield benefits for destination firms and act to broadly disseminate improvements in technologies and best practices. Non-compete enforcement can stifle this mobility, thereby limiting the process that leads to agglomeration economies.

Many observers have suggested that Silicon Valley is a prime example of this phenomenon.³⁸ California, along with some other states, generally does not enforce non-compete agreements. It would be difficult to reach definitive conclusions about one instance of an industrial cluster, of course. One fact contradicting the hypothesis of free mobility is that high-tech firms in Silicon Valley have been alleged to collude to suppress wages and reduce “poaching.”³⁹ We do not know precisely how this behavior interacts with use of non-competes; in other words, the California firms may have been colluding as a substitute for using non-competes. Nevertheless, the Silicon Valley example highlights the importance of information sharing facilitated by worker mobility in some industrial clusters.

³⁸ For example, see Gilson (1999).

³⁹ See <http://www.wsj.com/articles/judge-rejects-settlement-in-silicon-valley-wage-case-1407528633>.

Singh and Marx look more broadly at informational spillovers and find that non-compete enforcement reduces their scope. Furthermore, using the Michigan natural experiment and cross-sectional data, Marx, Singh, and Fleming find that highly skilled workers tend to move from enforcing to non-enforcing states. This suggests that non-competes play a role in “brain drain,” potentially harming states that enforce non-competes more stringently.⁴⁰

Samila and Sorenson (2011) also examine the relationship between non-compete enforcement and regional employment and entrepreneurship. They find that more stringent enforcement is negatively related to both employment growth and entrepreneurship, consistent with results from Marx and coauthors.

⁴⁰ See Singh and Marx (2011) and Marx, Singh, and Fleming (2011). Note that this particular finding does not speak to whether strict non-compete enforcement is harmful to the nation as a whole.

V. Directions for Reform

Until recently, the lack of comprehensive data and analysis of non-competes made it difficult to evaluate the institution from a public policy perspective. However, recent research has underlined some important stylized facts that help to inform ideal policy and distinguish between various possible explanations for non-competes. First, non-competes are common in the labor market across educational, occupational, and income groups. Many workers who do not report possessing trade secrets are nonetheless covered by non-competes.⁴¹ Second, workers are often poorly informed about the existence and details of their non-competes, as well the relevant legal implications. Some employers appear to be exploiting this lack of understanding in ways that harm workers without producing corresponding benefits to society. Finally, while non-compete enforcement is associated with increased training for some workers, the details of this enforcement are important: strong “consideration” requirements can support training and wage growth while diminishing the likelihood that non-compete contracts result purely from inadequate worker knowledge.

The following are general reform recommendations related to the enforcement and use of non-compete contracts. They are not intended to be detailed or exhaustive. Nonetheless, these are promising avenues for state and/or federal policymakers to explore.

Increase transparency in the offering of non-competes.

Policymakers should act to inject transparency into the world of non-competes. To the extent that firms are simply misleading their prospective workers, non-competes are straightforwardly negative for employees. It is important to be precise about the forms that worker confusion can take. Some workers may simply not realize that they have signed a non-compete or fail to understand its ramifications. This sort of confusion could be addressed by a requirement that employers make the contracts, as well as their implications for future mobility, more salient for workers at the outset of an employment relationship. Relatedly, some workers who are aware of their non-compete contract may nonetheless be confused about its legal enforceability.

⁴¹ It is worth noting, however, that this is based on worker self-reports; employers may disagree.

Encourage employers to use enforceable non-compete contracts.

Many firms write non-compete contracts that contain unenforceable, overbroad provisions. Given the well-documented worker confusion about these contracts and the very low cost of writing an unenforceable contract, employers can exert a chilling effect on worker behavior even when their contracts are unenforceable. Conversely, states should explicitly specify the constraints on enforceability of non-compete contracts, where possible.

Require that firms provide “consideration” to workers bound by non-compete contracts in exchange for both signing and abiding by non-competes.

Some firms already provide severance payments to workers with non-competes.⁴² For instance, a worker who quits may receive 50 percent of her previous salary in exchange for abiding by the terms of the non-compete. This limits the harm to workers while ensuring that firms retain the ability to protect their interests with non-competes. Importantly, by requiring that firms incur a cost when requesting a non-compete, this policy preserves the most socially valuable non-compete agreements and discourages the least valuable, for which firms would not be willing to pay.

Conclusion

Non-competes are a central labor market institution, with nearly one fifth of all American workers currently bound by such a contract. Surprisingly, non-competes are widely distributed across education, occupation, and income groups. Understanding the consequences of this institution for workers and the broader economy is therefore of great importance, especially in light of its central role in determining workers’ prospects for wage growth and job mobility.

⁴² See <http://www.sec.gov/Archives/edgar/data/320187/000119312510161874/dex1023.htm>.

Though non-compete contracts can have important social benefits, principally related to the protection of trade secrets, a growing body of evidence suggests that they are frequently used in ways that are inimical to the interests of workers and the broader economy. Enhancing the transparency of non-competes, better aligning them with legitimate social purposes like protection of trade secrets, and instituting minimal worker protections can all help to ensure that non-compete contracts contribute to economic growth without unduly burdening workers.

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Appendix A

Modern interpretations of non-compete agreements are often said to have their origin in 15th and 16th century English common law and are best understood in the context of that period's economic structure. The guild economy largely comprised three types of workers: the apprentice, the journeyman, and the master craftsman. Custom required apprentices to train under master craftsmen for an extended period until graduating to the status of journeyman. Once a journeyman, the individual was free to work wherever he wished while he sought entrance into the inner circle of master craftsmen. Non-compete agreements likely originated in this context as journeymen replaced retiring master craftsmen by purchasing their businesses.⁴³ However, available case law suggests English courts tended to disfavor restraints on trade – especially restraints initiated by an employer.

The most cited example from this period comes from *The Dyer's Case* of 1414.⁴⁴ This case is perhaps the first known example of a contractual restraint of trade. A London practitioner prohibited his apprentice from pursuing his trade in the same city for six months following his apprenticeship. The court ruled against the covenant.⁴⁵ According to some commentators, the result produced two fundamental pillars of employment law.⁴⁶ The first was a policy in favor of retaining skilled labor in the public domain. The second pillar promoted the right of all individuals to seek a livelihood. These principles guided legal precedent for the next century.

Over time, some master craftsmen began to take on more apprentices than customary so as to employ a larger staff at low cost.⁴⁷ The consequence of this strategy was an influx of journeymen looking for ways to unseat master craftsmen. Some craftsmen addressed the increased levels of competition by requiring apprentices and journeymen to sign non-compete agreements.⁴⁸ The English Parliament brought attention to some of these practices in 1536 by authoring the *Act for Avoiding of Extracting Taken upon Apprentices*.⁴⁹ The law attempted to

⁴³ Harlan M. Blake, *Employee Agreements Not to Compete*, 73 *Harvard Law Review* 638 (1960).

⁴⁴ *The Dyer's Case*, Y.B. Mich. 2 Hen. 5, fol. 5, pl. 26 (1414).

⁴⁵ *Ibid.*

⁴⁶ Dan Messeloff, *Giving the Green Light to Silicon Alley Employees: No-Compete Agreements between Internet Companies and Employees under New York Law*, *Fordham Intellectual Property, Media and Entertainment Law Journal*, (vol. 11, issue 3, 2001), at 710-711. Much of this appendix benefits from this article.

⁴⁷ Blake, *supra* note 39, at 633.

⁴⁸ *Ibid.*

⁴⁹ Bland, Brown & Tawney, *English Economic History – Select Documents*, (1919), at 284-286.

restrain some of the practices of guild masters – including non-compete contracts. In 1563, the Statute of Artificers restricted the privileges of workers while also shifting power from guild masters to the evolving English state.⁵⁰ The law established national constraints on maximum wages and the length of apprenticeships.⁵¹

By the beginning of the 17th century, courts continued to disfavor employment restraints, whether in the form of time or place. An excerpt from *Colgate v. Bacheler* (1602) notes, “For as well as [employers] may restrain [employees] for one time, or one place, [they] may restrain [them] for longer times, and more places, which is against the benefit of the Commonwealth... For he ought not be abridged of his Trade, and Living.”⁵² Others worried that non-compete covenants forced young men into “idleness”.⁵³ However, as a new economic system emerged, English courts began to rethink their position on non-compete covenants.

Mitchel v. Reynolds (1711) marked a distinct shift away from the practice of completely banning non-competes.⁵⁴ Reynolds, a baker, agreed to rent his bakery for five years. In return, Mitchel pledged Reynolds a bond worth 50 pounds on the condition that Reynolds would not resume his trade within St. Andrew Holborn Parish for 5 years. The latter failed to keep the agreement and Mitchel sued. Chief Justice Parker ruled in favor of the agreement.⁵⁵ He reasoned that while general restraints on trade were unlawful, as they benefited neither party, some partial restraints were reasonable.⁵⁶ Effectively, the ruling permitted individuals to enter agreements even if they restricted one’s ability to work in a particular location or for a certain period, as long as both parties and the affected communities benefited from the arrangement. However, employers were required to demonstrate the economic necessity of any such agreement.

⁵⁰ Donald Woodward, *The Background to the Statute of Artificers: The Genesis of Labour Policy, 1558-63*, *The Economic History Review* (vol. 33, no.1) 1980, at 32-44.

⁵¹ *Ibid.*

⁵² *Cro. Eliz.* 872, 78 English Report 1097, (Queen’s Bench 1602).

⁵³ *Case of Tailors of Ipswich*, 77 English Report 1218, 1219 (King’s Bench 1614).

⁵⁴ *Mitchel v. Reynolds*, 24 English Report 347 (Queen’s Bench 1711).

⁵⁵ Dan Messeloff, *Giving the Green Light to Silicon Alley Employees: No-Compete Agreements between Internet Companies and Employees under New York Law*, *Fordham Intellectual Property, Media and Entertainment Law Journal*, (vol. 11, issue 3, 2001), at 710-711.

⁵⁶ “General” restraints were defined as those with unlimited scope in either time or space, while “partial” restraints were those limited in both dimensions.

The economic significance of non-competes evolved as new technology accompanied the Industrial Revolution.⁵⁷ Once limited to local markets, companies began expanding into national and international markets, exposing themselves to new rivals.⁵⁸ Moreover, corporations were increasingly concerned with worker mobility. Leaving one's town no longer carried the same economic and physical risks. *Homer v. Ashford* (1825) describes the logic applied by English courts on matters of non-compete covenants:

A merchant or manufacture would soon find a rival in every one of his servants if he could not prevent them from using to his prejudice the knowledge they acquired in his employ. Engagements of this sort between masters and servants are not injurious restraints of trade, but securities necessary for those who engage in it. The effect of such contracts is to encourage rather than cramp the employment of capital in trade and the promotion of industry.⁵⁹

Some took the argument of the court to suggest that non-compete clauses were permissible in most circumstances. Six years later, the court clarified that while employers should have access to protection, *Mitchel's* test-of-reason still applied. In *Horner v. Graves* (1831), a dentist's assistant contracted to not practice independently within 100 miles of the original employer.⁶⁰ Soon after parting with his employer, the assistant broke the agreement, prompting the dentist to sue. In response, the court sided with the defendant, explaining that a reasonable restraint must also account for the interests of the public. From the public's perspective, the dentist had sought to withhold a valuable service within the 100 mile radius of his practice in order to protect himself. The court determined that the burden placed on the public was greater than the need to protect the interests of the previous employer and that the requirement was unreasonably broad.⁶¹

The intermittent reweighting of employer, worker, and public interests continued as the 19th century wore on. By 1841, although most English courts still rejected general restraints, some began to enforce them as businesses globalized.⁶² A trend toward pro-employer policy

⁵⁷ See Messeloff, *supra* note 42, at 712-713.

⁵⁸ Blake, *supra* note 39, at 638.

⁵⁹ *Homer v. Ashford*, 3 Bing. 322, 327 (1825).

⁶⁰ 7 Bing. 735, 131 English Report 284 (C.P. 1831).

⁶¹ *Ibid.* at 743.

⁶² Blake, *supra* note 39, at 624.

continued in 1853 when the Queen’s Bench ruled that the burden of showing unreasonableness rested on the employee rather than employer.⁶³ In 1875, the court ruled that while contracts must remain reasonable, a central value of the liberal economic philosophy permitted men of sound mind to enter arrangements as they saw fit.⁶⁴ Increasing emphasis on freedom of contract was evident in *Rousillon v. Rousillon* (1880), where the court allowed covenantal protection to extend beyond national borders. The court reasoned that if the contract was reasonable in scope at the negotiation, changing economic circumstances should not bar enforcement.^{65,66}

As English courts were moving toward pro-employer policies, American courts started developing their own body of common law. In 1851, *Lawrence v. Kidder*, a case before the New York Supreme Court, established a precedent that the state’s priority was to deter monopolies.^{67,68} The court reasoned that as far as possible, the state must ensure that all citizens be permitted to work.⁶⁹ As such, the court viewed agreements which barred individuals from practicing their occupations based on state or territory boundaries as unlawful.

A Pennsylvania court made an important distinction in 1866 between the sale of “handicraft” and the sale of “property”.⁷⁰ The Pennsylvania court deemed restrictions on property much more reasonable than restrictions on the use of an employee’s skills. This distinction laid the foundation for the landmark Supreme Court decision in *Oregon Steam Navigation Co. v. Winsor* (1874).⁷¹ The California Steam Navigation Company sold the Oregon Steam Navigation Company a boat under the condition that they would not operate the vessel within California for a period of ten years. The Oregon Steam Navigation Company subsequently sold it to Winsor, who at the time of sale was engaged in the navigation of water in Washington. The sale was subject to a condition (among others) that Winsor would not operate the boat in California for a period of ten years. The court upheld the condition, noting that there was no injury to the public.⁷²

⁶³ Tallis v. Tallis, 1 El. & B. 391, 118 English Report 482 (Queen’s Bench 1853).

⁶⁴ Printing & Numerical Registering Co. v. Sampson, L.R. 19 Eq. 462 (1875).

⁶⁵ 14 Ch. D. 351 (1880).

⁶⁶ Blake, *supra* note 39, at 641.

⁶⁷ 10 Barb. 641 (N.Y. Supreme Court 1851)

⁶⁸ Blake, *supra* note 39, at 644.

⁶⁹ *Ibid.*

⁷⁰ Keeler v. Taylor, 53 Pa. 467, 470 (1866).

⁷¹ Messeloff, *supra* note 42, at 720-721.

⁷² *Ibid.*

The New York Court of Appeals echoed the opinion of the Supreme Court in 1887 when it ruled in favor of a non-compete clause which restricted selling matches in the states of Nevada and Montana.⁷³ The court found that the condition was a “partial” restraint even though it covered the entire state of New York, while noting that the distinction between “general” and “partial” restraints, while still good law, was weakening.⁷⁴

Non-compete policies began diverging across states by the end of the 19th century. Notably, the California legislature rendered non-competes generally unenforceable.⁷⁵ Outside of legal opinions, the most influential American documents on contract law are the “Restatement of Contracts” of 1932 and its revision in 1979.⁷⁶ Though non-binding, these writings, published by the American Law Institute, codify case law. Both versions of the Restatement of Contracts state that restraints are unlawful if they unjustly benefit employers and impose undue hardship on the employee or public – reflecting the opinion in *Horner v. Graves*.⁷⁷ The second Restatement of Contracts protects the employee further by increasing the standard by which an employer must demonstrate legitimate need for non-compete protection.⁷⁸

⁷³ *Diamond Match v. Roeber* 106 N.Y. 473 (1887).

⁷⁴ Messeloff, *supra* note 42, at 722.

⁷⁵ Messeloff, *supra* note 42, at 714.

⁷⁶ *Ibid.* at 723-724.

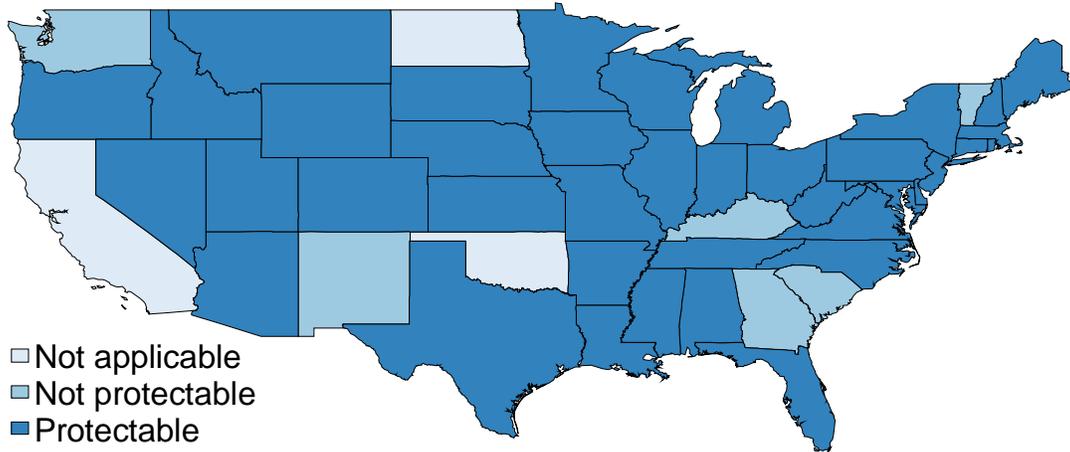
⁷⁷ *Ibid.*

⁷⁸ *Ibid.*

Appendix B

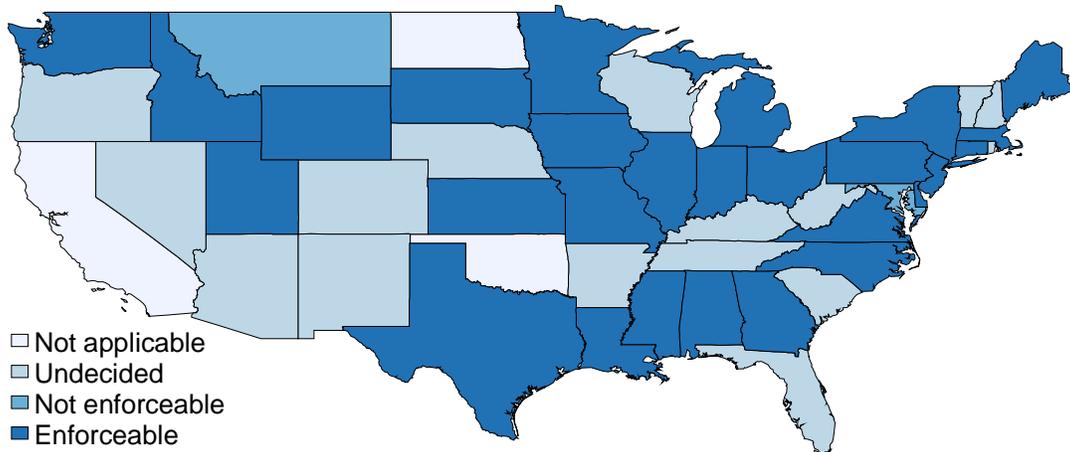
The following figures show some of the state heterogeneity in non-compete enforcement as of 2015. Note, however, that they reflect one particular expert's view of state law, and may elide distinctions relevant to some specific cases.⁷⁹

Trade Secrets as Legitimate Interests



Source: A State by State Survey of Employee Noncompetes, Beck Reed Riden

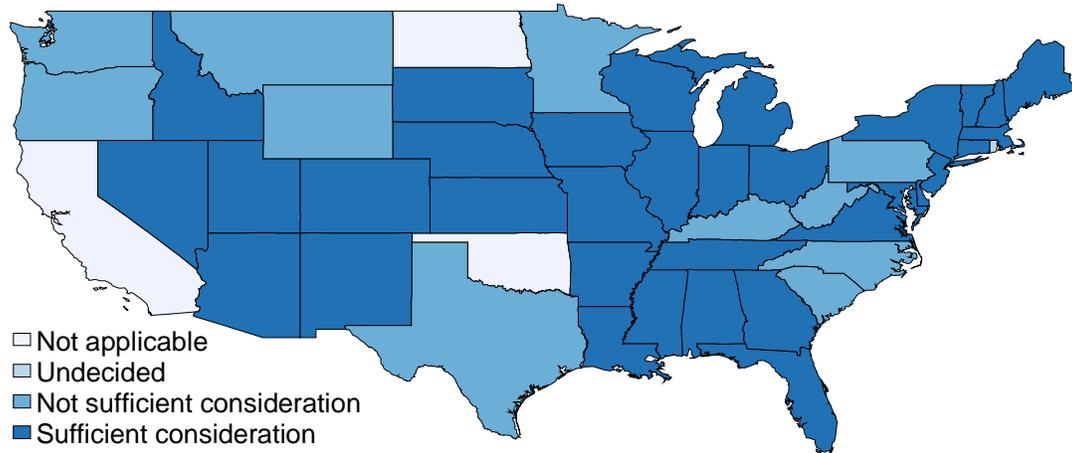
Enforceable Against Workers Fired Without Cause



Source: A State by State Survey of Employee Non-competes, Beck Reed Riden

⁷⁹ Hawaii considers trade secrets to be a protectable interest, is undecided on the question of enforcement against workers fired without cause, and regards continued employment as sufficient consideration. Alaska is identical, with the exception that it is undecided as to whether continued employment constitutes sufficient consideration.

Continued Employment as Sufficient Consideration



Source: A State by State Survey of Employee Noncompetes, Beck Reed Riden

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